

NOT YET SCHEDULED FOR ORAL ARGUMENT**Appeal No. 17-7035****(Consolidated with Appeal No. 17-7039)**

United States Court of Appeals**FOR THE DISTRICT OF COLUMBIA CIRCUIT**

American Society for Testing and Materials; National Fire Protection Association, Inc.; and American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc.,

Appellees,

v.

Public.Resource.Org, Inc.,

Appellant.

Appeal from the United States District Court for the District of Columbia

Hon. Tanya S. Chutkan

1:13-cv-1215-TSC

1:14-cv-0857-TSC

**PUBLIC APPENDIX – MATERIAL UNDER SEAL
IN SEPARATE SUPPLEMENT
VOLUME 2 (JA771-JA1270)**

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CERTIFICATE OF SERVICE

I, hereby certify that on January 31, 2018, I electronically filed the foregoing **Appendix** with the Clerk of the United States Court of Appeals for the District of Columbia Circuit by using the appellate CM/ECF system. I certify that all participants in the case are registered CM/ECF users and that service will be accomplished by the appellate CM/ECF system.

By: /s/ Andrew P. Bridges

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Public.Resource.Org, Inc.

EXHIBIT 16

CERTIFICATE

By Authority Of THE UNITED STATES OF AMERICA Legally Binding Document

By the Authority Vested By Part 5 of the United States Code § 552(a) and Part 1 of the Code of Regulations § 51 the attached document has been duly **INCORPORATED BY REFERENCE** and shall be considered legally binding upon all citizens and residents of the United States of America. HEED THIS NOTICE: Criminal penalties may apply for noncompliance.



Document Name: ASTM D86: Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure

CFR Section(s): 40 CFR 1065.710

Standards Body: American Society for Testing and Materials

EXHIBIT 63
Ashley Scovin, CSR No. 12019

Date 2/27/15

Witness: MALAMUD

Official Incorporator:

THE EXECUTIVE DIRECTOR
OFFICE OF THE FEDERAL REGISTER
WASHINGTON, D.C.





Designation: D 86 – 07

An American National Standard

Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure¹

This standard is issued under the fixed designation D 86; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This test method covers the atmospheric distillation of petroleum products using a laboratory batch distillation unit to determine quantitatively the boiling range characteristics of such products as light and middle distillates, automotive spark-ignition engine fuels, aviation gasolines, aviation turbine fuels, 1-D and 2-D regular and low sulfur diesel fuels, special petroleum spirits, naphthas, white spirits, kerosines, and Grades 1 and 2 burner fuels.

1.2 The test method is designed for the analysis of distillate fuels; it is not applicable to products containing appreciable quantities of residual material.

1.3 This test method covers both manual and automated instruments.

1.4 Unless otherwise noted, the values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for information only.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 All standards are subject to revision, and parties to agreement on this test method are to apply the most recent edition of the standards indicated below, unless otherwise specified, such as in contractual agreements or regulatory rules where earlier versions of the method(s) identified may be required.

2.2 ASTM Standards:²

¹ This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.08.0A on Distillation.

In the IP, the equivalent test method is published under the designation IP 123. It is under the jurisdiction of the Standardization Committee.

Current edition approved Jan. 15, 2007. Published February 2007. Originally approved in 1921. Last previous edition approved in 2005 as D 86–05.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

- D 97 Test Method for Pour Point of Petroleum Products
- D 323 Test Method for Vapor Pressure of Petroleum Products (Reid Method)
- D 2892 Test Method for Distillation of Crude Petroleum (15-Theoretical Plate Column)
- D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products
- D 4177 Practice for Automatic Sampling of Petroleum and Petroleum Products
- D 4953 Test Method for Vapor Pressure of Gasoline and Gasoline-Oxygenate Blends (Dry Method)
- D 5190 Test Method for Vapor Pressure of Petroleum Products (Automatic Method)
- D 5191 Test Method for Vapor Pressure of Petroleum Products (Mini Method)
- D 5842 Practice for Sampling and Handling of Fuels for Volatility Measurement
- D 5949 Test Method for Pour Point of Petroleum Products (Automatic Pressure Pulsing Method)
- D 5950 Test Method for Pour Point of Petroleum Products (Automatic Tilt Method)
- D 5985 Test Method for Pour Point of Petroleum Products (Rotational Method)
- E 1 Specification for ASTM Liquid-in-Glass Thermometers
- E 77 Test Method for Inspection and Verification of Thermometers
- E 1272 Specification for Laboratory Glass Graduated Cylinders
- E 1405 Specification for Laboratory Glass Distillation Flasks
- 2.3 *Energy Institute Standards:*³
 - IP 69 Determination of Vapour Pressure—Reid Method
 - IP 123 Petroleum Products—Determination of Distillation Characteristics
 - IP 394 Determination of Air Saturated Vapour Pressure
 - IP Standard Methods for Analysis and Testing of Petroleum and Related Products 1996—Appendix A

³ Available from Energy Institute, 61 New Cavendish St., London, W1G 7AR, U.K., <http://www.energyinst.org.uk>.

*A Summary of Changes section appears at the end of this standard.



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TABLE 1 Preparation of Apparatus

	Group 1	Group 2	Group 3	Group 4
Flask, mL	125	125	125	125
ASTM distillation thermometer	7C (7F)	7C (7F)	7C (7F)	8C (8F)
IP distillation thermometer range	low	low	low	high
Flask support board	B	B	C	C
diameter of hole, mm	38	38	50	50
Temperature at start of test				
Flask °C	13-18	13-18	13-18	not above
" °F	55-65	55-65	55-65	ambient
Flask support and shield	not above ambient	not above ambient	not above ambient	
Receiving cylinder and 100 mL charge				
°C	13-18	13-18	13-18 ^A	13-ambient ^A
°F	55-65	55-65	55-65 ^A	55-ambient ^A

^A See 10.3.1.1 for exceptions.

3. Terminology

3.1 Definitions:

3.1.1 *charge volume, n*—the volume of the specimen, 100 mL, charged to the distillation flask at the temperature specified in Table 1.

3.1.2 *decomposition, n*—of a hydrocarbon, the pyrolysis or cracking of a molecule yielding smaller molecules with lower boiling points than the original molecule.

3.1.2.1 *Discussion*—Characteristic indications of thermal decomposition are evolution of fumes and erratic temperature readings that usually decrease after any attempt is made to adjust the heat.

3.1.3 *decomposition point, n*—the corrected thermometer reading that coincides with the first indications of thermal decomposition of the liquid in the flask.

3.1.3.1 *Discussion*—The decomposition point, as determined under the conditions of this test method, does not necessarily correspond to the decomposition temperature in other applications.

3.1.4 *dry point, n*—the corrected thermometer reading that is observed at the instant the last drop of liquid (exclusive of any drops or film of liquid on the side of the flask or on the temperature sensor), evaporates from the lowest point in the distillation flask.

3.1.4.1 *Discussion*—The end point (final boiling point), rather than the dry point, is intended for general use. The dry point can be reported in connection with special purpose naphthas, such as those used in the paint industry. Also, it is substituted for the end point (final boiling point) whenever the sample is of such a nature that the precision of the end point (final boiling point) cannot consistently meet the requirements given in the precision section.

3.1.5 *dynamic holdup, n*—the amount of material present in the neck of the flask, in the sidearm of the flask, and in the condenser tube during the distillation.

3.1.6 *emergent stem effect, n*—the offset in temperature reading caused by the use of total immersion mercury-in-glass thermometers in the partial immersion mode.

3.1.6.1 *Discussion*—In the partial immersion mode, a portion of the mercury thread, that is, the emergent portion, is at a lower temperature than the immersed portion, resulting in a shrinkage of the mercury thread and a lower temperature reading.

3.1.7 *end point (EP) or final boiling point (FBP), n*—the maximum corrected thermometer reading obtained during the test.

3.1.7.1 *Discussion*—This usually occurs after the evaporation of all liquid from the bottom of the flask. The term maximum temperature is a frequently used synonym.

3.1.8 *front end loss, n*—loss due to evaporation during transfer from receiving cylinder to distillation flask, vapor loss during the distillation, and uncondensed vapor in the flask at the end of the distillation.

3.1.9 *initial boiling point (IBP), n*—the corrected thermometer reading that is observed at the instant the first drop of condensate falls from the lower end of the condenser tube.

3.1.10 *percent evaporated, n*—the sum of the percent recovered and the percent loss.

3.1.11 *percent loss (or observed loss), n*—one hundred minus the percent total recovery.

3.1.11.1 *corrected loss, n*—percent loss corrected for barometric pressure.

3.1.12 *percent recovered, n*—the volume of condensate observed in the receiving cylinder, expressed as a percentage of the charge volume, associated with a simultaneous temperature reading.

3.1.13 *percent recovery, n*—the maximum percent recovered, as observed in accordance with 10.18.

3.1.13.1 *corrected percent recovery, n*—the percent recovery, adjusted for the difference between the observed loss and the corrected loss, as described in Eq 8.

3.1.13.2 *percent total recovery, n*—the combined percent recovery and residue in the flask, as determined in accordance with 11.1.

3.1.14 *percent residue, n*—the volume of residue in the flask, measured in accordance with 10.19, and expressed as a percentage of the charge volume.

3.1.15 *rate of change (or slope), n*—the change in temperature reading per percent evaporated or recovered, as described in 13.2.

3.1.16 *temperature lag, n*—the offset between the temperature reading obtained by a temperature sensing device and the true temperature at that time.

3.1.17 *temperature measurement device, n*—a thermometer, as described in 6.3.1, or a temperature sensor, as described in 6.3.2.



3.1.18 *temperature reading, n*—the temperature obtained by a temperature measuring device or system that is equal to the thermometer reading described in 3.1.19.

3.1.18.1 *corrected temperature reading, n*—the temperature reading, as described in 3.1.18, corrected for barometric pressure.

3.1.19 *thermometer reading (or thermometer result), n*—the temperature of the saturated vapor measured in the neck of the flask below the vapor tube, as determined by the prescribed thermometer under the conditions of the test.

3.1.19.1 *corrected thermometer reading, n*—the thermometer reading, as described in 3.1.19, corrected for barometric pressure.

4. Summary of Test Method

4.1 Based on its composition, vapor pressure, expected IBP or expected EP, or combination thereof, the sample is placed in one of four groups. Apparatus arrangement, condenser temperature, and other operational variables are defined by the group in which the sample falls.

4.2 A 100-mL specimen of the sample is distilled under prescribed conditions for the group in which the sample falls. The distillation is performed in a laboratory batch distillation unit at ambient pressure under conditions that are designed to provide approximately one theoretical plate fractionation. Systematic observations of temperature readings and volumes of condensate are made, depending on the needs of the user of the data. The volume of the residue and the losses are also recorded.

4.3 At the conclusion of the distillation, the observed vapor temperatures can be corrected for barometric pressure and the data are examined for conformance to procedural requirements, such as distillation rates. The test is repeated if any specified condition has not been met.

4.4 Test results are commonly expressed as percent evaporated or percent recovered versus corresponding temperature, either in a table or graphically, as a plot of the distillation curve.

5. Significance and Use

5.1 The basic test method of determining the boiling range of a petroleum product by performing a simple batch distillation has been in use as long as the petroleum industry has existed. It is one of the oldest test methods under the jurisdiction of ASTM Committee D02, dating from the time when it was still referred to as the Engler distillation. Since the test method has been in use for such an extended period, a tremendous number of historical data bases exist for estimating end-use sensitivity on products and processes.

5.2 The distillation (volatility) characteristics of hydrocarbons have an important effect on their safety and performance, especially in the case of fuels and solvents. The boiling range gives information on the composition, the properties, and the behavior of the fuel during storage and use. Volatility is the major determinant of the tendency of a hydrocarbon mixture to produce potentially explosive vapors.

5.3 The distillation characteristics are critically important for both automotive and aviation gasolines, affecting starting, warm-up, and tendency to vapor lock at high operating

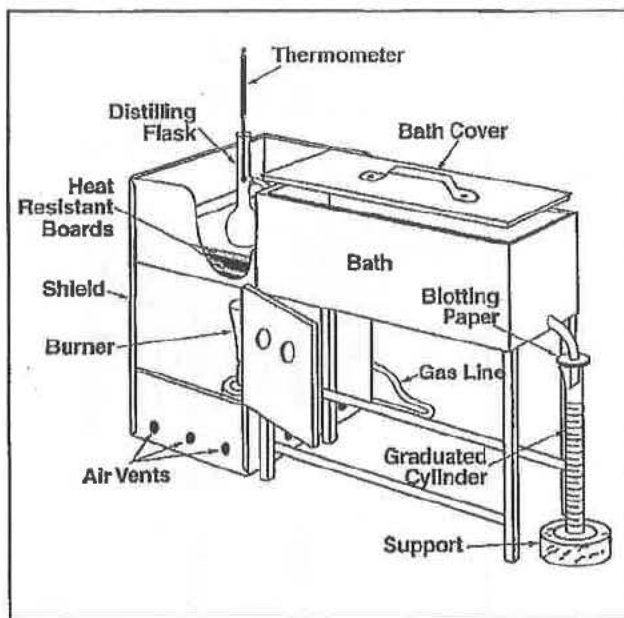


FIG. 1 Apparatus Assembly Using Gas Burner

temperature or at high altitude, or both. The presence of high boiling point components in these and other fuels can significantly affect the degree of formation of solid combustion deposits.

5.4 Volatility, as it affects rate of evaporation, is an important factor in the application of many solvents, particularly those used in paints.

5.5 Distillation limits are often included in petroleum product specifications, in commercial contract agreements, process refinery/control applications, and for compliance to regulatory rules.

6. Apparatus

6.1 Basic Components of the Apparatus:

6.1.1 The basic components of the distillation unit are the distillation flask, the condenser and associated cooling bath, a metal shield or enclosure for the distillation flask, the heat source, the flask support, the temperature measuring device, and the receiving cylinder to collect the distillate.

6.1.2 Figs. 1 and 2 are examples of manual distillation units.

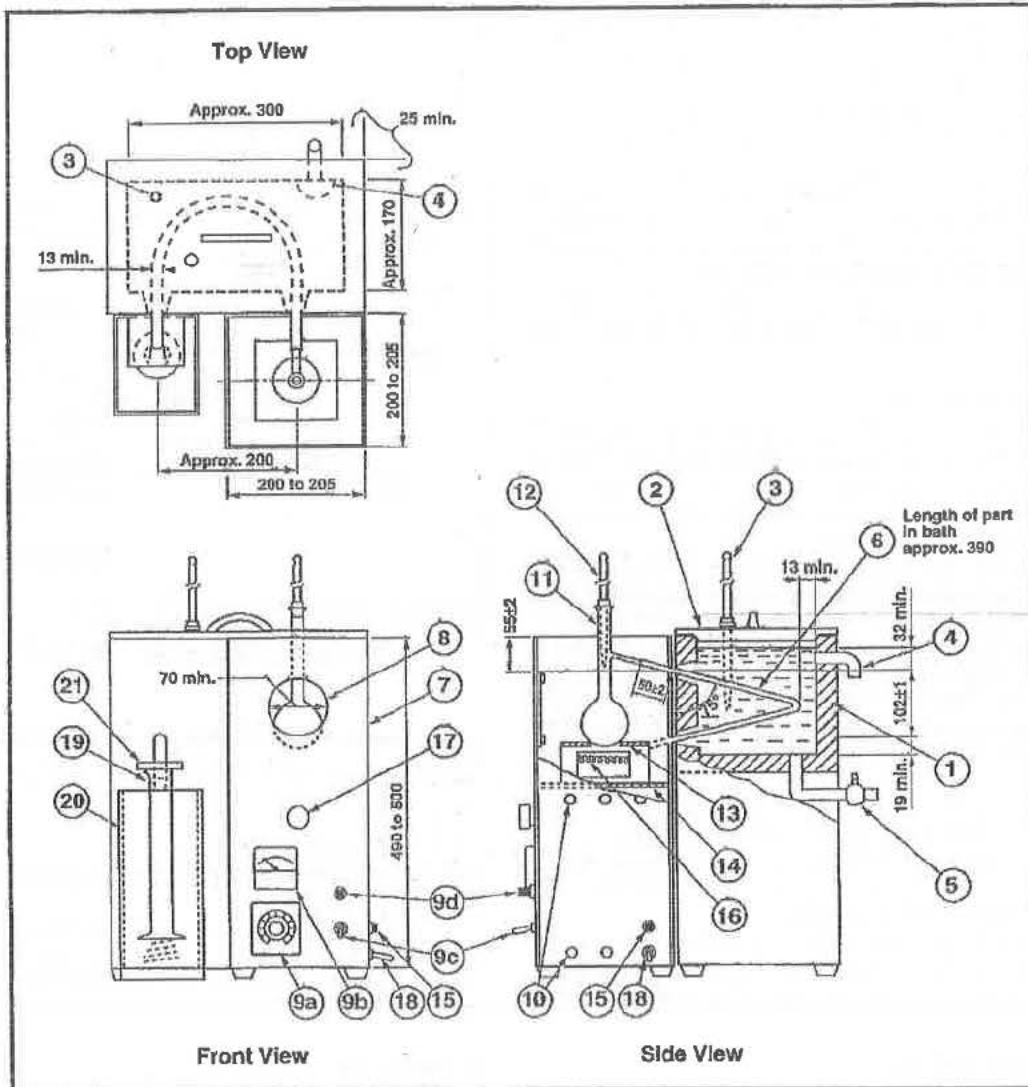
6.1.3 In addition to the basic components described in 6.1.1, automated units also are equipped with a system to measure and automatically record the temperature and the associated recovered volume in the receiving cylinder.

6.2 A detailed description of the apparatus is given in Annex A2.

6.3 Temperature Measuring Device:

6.3.1 Mercury-in-glass thermometers, if used, shall be filled with an inert gas, graduated on the stem and enamel backed. They shall conform to Specification E1 or IP Standard Methods for Analysis and Testing of Petroleum and Related Products 1996—Appendix A, or both, for thermometers ASTM

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- | | |
|---------------------------|---|
| 1-Condenser bath | 11-Distillation flask |
| 2-Bath cover | 12-Temperature sensor |
| 3-Bath temperature sensor | 13-Flask support board |
| 4-Bath overflow | 14-Flask support platform |
| 5-Bath drain | 15-Ground connection |
| 6-Condenser tube | 16-Electric heater |
| 7-Shield | 17-Knob for adjusting level of support platform |
| 8-Viewing window | 18-Power source cord |
| 9a-Voltage regulator | 19-Receiver cylinder |
| 9b-Voltmeter or ammeter | 20-Receiver cooling bath |
| 9c-Power switch | 21-Receiver cover |
| 9d-Power light indicator | |
| 10-Vent | |

FIG. 2 Apparatus Assembly Using Electric Heater

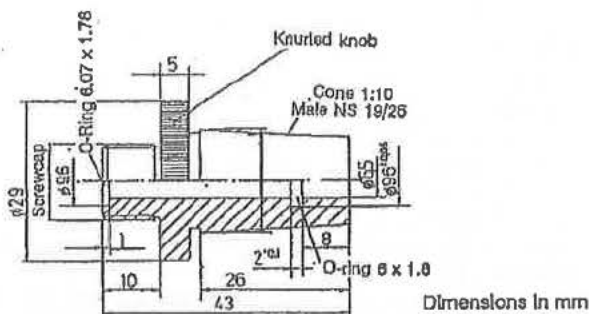


FIG. 3 PTFE Centering Device for Ground Glass Joint

7C/IP 5C and ASTM 7F for the low range thermometers, and ASTM 8C/IP 6C and ASTM 8F for the high range thermometers.

6.3.1.1 Thermometers that have been exposed for an extended period above an observed temperature of 370°C shall not be reused without a verification of the ice point or checked as prescribed in Specification E 1 and Test Method E 77.

NOTE 1—At an observed thermometer reading of 370°C, the temperature of the bulb is approaching a critical range in the glass and the thermometer may lose its calibration.

6.3.2 Temperature measurement systems other than those described in 6.3.1 are satisfactory for this test method, provided that they exhibit the same temperature lag, emergent stem effect, and accuracy as the equivalent mercury-in-glass thermometer.

6.3.2.1 The electronic circuitry or the algorithms, or both, used shall include the capability to simulate the temperature lag of a mercury-in-glass thermometer.

6.3.2.2 Alternatively, the sensor can also be placed in a casing with the tip of the sensor covered so that the assembly, because of its adjusted thermal mass and conductivity, has a temperature lag time similar to that of a mercury-in-glass thermometer.

NOTE 2—In a region where the temperature is changing rapidly during the distillation, the temperature lag of a thermometer can be as much as 3 seconds.

6.3.3 In case of dispute, the referee test method shall be carried out with the specified mercury-in-glass thermometer.

6.4 Temperature Sensor Centering Device:

6.4.1 The temperature sensor shall be mounted through a snug-fitting device designed for mechanically centering the sensor in the neck of the flask without vapor leakage. Examples of acceptable centering devices are shown in Figs. 3 and 4. (Warning—The use of a plain stopper with a hole drilled through the center is not acceptable for the purpose described in 6.4.1.)

NOTE 3—Other centering devices are also acceptable, as long as they position and hold the temperature sensing device in the proper position in the neck of the distillation column, as shown in Fig. 5 and described in 10.5.

NOTE 4—When running the test by the manual method, products with

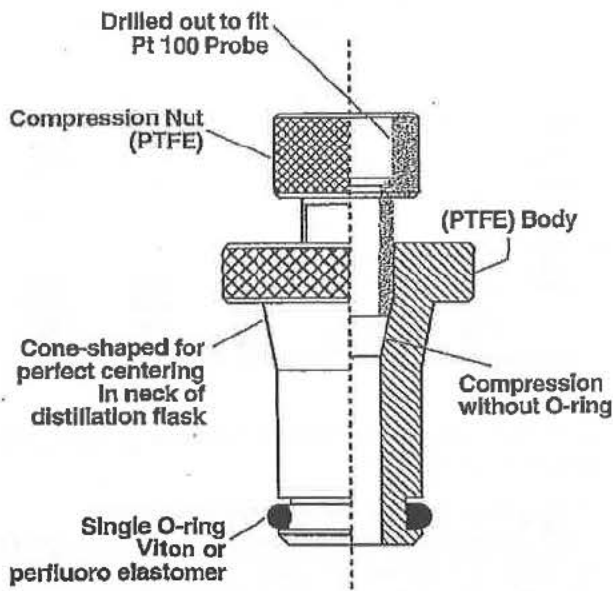


FIG. 4 Example of Centering Device Designs for Straight-Bore Neck Flasks

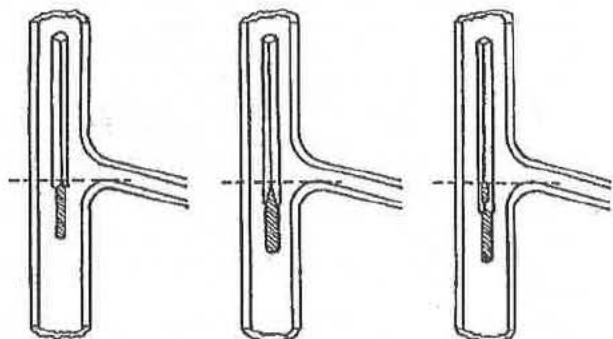


FIG. 5 Position of Thermometer in Distillation Flask

a low IBP may have one or more readings obscured by the centering device. See also 10.14.3.1.

6.5 Automated equipment manufactured in 1999 and later shall be equipped with a device to automatically shut down power to the unit and to spray an inert gas or vapor in the chamber where the distillation flask is mounted in the event of fire.

NOTE 5—Some causes of fires are breakage of the distillation flask, electrical shorts, and foaming and spilling of liquid sample through the top opening of the flask.

6.6 Barometer—A pressure measuring device capable of measuring local station pressure with an accuracy of 0.1 kPa (1 mm Hg) or better, at the same elevation relative to sea level as the apparatus in the laboratory. (Warning—Do not take readings from ordinary aneroid barometers, such as those used

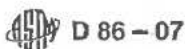


TABLE 2 Group Characteristics

	Group 1	Group 2	Group 3	Group 4
Sample characteristics				
Distillate type				
Vapor pressure at				
37.8°C, kPa	≥65.5	<65.5	<65.5	<65.5
100°F, psi	≥9.5	<9.5	<9.5	<9.5
(Test Methods				
D 323, D 4953,				
D 5190, D 5191,				
D 5482, IP 69 or				
IP 394)				
Distillation, IBP °C			≤100	>100
°F			≤212	>212
EP °C	≤250	≤250	>250	>250
°F	≤482	≤482	>482	>482

at weather stations and airports, since these are precorrected to give sea level readings.)

7. Sampling, Storage, and Sample Conditioning

7.1 Determine the Group characteristics that correspond to the sample to be tested (see Table 2). Where the procedure is dependent upon the group, the section headings will be so marked.

7.2 Sampling:

7.2.1 Sampling shall be done in accordance with Practice D 4057 or D 4177 and as described in Table 3.

7.2.1.1 Group 1—Condition the sample container to below 10°C, preferably by filling the bottle with the cold liquid sample and discarding the first sample. If this is not possible because, for instance, the product to be sampled is at ambient temperature, the sample shall be drawn into a bottle prechilled to below 10°C, in such a manner that agitation is kept at a minimum. Close the bottle immediately with a tight-fitting closure. (Warning—Do not completely fill and tightly seal a cold bottle of sample because of the likelihood of breakage on warming.)

7.2.1.2 Groups 2, 3, and 4—Collect the sample at ambient temperature. After sampling, close the sample bottle immediately with a tight-fitting closure.

7.2.1.3 If the sample received by the testing laboratory has been sampled by others and it is not known whether sampling has been performed as described in 7.2, the sample shall be assumed to have been so sampled.

7.3 Sample Storage:

7.3.1 If testing is not to start immediately after collection, store the samples as indicated in 7.3.2, 7.3.3, and Table 3. All samples shall be stored away from direct sunlight or sources of direct heat.

7.3.2 Group 1—Store the sample at a temperature below 10°C.

NOTE 6—If there are no, or inadequate, facilities for storage below 10°C, the sample may also be stored at a temperature below 20°C, provided the operator ensures that the sample container is tightly closed and leak-free.

7.3.3 Group 2—Store the sample at a temperature below 10°C.

NOTE 7—If there are no, or inadequate, facilities for storage below

10°C, the sample may also be stored at a temperature below 20°C, provided the operator ensures that the sample container is tightly closed and leak-free.

7.3.4 Groups 3 and 4—Store the sample at ambient or lower temperature.

7.4 Sample Conditioning Prior to Analysis:

7.4.1 Samples shall be conditioned to the temperature shown in Table 3 before opening the sample container.

7.4.1.1 Groups 1 and 2—Samples shall be conditioned to a temperature of less than 10°C (50°F) before opening the sample container.

7.4.1.2 Groups 3 and 4—If the sample is not fluid at ambient temperature, it is to be heated to a temperature of 9 to 21°C above its pour point (Test Method D 97, D 5949, or D 5985) prior to analysis. If the sample has partially or completely solidified during storage, it shall be vigorously shaken after melting prior to opening the sample container to ensure homogeneity.

7.4.1.3 If the sample is not fluid at room temperature, the temperature ranges shown in Table 3 for the flask and for the sample do not apply.

7.5 Wet Samples:

7.5.1 Samples of materials that visibly contain water are not suitable for testing. If the sample is not dry, obtain another sample that is free from suspended water.

7.5.2 Groups 1 and 2—If such a sample cannot be obtained, the suspended water can be removed by maintaining the sample at 0 to 10°C, adding approximately 10 g of anhydrous sodium sulfate per 100 mL of sample, shaking the mixture for approximately 2 min, and then allowing the mixture to settle for approximately 15 min. Once the sample shows no visible signs of water, use a decanted portion of the sample, maintained between 1 and 10°C, for the analysis. Note in the report that the sample has been dried by the addition of a desiccant.

NOTE 8—Suspended water in hazy samples in Groups 1 and 2 can be removed by the addition of anhydrous sodium sulfate and separating the liquid sample from the drying agent by decanting without statistically affecting the results of the test.⁴

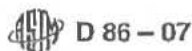
7.5.3 Groups 3 and 4—In cases in which a water-free sample is not practical, the suspended water can be removed by shaking the sample with anhydrous sodium sulfate or other suitable drying agent and separating it from the drying agent by decanting. Note in the report that the sample has been dried by the addition of a desiccant.

8. Preparation of Apparatus

8.1 Refer to Table 1 and prepare the apparatus by choosing the appropriate distillation flask, temperature measuring device, and flask support board, as directed for the indicated group. Bring the temperature of the receiving cylinder, the flask, and the condenser bath to the indicated temperature.

8.2 Make any necessary provisions so that the temperature of the condenser bath and the receiving cylinder will be maintained at the required temperatures. The receiving cylinder shall be in a bath such that either the liquid level is at least

⁴ Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR: D02-1455.



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TABLE 3 Sampling, Storage, and Sample Conditioning

		Group 1	Group 2	Group 3	Group 4
Temperature of sample bottle	°C	<10			
	°F	<50			
Temperature of stored sample	°C	<10 ^A	<10	ambient	ambient
	°F	<50 ^A	<50	ambient	ambient
Temperature of sample after conditioning prior to analysis	°C	<10	<10	Ambient or 8 to 21°C above pour point ^B	Ambient or 48 to 70°F above pour point ^B
	°F	<50	<50	Ambient or 48 to 70°F above pour point ^B	Ambient or 48 to 70°F above pour point ^B
If sample is wet		resample	resample	dry in accordance with 7.5.3	
If resample is still wet ^C		dry in accordance with 7.5.2			

^A Under certain circumstances, samples can also be stored at temperatures below 20°C (68°F). See also 7.3.2 and 7.3.3.

^B If sample is (semi)-solid at ambient temperature, see also 10.3.1.1.

^C If sample is known to be wet, resampling may be omitted. Dry sample in accordance with 7.5.2 and 7.5.3.

as high as the 100-mL mark or the entire receiving cylinder is surrounded by an air circulation chamber.

8.2.1 *Groups 1, 2, and 3*—Suitable media for low temperature baths include, but are not limited to, chopped ice and water, refrigerated brine, and refrigerated ethylene glycol.

8.2.2 *Group 4*—Suitable media for ambient and higher bath temperatures include, but are not limited to, cold water, hot water, and heated ethylene glycol.

8.3 Remove any residual liquid in the condenser tube by swabbing with a piece of soft, lint-free cloth attached to a cord or wire.

9. Calibration and Standardization

9.1 *Temperature Measurement System*—Temperature measurement systems using other than the specified mercury-in-glass thermometers shall exhibit the same temperature lag, emergent stem effect, and accuracy as the equivalent mercury-in-glass thermometer. Confirmation of the calibration of these temperature measuring systems shall be made at intervals of not more than six months, and after the system has been replaced or repaired.

9.1.1 The accuracy and the calibration of the electronic circuitry or computer algorithms, or both, shall be verified by the use of a standard precision resistance bench. When performing this verification, no algorithms shall be used to correct the temperature for lag and the emergent stem effect (see manufacturer's instructions).

9.1.2 Verification of the calibration of temperature measuring devices shall be conducted by distilling toluene in accordance with Group 1 of this test method and comparing the 50 % recovered temperature with that shown in Table 4.⁵

9.1.2.1 If the temperature reading is not within the values shown in Table 4 for the respective apparatus being used (see Note 10 and Table 4), the temperature measurement system shall be considered defective and shall not be used for the test.

Note 9—Toluene is used as a verification fluid for calibration; it will yield almost no information on how well an electronic measurement system simulates the temperature lag of a liquid-in-glass thermometer.

9.1.2.2 Reagent grade toluene and hexadecane (cetane), conforming to the specifications of the Committee on Analyti-

cal Reagents of the American Chemical Society,⁶ shall be used. However, other grades may also be used, provided it is first ascertained that the reagent is of sufficient purity to permit its use without lessening the accuracy of the determination.

Note 10—At 101.3 kPa, toluene is shown in reference manuals as boiling at 110.6°C when measured using a partial immersion thermometer. Because this test method uses thermometers calibrated for total immersion, the results typically will be lower and, depending on the thermometer and the situation, may be different for each thermometer. At 101.3 kPa, hexadecane is shown in reference manuals as boiling at 287.0°C when measured using a partial immersion thermometer. Because this test method uses thermometers calibrated for total immersion, the results typically will be lower, and, depending on the thermometer and the situation, may be different for each thermometer.

9.1.3 A procedure to determine the magnitude of the temperature lag is described in Annex A3.

9.1.4 A procedure to emulate the emergent stem effect is described in Appendix X4.

9.1.5 To verify the calibration of the temperature measurement system at elevated temperatures, use hexadecane. The temperature measurement system shall indicate, at 50% recovered, a temperature comparable to that shown in Table 4 for the respective apparatus under Group 4 distillation conditions.

Note 11—Because of the high melting point of hexadecane, Group 4 verification distillations will have to be carried out with condenser temperatures >20°C.

9.2 Automated Method:

9.2.1 *Level Follower*—For an automated distillation apparatus, the level follower/recording mechanism of the apparatus shall have a resolution of 0.1 mL or better with a maximum error of 0.3 mL between the 5 and 100 mL points. The calibration of the assembly shall be verified in accordance with manufacturer's instructions at intervals of not more than three months and after the system has been replaced or repaired.

Note 12—The typical calibration procedure involves verifying the output with the receiver containing 5 and 100 mL of material respectively.

9.2.2 *Barometric Pressure*—At intervals of not more than six months, and after the system has been replaced or repaired,

⁵ Reagent Chemicals, American Chemical Society Specifications, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analytical Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopoeia and National Formulary*, U.S. Pharmacopoeial Convention, Inc. (USPC), Rockville, MD.

⁶ Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR: D02-1580.

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TABLE 4 True and Min and Max D 86 50 % Recovered Boiling Points (°C)⁴

	ASTMIP true boiling point	Manual		Automated	
		Distillation conditions min D 86 50 % boiling point	Distillation conditions max D 86 50 % boiling point	Distillation conditions min D 86 50 % boiling point	Distillation conditions max D 86 50 % boiling point
Toluene		Group 1, 2, and 3	Group 1, 2, and 3	Group 1, 2, and 3	Group 1, 2, and 3
	110.6	105.9	111.8	108.5	109.7
Hexadecane		Group 4	Group 4	Group 4	Group 4
	287.0	272.2	289.1	277.0	280.0

⁴ The manual and automated temperatures show in this table are the values for the 95 % tolerance interval for the 99 % population coverage. The proposed tolerance is approximately 3 × sigma. Information on the values in this table can be found in RR:D02-1580.

the barometric reading of the instrument shall be verified against a barometer, as described in 6.6.

10. Procedure

10.1 Record the prevailing barometric pressure.

10.2 *Groups 1 and 2*—Fit a low range thermometer provided with a snug-fitting cork or stopper of silicone rubber, or equivalent polymeric material, tightly into the neck of the sample container and bring the temperature of the sample to the temperature indicated in Table 3.

10.3 *Groups 1, 2, 3, and 4*—Check that the temperature of the sample is as shown in Table 3. Pour the specimen precisely to the 100-mL mark of the receiving cylinder, and transfer the contents of the receiving cylinder as completely as practical into the distillation flask, ensuring that none of the liquid flows into the vapor tube.

NOTE 13—It is important that the difference between the temperature of the specimen and the temperature of the bath around the receiving cylinder is as small as practically possible. A difference of 5°C can make a difference of 0.7 mL.

10.3.1 *Groups 3 and 4*—If the sample is not fluid at ambient temperature, it is to be heated to a temperature between 9 and 21°C above its pour point (Test Methods D 97, D 5949, D 5950, or D 5985) prior to analysis. If the sample has partially or completely solidified in the intervening period, it shall be vigorously shaken after melting, and prior to sampling, to ensure homogeneity.

10.3.1.1 If the sample is not fluid at ambient temperatures, disregard the temperature range shown in Table 1 for the receiving cylinder and sample. Prior to analysis, heat the receiving cylinder to approximately the same temperature as the sample. Pour the heated specimen precisely to the 100-mL mark of the receiving cylinder, and transfer the contents of the receiving cylinder as completely as practical into the distillation flask, ensuring that none of the liquid flows into the vapor tube.

NOTE 14—Any material that evaporates during the transfer will contribute to the loss; any material that remains in the receiving cylinder will contribute to the observed recovery volume at the time of the IBP.

10.4 If the sample can be expected to demonstrate irregular boiling behavior, that is, bumping, add a few boiling chips to the specimen. The addition of a few boiling chips is acceptable for any distillation.

10.5 Fit the temperature sensor through a snug-fitting device, as described in 6.4, to mechanically center the sensor in the neck of the flask. In the case of a thermometer, the bulb is centered in the neck and the lower end of the capillary is level with the highest point on the bottom of the inner wall of the vapor tube (see Fig. 5). In the case of a thermocouple or resistance thermometer, follow the manufacturer's instructions as to placement (see Fig. 6).

NOTE 15—If vacuum grease is used on the mating surface of the centering device, use the minimum amount of grease that is practical.

10.6 Fit the flask vapor tube, provided with a snug-fitting cork or rubber stopper of silicone, or equivalent polymeric material, tightly into the condenser tube. Adjust the flask in a vertical position so that the vapor tube extends into the condenser tube for a distance from 25 to 50 mm. Raise and adjust the flask support board to fit it snugly against the bottom of the flask.

10.7 Place the receiving cylinder that was used to measure the specimen, without drying the inside of the cylinder, into its temperature-controlled bath under the lower end of the condenser tube. The end of the condenser tube shall be centered in the receiving cylinder and shall extend therein for a distance of at least 25 mm, but not below the 100-mL mark.

10.8 Initial Boiling Point:

10.8.1 *Manual Method*—To reduce evaporation loss of the distillate, cover the receiving cylinder with a piece of blotting paper, or similar material, that has been cut to fit the condenser tube snugly. If a receiver deflector is being used, start the distillation with the tip of the deflector just touching the wall of the receiving cylinder. If a receiver deflector is not used, keep the drip tip of the condenser away from the wall of the receiving cylinder. Note the start time. Observe and record the IBP to the nearest 0.5°C (1.0°F). If a receiver deflector is not being used, immediately move the receiving cylinder so that the tip of the condenser touches its inner wall.

10.8.2 *Automated Method*—To reduce evaporation loss of the distillate, use the device provided by the instrument manufacturer for this purpose. Apply heat to the distillation flask and contents with the tip of the receiver deflector just touching the wall of the receiving cylinder. Note the start time. Record the IBP to the nearest 0.1°C (0.2°F).

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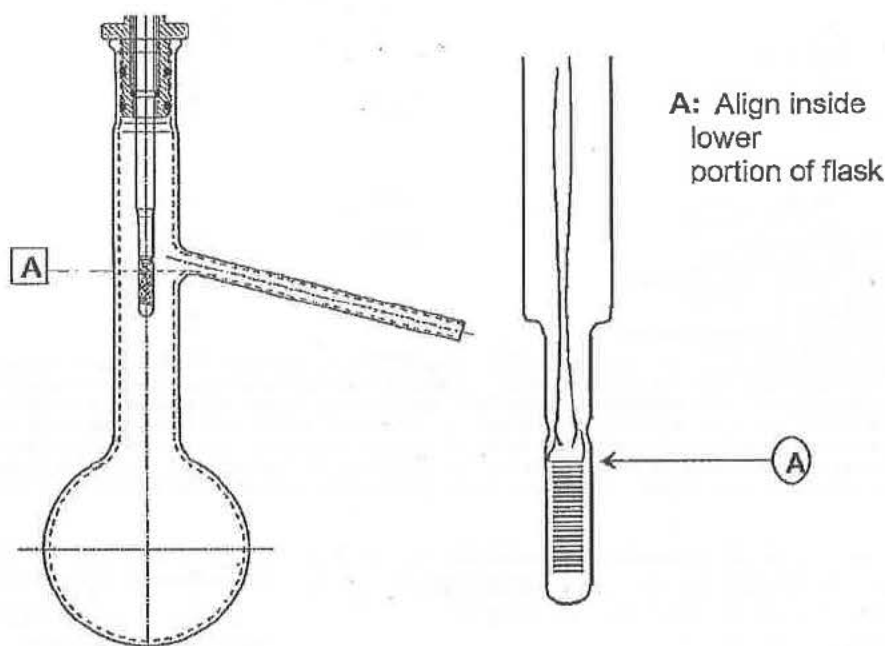


FIG. 6 Example of Recommended Placement of Pt-100 Probe Relative to Distillation Flask Sidearm for Automated D 86 Distillation Instrument

10.9 Regulate the heating so that the time interval between the first application of heat and the IBP is as specified in Table 5.

10.10 Regulate the heating so that the time from IBP to 5 or 10 % recovered is as indicated in Table 5.

10.11 Continue to regulate the heating so that the uniform average rate of condensation from 5 or 10 % recovered to 5 mL residue in the flask is 4 to 5 mL per min. (Warning—Due to the configuration of the boiling flask and the conditions of the test, the vapor and liquid around the temperature sensor are not in thermodynamic equilibrium. The distillation rate will consequently have an effect on the measured vapor temperature. The distillation rate shall, therefore, be kept as constant as possible throughout the test.)

Note 16—When testing gasoline samples, it is not uncommon to see the condensate suddenly form non-miscible liquid phases and bead up on the temperature measuring device and in the neck of the boiling flask at a vapor temperature of around 160°C. This may be accompanied by a sharp (about 3°C) dip in the vapor temperature and a drop in the recovery rate. The phenomenon, which may be due to the presence of trace water in the sample, may last for 10 to 30 s before the temperature recovers and the condensate starts flowing smoothly again. This point is sometimes colloquially referred to as the Hesitation Point.

10.12 Repeat any distillation that did not meet the requirements described in 10.9, 10.10, and 10.11.

10.13 If a decomposition point, as described in 3.1.3, is observed, discontinue the heating and proceed as directed in 10.17.

10.14 In the interval between the IBP and the end of the distillation, observe and record data necessary for the calculation and reporting of the results of the test as required by the

specification involved, or as previously established for the sample under test. These observed data can include temperature readings at prescribed percentages recovered or percentages recovered at prescribed temperature readings, or both.

10.14.1 *Manual Method*—Record all volumes in the graduated cylinder to the nearest 0.5 mL, and all temperature readings to the nearest 0.5°C (1.0°F).

10.14.2 *Automated Method*—Record all volumes in the receiving cylinder to the nearest 0.1 mL, and all temperature readings to the nearest 0.1°C (0.2°F).

10.14.3 *Group 1, 2, 3, and 4*—In cases in which no specific data requirements have been indicated, record the IBP and the EP (FBP) or the dry point, or both, and temperature readings at 5, 15, 85, and 95 % recovered, and at each 10 % multiple of volume recovered from 10 to 90, inclusive.

10.14.3.1 *Group 4*—When a high range thermometer is used in testing aviation turbine fuels and similar products, pertinent thermometer readings can be obscured by the centering device. If these readings are required, perform a second distillation in accordance with Group 3. In such cases, reading from a low range thermometer can be reported in place of the obscured high range thermometer readings, and the test report shall so indicate. If, by agreement, the obscured readings are waived, the test report shall so indicate.

10.14.4 When it is required to report the temperature reading at a prescribed percent evaporated or recovered for a sample that has a rapidly changing slope of the distillation curve in the region of the prescribed percent evaporated or recovered reading, record temperature readings at every 1 % recovered. The slope is considered rapidly changing if the



TABLE 5 Conditions During Test Procedure

		Group 1	Group 2	Group 3	Group 4
Temperature of cooling bath ^A	°C	0-1	0-5	0-5	0-60
	°F	32-34	32-40	32-40	32-140
Temperature of bath around receiving cylinder	°C	13-18	13-18	13-18	±3
	°F	55-65	55-65	55-65	±5 of charge temperature
Time from first application of heat to initial boiling point, min		5-10	5-10	5-10	5-15
Time from initial boiling point to 5 % recovered, s to 10 % recovered, min		60-100	60-100		
Uniform average rate of condensation from 5 % recovered to 5 mL in flask, mL/min		4-5	4-5	4-5	4-5
Time recorded from 5 mL residue to end point, min		5 max	5 max	5 max	5 max

^A the proper condenser bath temperature will depend upon the wax content of the sample and of its distillation fractions. The test is generally performed using one single condenser temperature. Wax formation in the condenser can be deduced from (a) the presence of wax particles in the distillate coming off the drip tip, (b) a higher distillation loss than what would be expected based on the initial boiling point of the specimen, (c) an erratic recovery rate and (d) the presence of wax particles during the removal of residual liquid by swabbing with a lint-free cloth (see 8.3). The minimum temperature that permits satisfactory operation shall be used. In general, a bath temperature in the 0 to 4°C range is suitable for kerosine, Grade No. 1 fuel oil and Grade No. 1-D diesel fuel oil. In some cases involving Grade No. 2 fuel oil, Grade No. 2-D diesel fuel oil, gas oils and similar distillates, it may be necessary to hold the condenser bath temperature in the 38 to 60°C range.

change in slope (*C*) of the data points described in 10.14.2 in that particular area is greater than 0.6 (change of slope (*F*) is greater than 1.0) as calculated by Eq 1 (Eq 2).

$$\text{Change of Slope } (C) = \frac{(C_2 - C_1)(V_2 - V_1) - (C_3 - C_2)(V_3 - V_2)}{(F_2 - F_1)(V_2 - V_1) - (F_3 - F_2)(V_3 - V_2)} \quad (1)$$

$$\text{Change of Slope } (F) = \frac{(F_2 - F_1)(V_2 - V_1) - (F_3 - F_2)(V_3 - V_2)}{(C_2 - C_1)(V_2 - V_1) - (C_3 - C_2)(V_3 - V_2)} \quad (2)$$

where:

- C_1 = temperature at the volume % recorded one reading prior to the volume % in question, °C,
- C_2 = temperature at the volume % recorded in question, °C,
- C_3 = temperature at the volume % recorded following the volume % in question, °C,
- F_1 = temperature at the volume % recorded one reading prior to the volume % in question, °F,
- F_2 = temperature at the volume % recorded in question, °F,
- F_3 = temperature at the volume % recorded following the volume % in question, °F,
- V_1 = volume % recorded one reading prior to the volume % in question,
- V_2 = volume % recorded at the volume % in question, and
- V_3 = volume % recorded following the volume % in question.

10.15 When the residual liquid in the flask is approximately 5 mL, make a final adjustment of the heat. The time from the 5 mL of liquid residue in the flask to the EP (FBP) shall be within the limits prescribed in Table 5. If this condition is not satisfied, repeat the test with appropriate modification of the final heat adjustment.

NOTE 17—Since it is difficult to determine when there is 5 mL of boiling liquid left in the flask, this time is determined by observing the amount of liquid recovered in the receiving cylinder. The dynamic holdup has been determined to be approximately 1.5 mL at this point. If there are no front end losses, the amount of 5 mL in the flask can be assumed to

correspond with an amount of 93.5 mL in the receiving cylinder. This amount has to be adjusted for the estimated amount of front end loss.

10.15.1 If the actual front end loss differs more than 2 mL from the estimated value, the test shall be rerun.

10.16 Observe and record the EP (FBP) or the dry point, or both, as required, and discontinue the heating.

10.17 Allow the distillate to drain into the receiving cylinder, after heating has been discontinued.

10.17.1 *Manual Method*—While the condenser tube continues to drain into the graduated cylinder, observe and note the volume of condensate to the nearest 0.5 mL at 2 min intervals until two successive observations agree. Measure the volume in the receiving cylinder accurately, and record it to the nearest 0.5 mL.


10.17.2 *Automated Method*—The apparatus shall continually monitor the recovered volume until this volume changes by no more than 0.1 mL in 2 min. Record the volume in the receiving cylinder accurately to the nearest 0.1 mL.

10.18 Record the volume in the receiving cylinder as percent recovery. If the distillation was previously discontinued under the conditions of a decomposition point, deduct the percent recovered from 100, report this difference as the sum of percent residue and percent loss, and omit the procedure given in 10.19.

10.19 After the flask has cooled and no more vapor is observed, disconnect the flask from the condenser, pour its contents into a 5-mL graduated cylinder, and with the flask suspended over the cylinder, allow the flask to drain until no appreciable increase in the volume of liquid in the cylinder is observed. Measure the volume in the graduated cylinder to the nearest 0.1 mL, and record as percent residue.

10.19.1 If the 5-mL graduated cylinder does not have graduations below 1 mL and the volume of liquid is less than 1 mL, prefill the cylinder with 1 mL of a heavy oil to allow a better estimate of the volume of the material recovered.

10.19.1.1 If a residue greater than expected is obtained, and the distillation was not purposely terminated before the EP,

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check whether adequate heat was applied towards the end of the distillation and whether conditions during the test conformed to those specified in Table 5. If not, repeat test.

NOTE 18—The distillation residues of this test method for gasoline, kerosine, and distillate diesel are typically 0.9–1.3, 0.9–1.3, and 1.0–1.4 volume %, respectively.

NOTE 19—The test method is not designed for the analysis of distillate fuels containing appreciable quantities of residual material (see 1.2).

10.19.2 Groups 1, 2, 3, and 4—Record the volume in the 5-mL graduated cylinder, to the nearest 0.1 mL, as percent residue.

10.20 If the intent of the distillation is to determine the percent evaporated or percent recovered at a predetermined corrected temperature reading, modify the procedure to conform to the instructions described in Annex A4.

10.21 Examine the condenser tube and the side arm of the flask for waxy or solid deposits. If found, repeat the test after making adjustments described in Footnote A of Table 5.

11. Calculations

11.1 The percent total recovery is the sum of the percent recovery (see 10.18) and the percent residue (see 10.19). Deduct the percent total recovery from 100 to obtain the percent loss.

11.2 Do not correct the barometric pressure for meniscus depression, and do not adjust the pressure to what it would be at sea level.

NOTE 20—The observed barometric reading does not have to be corrected to a standard temperature and to standard gravity. Even without performing these corrections, the corrected temperature readings for the same sample between laboratories at two different locations in the world will, in general, differ less than 0.1°C at 100°C. Almost all data obtained earlier have been reported at barometric pressures that have not been corrected to standard temperature and to standard gravity.

11.3 Correct temperature readings to 101.3 kPa (760 mm Hg) pressure. Obtain the correction to be applied to each temperature reading by means of the Sydney Young equation as given in Eq 3, Eq 4, or Eq 5, as appropriate, or by the use of Table 6. For Celsius temperatures:

$$C_c = 0.0009 (101.3 - P_k) (273 + t_c) \quad (3)$$

$$C_c = 0.00012 (760 - P) (273 + t_c) \quad (4)$$

For Fahrenheit temperatures:

$$C_f = 0.00012 (760 - P) (460 + t_f) \quad (5)$$

where:

- t_c = the observed temperature reading in °C,
- t_f = the observed temperature reading in °F,
- C_c and C_f = corrections to be added algebraically to the observed temperature readings,
- P_k = barometric pressure, prevailing at the time and location of the test, kPa, and
- P = barometric pressure, prevailing at the time and location of the test, mm Hg.

After applying the corrections and rounding each result to the nearest 0.5°C (1.0°F) or 0.1°C (0.2°F), as appropriate to the

TABLE 6 Approximate Thermometer Reading Correction

Temperature Range		Correction ^a per 1.3 kPa (10 mm Hg) Difference in Pressure	
°C	°F	°C	°F
10–30	50–86	0.35	0.63
30–50	86–122	0.38	0.68
50–70	122–158	0.40	0.72
70–90	158–194	0.42	0.76
90–110	194–230	0.45	0.81
110–130	230–266	0.47	0.85
130–150	266–302	0.50	0.89
150–170	302–338	0.52	0.94
170–190	338–374	0.54	0.98
190–210	374–410	0.57	1.02
210–230	410–446	0.59	1.07
230–250	446–482	0.62	1.11
250–270	482–518	0.64	1.15
270–290	518–554	0.66	1.20
290–310	554–590	0.69	1.24
310–330	590–626	0.71	1.28
330–350	626–662	0.74	1.33
350–370	662–698	0.78	1.37
370–390	698–734	0.78	1.41
390–410	734–770	0.81	1.46

^a Values to be added when barometric pressure is below 101.3 kPa (760 mm Hg) and to be subtracted when barometric pressure is above 101.3 kPa.

apparatus being used, use the corrected temperature readings in all further calculations and reporting.

NOTE 21—Temperature readings are not corrected to 101.3 kPa (760 mm Hg) when product definitions, specifications, or agreements between the parties involved indicate, specifically, that such correction is not required or that correction shall be made to some other base pressure.

11.4 Correct the actual loss to 101.3 kPa (760 mm Hg) pressure when temperature readings are corrected to 101.3 kPa pressure. The corrected loss, L_c , is calculated from Eq 6 or Eq 7, as appropriate, or can be read from the tables presented as Fig. X3.1 or Fig. X3.2.

$$L_c = 0.5 + (L - 0.5) / \{1 + (101.3 - P_k) / 8.00\} \quad (6)$$

$$L_c = 0.5 + (L - 0.5) / \{1 + (760 - P) / 60.0\} \quad (7)$$

where:

- L = observed loss,
- L_c = corrected loss,
- P_k = pressure, kPa, and
- P = pressure, mm Hg.

NOTE 22—Eq 6 and 7 above have been derived from the data in Table 7 and Eqs 5 and 6 in Test Method D 86–95 and earlier versions. It is probable that Eq 6 and 7 shown were the original empirical equations from which the table and equations in the Test Method D 86–95 and earlier versions were derived.

11.4.1 Calculate the corresponding corrected percent recovery in accordance with the following equation:

$$R_c = R + (L - L_c) \quad (8)$$

where:

- L = percent loss or observed loss,
- L_c = corrected loss,
- R = percent recovery, and
- R_c = corrected percent recovery.

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TABLE 7 Data Points for Determining Slope, S_c or S_p

Slope at %	IBP	5	10	20	30	40	50	60	70	80	90	95	EP
T_L at %	0	0	0	10	20	30	40	50	60	70	80	90	95
T_U at %	5	10	20	30	40	50	60	70	80	90	90	95	V_{BP}
$V_U - V_L$	5	10	20	20	20	20	20	20	20	20	10	5	V_{BP-95}

11.5 To obtain the percent evaporated at a prescribed temperature reading, add the percent loss to each of the observed percent recovered at the prescribed temperature readings, and report these results as the respective percent evaporated, that is:

$$P_e = P_r + L \quad (9)$$

where:

- L = observed loss,
- P_e = percent evaporated, and
- P_r = percent recovered.

11.6 To obtain temperature readings at prescribed percent evaporated, and if no recorded temperature data is available within 0.1 volume % of the prescribed percent evaporated, use either of the two following procedures, and indicate on the report whether the arithmetical procedure or the graphical procedure has been used.

11.6.1 *Arithmetical Procedure*—Deduct the observed loss from each prescribed percent evaporated to obtain the corresponding percent recovered. Calculate each required temperature reading as follows:

$$T = T_L + (T_H - T_L)(R - R_L)/(R_H - R_L) \quad (10)$$

where:

- R = percent recovered corresponding to the prescribed percent evaporated,
- R_H = percent recovered adjacent to, and higher than R ,
- R_L = percent recovered adjacent to, and lower than R ,
- T = temperature reading at the prescribed percent evaporated,
- T_H = temperature reading recorded at R_H , and
- T_L = temperature reading recorded at R_L .

Values obtained by the arithmetical procedure are affected by the extent to which the distillation graphs are nonlinear. Intervals between successive data points can, at any stage of the test, be no wider than the intervals indicated in 10.18. In no case shall a calculation be made that involves extrapolation.

11.6.2 *Graphical Procedure*—Using graph paper with uniform subdivisions, plot each temperature reading corrected for barometric pressure, if required (see 11.3), against its corresponding percent recovered. Plot the IBP at 0 % recovered. Draw a smooth curve connecting the points. For each prescribed percent evaporated, deduct the distillation loss to obtain the corresponding percent recovered and take from the graph the temperature reading that this percent recovered indicates. Values obtained by graphical interpolation procedures are affected by the care with which the plot is made.

NOTE 23—See Appendix X1 for numerical examples illustrating the arithmetical procedure.

11.6.3 In most automated instruments, temperature-volume data are collected at 0.1 volume % intervals or less and stored in memory. To report a temperature reading at a prescribed percent evaporated, neither of the procedures described in 11.6.1 and 11.6.2 have to be used. Obtain the desired temperature directly from the database as the temperature closest to and within 0.1 volume % of the prescribed percent evaporated.

12. Report

12.1 Report the following information (see Appendix X5 for examples of reports):

12.2 Report the barometric pressure to the nearest 0.1 kPa (1 mm Hg).

12.3 Report all volumetric readings in percentages.

12.3.1 *Manual Method*—Report volumetric readings to the nearest 0.5, and all temperature readings to the nearest 0.5°C (1.0°F).

12.3.2 *Automated Method*—Report volumetric readings to the nearest 0.1, and all temperature readings to the nearest 0.1°C (0.2°F) or less.

12.4 After barometric corrections of the temperature readings have been made, the following data require no further calculation prior to reporting: IBP, dry point, EP (FBP), decomposition point, and all pairs of corresponding values involving percent recovered and temperature readings.

12.4.1 The report shall state if the temperature readings have not been corrected for barometric pressure.

12.5 When the temperature readings have not been corrected to 101.3 kPa (760 mm Hg) pressure, report the percent residue and percent loss as *observed* in accordance with 10.19 and 11.1, respectively.

12.6 Do not use the corrected loss in the calculation of percent evaporated.

12.7 It is advisable to base the report on relationships between temperature readings and percent evaporated when the sample is a gasoline, or any other product classified under Group 1, or in which the percent loss is greater than 2.0. Otherwise, the report can be based on relationships between temperature readings and percent evaporated or percent recovered. Every report must indicate clearly which basis has been used.

12.7.1 In the manual method, if results are given in percent evaporated versus temperature readings, report if the arithmetical or the graphical procedure was used (see 11.6).

12.8 Report if a drying agent, as described in 7.5.2 or 7.5.3, was used.

12.9 Fig. X1.1 is an example of a tabular report. It shows the percent recovered versus the corresponding temperature reading and versus the corrected temperature reading. It also shows the percent loss, the corrected loss, and the percent evaporated versus the corrected temperature reading.



TABLE 9 Repeatability and Reproducibility for Groups 2, 3 and 4 (Manual Method)

	Repeatability ^A		Reproducibility ^A	
	°C	°F	°C	°F
IBP	1.0+0.35S _O	1.9+0.36S _F	2.8+0.93S _O	5.0+0.93S _F
5–95 %	1.0+0.41S _O	1.8+0.41S _F	1.8+1.33S _O	3.3+1.33S _F
FBP	0.7+0.36S _O	1.3+0.36S _F	3.1+0.42S _O	5.7+0.42S _F
% volume at temperature reading	0.7+0.92/S _O	0.7+1.86/S _F	1.5+1.78/S _O	1.53+3.20/S _F

^A Calculate S_O or S_F from 13.2.

13.3.2.1 *GROUP 1*—The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the normal and correct operation of this method, exceed the values calculated from Table 9 in only one case in twenty.⁷

13.3.2.2 *GROUPS 2, 3, and 4*—The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the normal and correct operation of this test method, exceed the values calculated from the data in Table 9 in only one case in twenty.⁸

13.4 *Automated Method:*

13.4.1 *Repeatability:*

13.4.1.1 *GROUP 1*—The difference between successive results obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of this test method, exceed the values calculated from Table 8 in only one case in twenty.

13.4.1.2 *GROUPS 2, 3, and 4*—The difference between successive results obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of this test method, exceed the values calculated from Table 10 in only one case in twenty.

13.4.2 *Reproducibility:*

13.4.2.1 *GROUP 1*—The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the normal and correct operation of this test method, exceed the values calculated from Table 8 in only one case in twenty.⁷

13.4.2.2 *GROUPS 2, 3, and 4*—The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the normal and correct operation of this test method, exceed the values calculated from Table 10 in only one case in twenty.

13.5 *Bias:*

13.5.1 *Bias*—Due to the use of total immersion thermometers, or temperature sensing systems designed to emulate them, the distillation temperatures in this test method are somewhat lower than the true temperatures. The amount of bias depends on the product being distilled and the thermometer used.

13.5.2 *Relative Bias*—There exists a bias between the empirical results of distillation properties obtained by this test method and the true boiling point distillation curve obtained by Test Method D 2892. The magnitude of this bias, and how it relates to test precision, has not been rigorously studied.

13.5.3 *Relative Bias*—An interlaboratory study⁵ conducted in 2003 using manual and automated apparatus has concluded that there is no statistical evidence to suggest that there is a bias between manual and automated results.

14. *Keywords*

14.1 batch distillation; distillates; distillation; laboratory distillation; petroleum products

⁷ Precision data obtained from RR study on both manual and automated D 86 units by North American and TP Laboratories.

⁸ Table 9 has been derived from the nomographs in Figs. 6 and 7 in ASTM D 86-97.



TABLE 8 Repeatability and Reproducibility for Group 1

Evaporated Point, %	Manual Repeatability ^A		Manual Reproducibility ^A		Automated Repeatability ^A		Automated Reproducibility ^A	
	°C	°F	°C	°F	°C	°F	°C	°F
IBP	3.3	6	5.8	10	3.9	7	7.2	13
5	1.9+0.86S _C	3.4+0.86S _F	3.1+1.74S _C	5.6+1.74S _F	2.1+0.67S _C	3.8+0.67S _F	4.4+2.0S _C	7.9+2.0S _F
10	1.2+0.86S _C	2.2+0.86S _F	2.0+1.74S _C	3.6+1.74S _F	1.7+0.67S _C	3.0+0.67S _F	3.3+2.0S _C	6.0+2.0S _F
20	1.2+0.86S _C	2.2+0.86S _F	2.0+1.74S _C	3.6+1.74S _F	1.1+0.67S _C	2.0+0.67S _F	3.3+2.0S _C	6.0+2.0S _F
30-70	1.2+0.86S _C	2.2+0.86S _F	2.0+1.74S _C	3.6+1.74S _F	1.1+0.67S _C	2.0+0.67S _F	2.6+2.0S _C	4.7+2.0S _F
80	1.2+0.86S _C	2.2+0.86S _F	2.0+1.74S _C	3.6+1.74S _F	1.1+0.67S _C	2.0+0.67S _F	1.7+2.0S _C	3.0+2.0S _F
90	1.2+0.86S _C	2.2+0.86S _F	0.8+1.74S _C	1.4+1.74S _F	1.1+0.67S _C	2.0+0.67S _F	0.7+2.0S _C	1.2+2.0S _F
95	1.2+0.86S _C	2.2+0.86S _F	1.1+1.74S _C	1.9+1.74S _F	2.5+0.67S _C	4.5+0.67S _F	2.6+2.0S _C	4.7+2.0S _F
FBP	3.9	7	7.2	13	4.4	8	8.9	16

^A S_C or S_F is the average slope (or rate of change) calculated in accordance with 13.2.

13. Precision and Bias

13.1 Precision:

13.1.1 The precision of this test method has been determined by the statistical examination of interlaboratory test results obtained by 26 laboratories on 14 gasolines, by 4 laboratories on 8 samples of kerosine by the manual procedure, 3 laboratories on 6 samples of kerosine by the automated procedure, and 5 laboratories on 10 samples of diesel fuel by both the manual and automated procedures. Table A1.1 lists which tables and figures are to be used for the different fuel groups, distillation methods, and temperature scales.

13.1.2 The following terms are used in this section: (1) *r* = repeatability and (2) *R* = reproducibility. The value of any of these terms will depend upon whether the calculations were carried out in °C or °F.

13.2 Slope or Rate of Change of Temperature:

13.2.1 To determine the precision of a result, it is generally necessary to determine the slope or rate of change of the temperature at that particular point. This variable, denoted as S_C or S_F, is equal to the change in temperature, either in °C or in °F, respectively, per percent recovered or evaporated.

13.2.2 For Group 1 in the manual method and for all groups in the automated method, the precision of the IBP and EP does not require any slope calculation.

13.2.3 With the exception stated in 13.2.2 and in 13.2.4, the slope at any point during the distillation is calculated from the following equations, using the values shown in Table 7:

$$S_C \text{ (or } S_F) = (T_U - T_L) / (V_U - V_L) \quad (11)$$

where:

- S_C = is the slope, °C/volume %,
- S_F = is the slope, °F/volume %,
- T_U = is the upper temperature, °C (or °F),
- T_L = is the lower temperature, °C (or °F),
- V_U = is the volume % recovered or evaporated corresponding to T_U,
- V_L = is the volume % recovered or evaporated corresponding to T_L, and
- V_{EP} = is the volume % recovered or evaporated corresponding to the end point.

13.2.4 In the event that the distillation end point occurs prior to the 95 % point, the slope at the end point is calculated as follows:

$$S_C \text{ (or } S_F) = (T_{EP} - T_{HR}) / (V_{EP} - V_{HR}) \quad (12)$$

where:

T_{EP} or T_{HR} is the temperature, in °C or °F at the percent volume recovered indicated by the subscript,

V_{EP} or V_{HR} is the volume % recovered.

13.2.4.1 The subscripts in Eq 12 refer to:

- EP = end point
- HR = highest reading, either 80 % or 90 %, prior to the end point.

13.2.5 For points between 10 to 85 % recovered which are not shown in Table 7, the slope is calculated as follows:

$$S_C \text{ (or } S_F) = 0.05 (T_{(v+10)} - T_{(v-10)}) \quad (13)$$

13.2.6 For samples in Group 1, the precision data reported are based on slope values calculated from percent evaporated data.

13.2.7 For samples in Group 2, 3, and 4, the precision data reported (Table 8) are based on slope values calculated from percent recovered data.

13.2.8 When results are reported as volume % recovered, slope values for the calculation of precision are to be determined from percent recovered data; when results are reported as volume % evaporated slope values are to be determined from % evaporated data.

13.3 Manual Method:

13.3.1 Repeatability:

13.3.1.1 GROUP 1—The difference between successive results obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of this test method, exceed the values calculated from Table 9 in only one case in twenty.

13.3.1.2 GROUPS 2, 3, and 4—The difference between successive results obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of this test method, exceed the values calculated from the values in Table 9 in only one case in twenty.

13.3.2 Reproducibility:

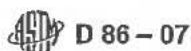


TABLE 10 Repeatability and Reproducibility for Groups 2, 3 and 4 (Automated)

Collected, %	Repeatability ^A		Reproducibility ^A	
	°C	°F	°C	°F
IBP	3.5	6.3	8.5	15.3
2 %	3.5	6.3	2.6 + 1.92S _C	4.7 + 1.92S _F
5 %	1.1 + 1.08S _C	2.0 + 1.08S _F	2.0 + 2.53S _C	3.6 + 2.53S _F
10 %	1.2 + 1.42S _C	2.2 + 1.42S _F	3.0 + 2.84S _C	5.4 + 2.84S _F
20-70 %	1.2 + 1.42S _C	2.2 + 1.42S _F	2.9 + 3.97S _C	5.2 + 3.97S _F
80 %	1.2 + 1.42S _C	2.2 + 1.42S _F	3.0 + 2.84S _C	5.4 + 2.84S _F
90-95 %	1.1 + 1.08S _C	2.0 + 1.08S _F	2.0 + 2.63S _C	3.8 + 2.53S _F
FBP	3.5	6.3	10.6	18.9

^A S_C or S_F is the average slope (or rate of change) calculated in accordance with 13.5.

ANNEXES

(Mandatory Information)

A1. REPEATABILITY AND REPRODUCIBILITY DEFINITION AIDS

A1.1 Table A1.1 is an aid for determining which repeatability and reproducibility table or section, is to be used.

TABLE A1.1 Summary of Aids for Definition of Repeatability and Reproducibility

Group	Method	Temperature Scale	Table or Section to Use	
			Repeatability	Reproducibility
1	Manual	°C	Table 8	Table 8
		°F	Table 8	Table 8
1	Automated	°C	Table 8	Table 8
		°F	Table 8	Table 8
2,3,4	Manual	°C	Table 9	Table 9
		°F	Table 9	Table 9
2,3,4	Automated	°C	Table 10	Table 10
		°F	Table 10	Table 10

A2. DETAILED DESCRIPTION OF APPARATUS

A2.1 *Distillation Flasks*—Flasks shall be of heat resistant glass, constructed to the dimensions and tolerances shown in Fig. A2.1 and shall otherwise comply with the requirements of Specification E 1405. Flask A (100 mL) may also be constructed with a ground glass joint, in which case the diameter of the neck shall be the same as the 125-mL flask.

NOTE A2.1—For tests specifying dry point, specially selected flasks with bottoms and walls of uniform thickness are desirable.

A2.2 *Condenser and Condenser Bath*—Typical types of condenser and condenser baths are illustrated in Figs. 1 and 2.

A2.2.1 The condenser shall be made of seamless noncorrosive metal tubing, 560 ± 5 mm in length, with an outside diameter of 14 mm and a wall thickness of 0.8 to 0.9 mm.

NOTE A2.2—Brass or stainless steel has been found to be a suitable material for this purpose.

A2.2.2 The condenser shall be set so that 393 ± 3 mm of the tube is in contact with the cooling medium, with 50 ± 3 mm outside the cooling bath at the upper end, and with 114 ± 3 mm outside at the lower end. The portion of the tube projecting at the upper end shall be set at an angle of 75 ± 3° with the vertical. The portion of the tube inside the condenser bath shall be either straight or bent in any suitable continuous smooth curve. The average gradient shall be 15 ± 1° with respect to the horizontal, with no 10-cm section having a gradient outside of the 15 ± 3° range. The projecting lower portion of the condenser tube shall be curved downward for a length of 76 mm and the lower end shall be cut off at an acute angle. Provisions shall be made to enable the flow of the distillate to run down the side of the receiving cylinder. This can be accomplished by using a drip-deflector, which is attached to the outlet of the tube. Alternatively, the lower portion of the condenser tube can be curved slightly backward to ensure



contact with the wall of the receiving cylinder at a point 25 to 32 mm below the top of the receiving cylinder. Fig. A2.3 is a drawing of an acceptable configuration of the lower end of the condenser tube.

A2.2.3 The volume and the design of the bath will depend on the cooling medium employed. The cooling capacity of the bath shall be adequate to maintain the required temperature for the desired condenser performance. A single condenser bath may be used for several condenser tubes.

A2.3 *Metal Shield or Enclosure for Flask.* (Manual units only).

A2.3.1 *Shield for Gas Burner* (see Fig. 1)—The purpose of this shield is to provide protection for the operator and yet allow easy access to the burner and to the distillation flask during operation. A typical shield would be 480-mm high, 280-mm long and 200-mm wide, made of sheet metal of 0.8-mm thickness (22 gauge). The shield shall be provided with at least one window to observe the dry point at the end of the distillation.

A2.3.2 *Shield for Electric Heater* (see Fig. 2)—A typical shield would be 440-mm high, 200-mm long, and 200-mm wide, made of sheet metal of approximately 0.8-mm thickness (22 gauge) and with a window in the front side. The shield shall be provided with at least one window to observe the dry point at the end of the distillation.

A2.4 *Heat Source:*

A2.4.1 *Gas Burner* (see Fig. 1), capable of bringing over the first drop from a cold start within the time specified and of continuing the distillation at the specified rate. A sensitive manual control valve and gas pressure regulator to give complete control of heating shall be provided.

A2.4.2 *Electric Heater* (see Fig. 2), of low heat retention.

NOTE A2.3—Heaters, adjustable from 0 to 1000 W, have been found to be suitable for this purpose.

A2.5 *Flask Support:*

A2.5.1 *Type 1*—Use a Type 1 flask support with a gas burner (see Fig. 1). This support consists of either a ring support of the ordinary laboratory type, 100 mm or larger in diameter, supported on a stand inside the shield, or a platform adjustable from the outside of the shield. On this ring or platform is mounted a hard board made of ceramic or other heat-resistant material, 3 to 6 mm in thickness, with a central opening 76 to 100 mm in diameter, and outside line dimensions slightly smaller than the inside boundaries of the shield.

A2.5.2 *Type 2*—Use a Type 2 flask support assembly with electric heating (see Fig. 2 as one example). The assembly consists of an adjustable system onto which the electric heater is mounted with provision for placement of a flask support board (see A2.6) above the electric heater. The whole assembly is adjustable from the outside of the shield.

A2.6 *Flask Support Board*—The flask support board shall be constructed of ceramic or other heat-resistant material, 3 to 6 mm in thickness. Flask support boards are classified as A, B, or C, based on the size of the centrally located opening, the dimension of which is shown in Table 1. The flask support board shall be of sufficient dimension to ensure that thermal heat to the flask only comes from the central opening and that extraneous heat to the flask other than through the central opening is minimized. (Warning—Asbestos-containing materials shall not be used in the construction of the flask support board.)

A2.7 The flask support board can be moved slightly in different directions on the horizontal plane to position the distillation flask so that direct heat is applied to the flask only through the opening in this board. Usually, the position of the flask is set by adjusting the length of the side-arm inserted into the condenser.

A2.8 Provision shall be made for moving the flask support assembly vertically so that the flask support board is in direct contact with the bottom of the distillation flask during the distillation. The assembly is moved down to allow for easy mounting and removal of the distillation flask from the unit.

A2.9 *Receiving Cylinders*—The receiving cylinder shall have a capacity to measure and collect 100 mL. The shape of the base shall be such that the receiver does not topple when placed empty on a surface inclined at an angle of 13° from the horizontal.

A2.9.1 *Manual Method*—The cylinder shall be graduated at intervals of 1 mL and have a graduation at the 100-mL mark. Construction details and tolerances for the graduated cylinder are shown in Fig. A2.4.

A2.9.2 *Automated Method*—The cylinder shall conform to the physical specifications described in Fig. A2.4, except that graduations below the 100-mL mark are permitted, as long as they do not interfere with the operation of the level follower. Receiving cylinders for use in automated units may also have a metal base.

A2.9.3 If required, the receiving cylinder shall be immersed during the distillation to above the 100-mL graduation line in a cooling liquid contained in a cooling bath, such as a tall-form beaker of clear glass or transparent plastic. Alternatively, the receiving cylinder may be placed in a thermostated bath air circulation chamber.

A2.10 *Residue Cylinder*—The graduated cylinder shall have a capacity of 5 or 10 mL, with graduations into 0.1 mL subdivisions, beginning at 0.1 mL. The top of the cylinder may be flared, the other properties shall conform to Specification E 1272.

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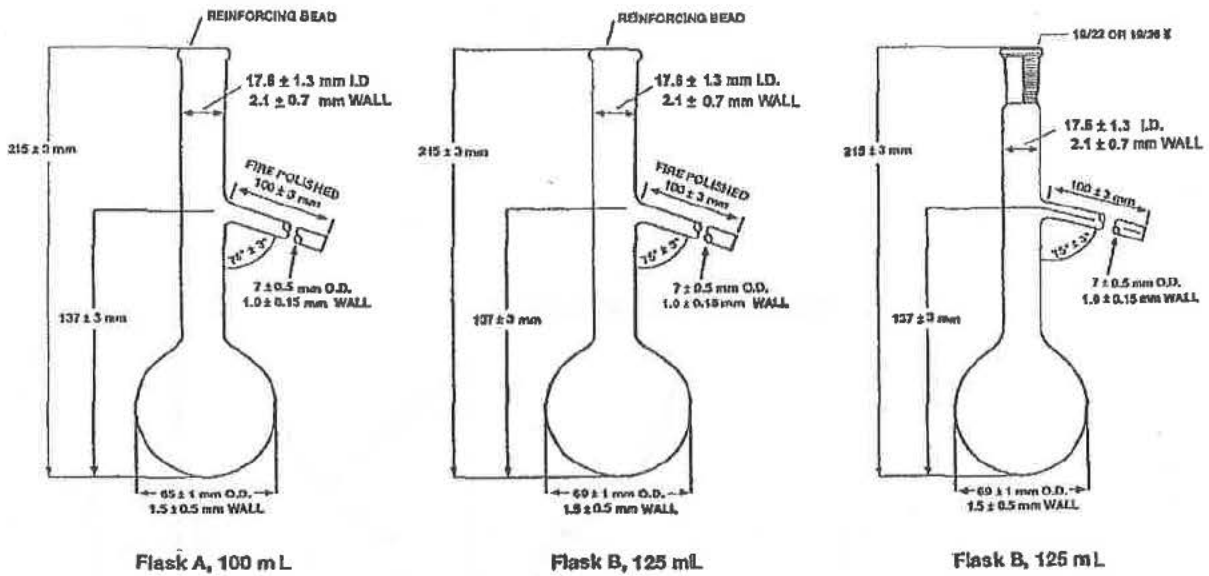


FIG. A2.1 Flask A, 100 mL, Flask B, 125 mL, and Flask B with Ground Glass Joint, 125 mL

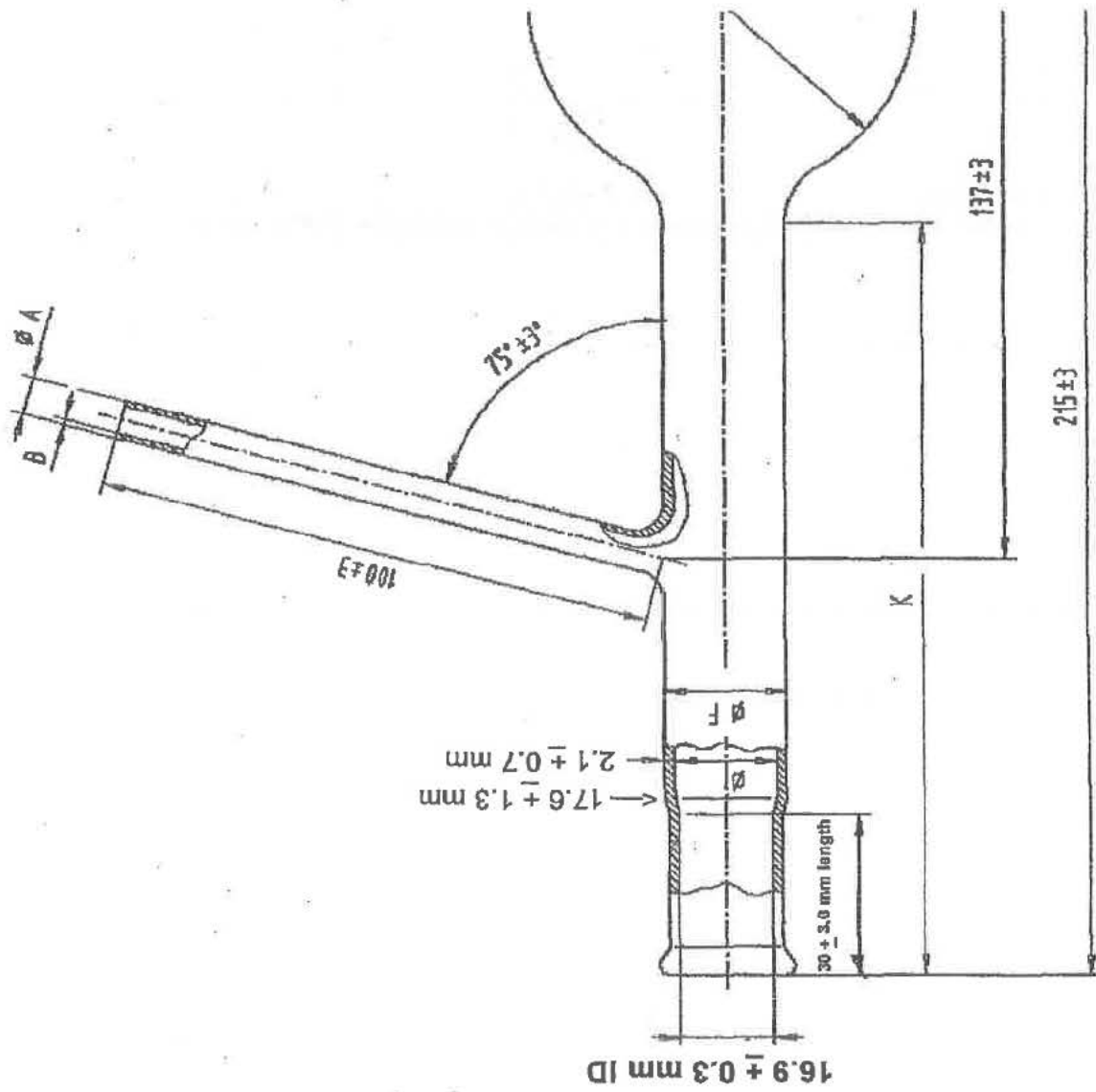
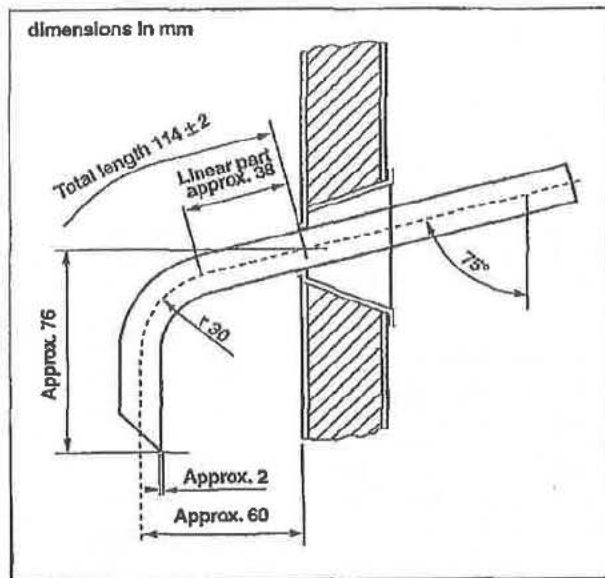


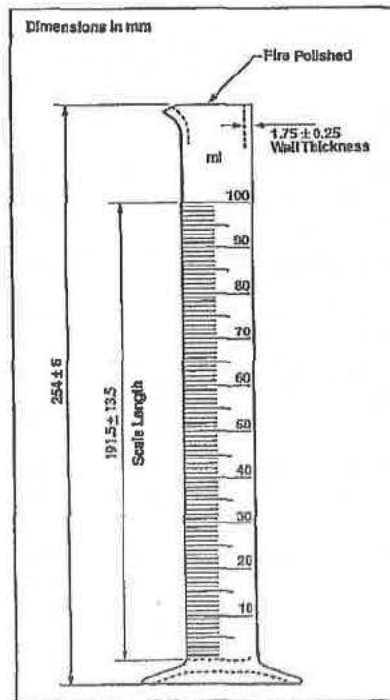
FIG. A2.2 Detail of Upper Neck Section

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Lower End of Condenser Tube
FIG. A2.3 Lower End of Condenser Tube



NOTE—1 to 100 mL in 1 mL graduations; tolerance ± 1.0 mL.
FIG. A2.4 100 mL Graduated Cylinder



A3. DETERMINATION OF THE DIFFERENCE IN LAG TIME BETWEEN AN ELECTRONIC TEMPERATURE MEASUREMENT SYSTEM AND A MERCURY-IN-GLASS THERMOMETER

A3.1 The response time of an electronic temperature measuring device is inherently more rapid than that of a mercury-in-glass thermometer. The temperature measuring device assembly in general use, consisting of the sensor and its casing, or an electronic system and its associated software, or both, is so designed that the temperature measuring system will simulate the temperature lag of the mercury-in-glass thermometer.

A3.2 To determine the difference in lag time between such a temperature measuring system and a mercury-in-glass thermometer, analyze a sample such as gasoline, kerosine, jet fuel, or light diesel fuel with the electronic temperature measurement system in place and in accordance with the procedures described in this test method. In most cases this is the standard distillation step performed with an automated unit.

A3.2.1 Do not use a single pure compound, a very narrow boiling range product, or a synthetic blend of less than six compounds for this test.

A3.2.2 Best results are obtained with a sample that is typical of the sample load of the laboratory. Alternatively, use a full-range mixture with a 5 to 95 % boiling range of at least 100°C.

A3.3 Replace the electronic temperature measuring device with a low range or a high range mercury-in-glass thermometer, depending on the boiling range of the sample.

A3.4 Repeat the distillation with this thermometer, and manually record the temperature at the various percent recovered as described in 10.14.

A3.5 Calculate the values for the repeatability for the observed slope ($\Delta T/\Delta V$) for the different readings in the test.

A3.6 Compare the test data obtained using these two temperature measuring devices. The difference at any point shall be equal to, or less than, the repeatability of the method at that point. If this difference is larger, replace the electronic temperature measuring device or adjust the electronics involved, or both.

A4. PROCEDURE TO DETERMINE THE PERCENT EVAPORATED OR PERCENT RECOVERED AT A PRESCRIBED TEMPERATURE READING

A4.1 Many specifications require specific percentages evaporated or recovered at prescribed temperature readings, either as maxima, minima, or ranges. The procedures to determine these values are frequently designated by the terms Exxx or Rxxx, where xxx is the desired temperature.

NOTE A4.1—Regulatory standards on the certification of reformulated gasoline under the complex model procedure require the determination of E 200 and E 300, defined as the percent evaporated fuel at 93.3°C (200°F) and 148.9°C (300°F), respectively. E 158, the percent evaporated at a distillation temperature of 70°C (158°F), is also used in describing fuel volatility characteristics. Other typical temperatures are R 200 for kerosines and R 250 and R 350 for gas oils, where R 200, R 250, and R 350 are the percent recovered fuel at 200°C, 250°C, and 350°C, respectively.

A4.2 Determine the barometric pressure, and calculate the correction to the desired temperature reading using Eq 3, Eq 4, or Eq 5 for $t = xxx^\circ\text{C}$ (or $t_f = xxx^\circ\text{F}$).

A4.2.1 *Manual Method*—Determine this correction to 0.5°C (1°F).

A4.2.2 *Automated Method*—Determine this correction to 0.1°C (0.2°F).

A4.3 Determine the expected temperature reading to yield $xxx^\circ\text{C}$ (or $xxx^\circ\text{F}$) after the barometric correction. To obtain the expected value, add the absolute value of the calculated correction to the desired temperature if the barometric pressure is above 101.3 kPa. If the barometric pressure is below 101.3 kPa, subtract the absolute value of the calculated correction from the desired temperature.

A4.4 Perform the distillation, as described in Section 10,

while taking into account A4.5 and A4.6.

A4.5 *Manual Distillation:*

A4.5.1 In the region between about 10°C below and 10°C above the desired expected temperature reading determined in A4.3 record the temperature reading in intervals of 1 volume %.

A4.5.2 If the intent of the distillation is to solely determine the value of Exxx or Rxxx, discontinue the distillation after at least another 2 mL of distillate have been collected. Otherwise, continue the distillation, as described in Section 10, and determine the observed loss, as described in 11.1.

A4.5.2.1 If the intent of the distillation is to determine the value of Exxx and the distillation was terminated after about 2 mL of distillate was collected beyond the desired temperature, allow the distillate to drain into the receiving graduate. Allow the contents of the flask to cool to below approximately 40°C and then drain its contents into the receiving graduate. Note the volume of product in the receiving graduate to the nearest 0.5 mL at 2 min intervals until two successive observations agree.

A4.5.2.2 The amount recovered in the receiving graduate is the percent recovery. Determine the amount of observed loss by subtracting the percent recovery from 100.0.

A4.6 *Automated Distillation:*

A4.6.1 In the region between about 10°C below and 10°C above the desired expected temperature reading determined in A4.3, collect temperature-volume data at 0.1 volume % intervals or less.

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A4.6.2 Continue the distillation, as described in Section 10, and determine the percent loss, as described in 11.1.

A4.7 Calculations:

A4.7.1 *Manual Method*—If a volume % recovered reading is not available at the exact temperature calculated in A4.3, determine the percent recovered by interpolation between the two adjacent readings. Either the linear, as described in 11.6.1, or the graphical procedure, as described in 11.6.2, is permitted. The percent recovered is equal to Rxxx.

A4.7.2 *Automated Method*—Report the observed volume to 0.1 volume % corresponding to the temperature closest to the expected temperature reading. This is the percent recovered, or Rxxx.

A4.7.3 *Manual and Automated Methods*—To determine the value of Exxx, add the observed loss to the percent recovered, Rxxx, as determined in A4.7.1 or A4.7.2 and as described in Eq 9.

A4.7.3.1 As prescribed in 12.6, do not use the corrected loss.

A4.8 Precision:

A4.8.1 The statistical determination of the precision of the volume % evaporated or recovered at a prescribed temperature has not been directly measured in an interlaboratory program. It can be shown that the precision of the volume % evaporated or recovered at a prescribed temperature is equivalent to the precision of the temperature measurement at that point divided by the rate of change of temperature versus volume % evaporated or recovered. The estimation of precision becomes less precise at high slope values.

A4.8.2 Calculate the slope or rate of change in temperature reading, S_C (or S_F), as described in 13.2 and Eq 11 and using temperature values bracketing the desired temperature.

A4.8.3 Calculate the repeatability, r , or the reproducibility, R , from the slope, S_C (or S_F), and the data in Table 8, Table 9, or Table 10.

A4.8.4 Determine the repeatability or reproducibility, or both, of the volume % evaporated or recovered at a prescribed temperature from the following formulas:

$${}^v\text{volume \%} = r/S_C(S_F) \quad (\text{A4.1})$$

$${}^R\text{volume \%} = R/S_C(S_F) \quad (\text{A4.2})$$

where:

- ${}^v\text{volume \%}$ = repeatability of the volume % evaporated or recovered,
- ${}^R\text{volume \%}$ = reproducibility of the volume % evaporated or recovered,
- r = repeatability of the temperature at the prescribed temperature at the observed percent distilled,
- R = reproducibility of the temperature at the prescribed temperature at the observed percent distilled, and
- $S_C(S_F)$ = rate of change in temperature reading in °C (°F) per the volume % evaporated or recovered.

A4.8.5 Examples on how to calculate the repeatability and the reproducibility are shown in Appendix X2.

APPENDIXES

(Nonmandatory Information)

X1. EXAMPLES ILLUSTRATING CALCULATIONS FOR REPORTING OF DATA

X1.1 The observed distillation data used for the calculation of the examples below are shown in the first three columns of Fig. X1.1.

X1.1.1 Temperature readings corrected to 101.3 kPa (760 mm Hg) pressure (see 11.3) are as follows:

$$\text{correction } ({}^\circ\text{C}) = 0.0009 (101.3 - 98.6) (273 + t_c) \quad (\text{X1.1})$$

$$\text{correction } ({}^\circ\text{F}) = 0.00012 (760 - 740) (460 + t_f) \quad (\text{X1.2})$$

X1.1.2 Loss correction to 101.3 kPa (see 11.4) are as follows. The data for the examples are taken from Fig. X1.1.

$$\text{corrected loss} = (0.5 + (4.7 - 0.5)/ \quad (\text{X1.3})$$

$$\{1 + (101.3 - 98.6)/8.0\} = 3.6$$

X1.1.3 Recovery correction to 101.3 kPa (see 11.4.1) are as follows:

$$\text{corrected recovery} = 94.2 + (4.7 - 3.6) = 95.3 \quad (\text{X1.4})$$

X1.2 *Temperature Readings at Prescribed Percent Evaporated:*

X1.2.1 Temperature reading at 10 % evaporated (4.7 % observed loss = 5.3 % recovered) (see 11.6.1) are as follows:

$$T_{10E} ({}^\circ\text{C}) = 33.7 + [(40.3 - 33.7) \quad (\text{X1.5})$$

$$(5.3 - 5)/(10 - 5)] = 34.1{}^\circ\text{C}$$

$$T_{10E} ({}^\circ\text{F}) = 92.7 + [(104.5 - 92.7) \quad (\text{X1.6})$$

$$(5.3 - 5)/(10 - 5)] = 93.1{}^\circ\text{F}$$

X1.2.2 Temperature reading at 50 % evaporated (45.3 % recovered) (see 11.6.1) are as follows:

$$T_{50E} ({}^\circ\text{C}) = 93.9 + [(108.9 - 93.9) \quad (\text{X1.7})$$

$$(45.3 - 40)/(50 - 40)] = 101.9{}^\circ\text{C}$$

$$T_{50E} ({}^\circ\text{F}) = 201 + [(228 - 201) \quad (\text{X1.8})$$

$$(45.3 - 40)/(50 - 40)] = 215.3{}^\circ\text{F}$$

X1.2.3 Temperature reading at 90 % evaporated (85.3 % recovered) (see 11.6.1) are as follows:

$$T_{90E} ({}^\circ\text{C}) = 181.6 + [(201.6 - 181.6) \quad (\text{X1.9})$$

$$(85.3 - 85)/(90 - 85)] = 182.8{}^\circ\text{C}$$

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$$T_{90E} (^{\circ}F) = 358.9 + [(394.8 - 358.9) \cdot (85.3 - 85) / (90 - 85)] = 361.0^{\circ}F \quad (X1.10)$$

X1.2.4 Temperature reading at 90 % evaporated (85.3 % recovered) not corrected to 101.3 kPa pressure (see 11.6.1) are as follows:

$$T_{90E} (^{\circ}C) = 180.5 + [(200.4 - 180.5) \cdot (85.3 - 85) / (90 - 85)] = 181.7^{\circ}C \quad (X1.11)$$

$$T_{90E} (^{\circ}F) = 357 + [(392 - 357) \cdot (85.3 - 85) / (90 - 85)] = 359.1^{\circ}F \quad (X1.12)$$

NOTE X1.1—Results calculated from $^{\circ}C$ data may not correspond exactly to results calculated from $^{\circ}F$ data because of errors in rounding.

Sample ID:
 Date analyzed:
 Equipment No:
 Remarks:
 Barometric pressure: 98.6 kPa
 Analyst:

% recovered	Barometric pressure observed 98.6 kPa 740 mm Hg		Barometric pressure corrected 101.3 kPa 760 mm Hg		procedure	
	$^{\circ}C$	$^{\circ}F$	$^{\circ}C$	$^{\circ}F$	% evaporated	arithmetic/graphical T_{evap} $^{\circ}C$ $^{\circ}F$
18P	25.5	78	26.2	79.2	5	26.7 80.0
5	33.0	91	33.7	92.7	10	34.1 93.4
10	39.5	103	40.3	104.5	15	40.7 105.2
15	46.0	115	46.8	114.2	20	47.3 117.1
20	54.5	130	53.3	131.5	30	53.7 130.2
30	74.0	165	74.8	166.7	40	84.9 184.9
40	93.0	199	93.9	201.0	50	101.9 215.3
58	108.0	226	108.9	228.0	60	116.9 242.4
60	123.0	253	124.0	255.1	70	134.1 273.3
70	142.0	288	143.0	289.4	80	156.0 312.8
80	166.5	332	167.4	333.6	85	168.4 335.1
85	180.5	357	181.6	358.9	90	182.8 361.0
90	200.4	393	201.6	394.8	95	202.4 396.3
EP	215.0	419	216.2	421.1		
recovered, %	94.2		95.3			
residue, %	1.1		1.1			
loss, %	4.7		3.6			

FIG. X1.1 Example of Test Report



X2. EXAMPLES OF CALCULATION OF REPEATABILITY AND REPRODUCIBILITY OF VOLUME % (RECOVERED OR EVAPORATED) AT A PRESCRIBED TEMPERATURE READING

X2.1 Some specifications require the reporting of the volume % evaporated or recovered at a prescribed temperature. Table X2.1 shows the distillation data of a Group 1 sample as obtained by an automated unit.

X2.2 Example Calculation:

X2.2.1 For a Group 1 sample exhibiting distillation characteristics as per Table X2.1, as determined by an automated unit, the reproducibility of the volume evaporated, R , volume %, at 93.3°C (200°F) is determined as follows:

X2.2.1.1 Determine first the slope at the desired temperature:

$$S_C \% = 0.1 (T_{(20)} - T_{(10)}) \quad (X2.1)$$

$$= 0.1 (94 - 83)$$

$$= 1.1$$

$$S_F \% = 0.1 (T_{(20)} - T_{(10)})$$

$$= 0.1 (201 - 182)$$

$$= 1.9$$

X2.2.2 From Table 9, determine the value of R , the reproducibility at the observed percentage distilled. In this case, the observed percentage distilled is 18 % and

$$R = 3.3 + 2.0 (S_C) \quad (X2.2)$$

$$= 3.3 + 2.0 \times 1.1$$

$$= 5.5$$

$$R = 6.0 + 2.0 (S_F)$$

$$= 6.0 + 2.0 \times 1.9$$

$$= 9.8$$

X2.2.3 From the calculated value of R , determine the value of volume, as described in A4.8.4.

$$R \text{ volume \%} = R/(S_C) \quad (X2.3)$$

$$= 5.5/1.1$$

$$= 5.0$$

$$R \text{ volume \%} = R/(S_F)$$

$$= 9.8/1.9$$

$$= 5.1$$

TABLE X2.1 Distillation Data from a Group 1 Sample Automated Distillation

Distillation Point Recovered, mL	Temperature° C	Temperature° F	Volume (mL) Recovered at 93.3°C (200°F)
10	84	183	18.0
20	94	202	
30	103	217	
40	112	233	

Distillation Point Evaporated, mL	Temperature° C	Temperature° F	Volume (mL) Evaporated at 93.3°C (200°F)
10	83	182	18.4
20	94	201	
30	103	217	
40	111	232	

X3. TABLES OF CORRECTED LOSS FROM MEASURED LOSS AND BAROMETRIC PRESSURE

X3.1 The table presented as Fig. X3.1 can be used to determine the corrected loss from the measured loss and the barometric pressure in kPa.

X3.2 The table presented as Fig. X3.2 can be used to determine the corrected loss from the measured loss and the barometric pressure in mm Hg.



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SUMMARY OF CHANGES

Subcommittee D02.08 has identified the location of selected changes to this standard since the last issue (D 86-05) that may impact the use of this standard. (Approved Jan. 15, 2007.)

- (1) Deleted "natural gasolines" from 1.1.
- (2) Deleted "Group 0" from the entire standard.
- (3) Added Fig. 6.

Subcommittee D02.08 has identified the location of selected changes to this standard since the last issue, (D 86-04b), that may impact the use of this standard. (Approved July 1, 2005.)

- (1) Replaced Table 4 with new values.
- (2) Revised 9.1.2-9.1.2.2, 9.1.5, and Notes 9-11.
- (3) Added 13.5.3 and footnote reference to the research report.
- (4) Added Appendix X5, and cross-reference in Section 12.1.

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This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

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"Percent Evaporated" Report Form

Laboratory: _____

Date: _____
 Time: _____
 Operator: _____

Ambient temperature (°C)	_____
Atmospheric pressure (kPa)	_____
Condenser temperature (°C)	_____
Temperature of the bath around receiving cylinder (°C)	_____

Percent Recovered	Corrected Temperature Reading (°C)	Time or mL / min	Percent Evaporated	Temperature Readings at prescribed percent evaporated (°C)
IBP			IBP	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
35			35	
40			40	
45			45	
50			50	
55			55	
60			60	
65			65	
70			70	
75			75	
80			80	
85			85	
90			90	
5 ml residue				
95			95	
FBP			FBP	

Percent Recovery	_____	Corrected Loss	_____
Percent Residue	_____	Corrected Total Recovery	_____
Percent Total Recovery	_____		
Percent Loss	_____		
Corrected Percent Recovery	_____		

Comments: _____

- Ambient temperature at the start of the test
- Ambient barometric pressure at the start of the test
- Volume of condensate observed in the receiving cylinder at any point in the distillation, expressed as a percentage of the charge volume, in connection with simultaneous temperature reading
- Temperature measuring device readings which are corrected to 101.3 kPa barometric pressure
- Sum of the percent recovered and the percent loss
- Temperature measuring device readings at specified percentages evaporated calculated with arithmetical or graphical procedures
- Group 0: 2 to 5 minutes
- Group 1, 2 & 3: 5 to 10 minutes
- Group 4: 5 to 15 minutes
- Group 1 & 2: 60 to 100 seconds
- Group 0: time from first application of heat to 10% recovered = 3 to 4 minutes
- Group 0, 1, 2, 3 & 4: 4 to 5 ml / min uniform average rate from 5% recovered to 5 ml in flask
- Volume of condensate observed in the receiving cylinder when the 5ml conditions are reached
- Volume of condensate observed in the receiving cylinder when the final boiling point is observed
- Maximum percent recovered
- Volume of residue in the flask expressed as a percentage of the charge volume
- Combined Percent Recovery and Percent Residue in the flask
- Time from 5 ml in flask to FBP = < 5 minutes
- 100 minus the Total Recovery
- Percent Recovery corrected for barometric pressure
- Percent Loss corrected for barometric pressure
- Combined Percent Recovery and Percent Residue in the flask corrected for barometric pressure

FIG. X5.2 Percent Evaporated Report Form



"Percent Recovered" Report Form

Date: _____
 Time: _____
 Operator: _____

Ambient temperature (°C) _____
 Atmospheric pressure (kPa) _____
 Condenser temperature (°C) _____
 Temperature of the bath around receiving cylinder (°C) _____

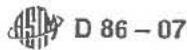
Percent Recovered	Corrected Temperature Reading (°C)	Time or mL / min
IBP		
5		
10		
15		
20		
25		
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		
5 ml residue		
95		
FBP		

Percent Recovery _____
 Percent Residue _____
 Percent Total Recovery _____
 Percent Loss _____
 Corrected Percent Recovery _____
 Corrected Total Recovery _____
 Corrected Loss _____

- Ambient temperature at the start of the test
- Ambient barometric pressure at the start of the test
- Volume of condensate observed in the receiving cylinder at any point in the distillation, expressed as a percentage of the charge volume, in connection with simultaneous temperature reading
- Temperature measuring device readings which are corrected to 101.3 kPa barometric pressure
- Group 1, 2 & 3: 5 to 10 minutes
Group 4: 5 to 15 minutes
- Group 1 & 2: 60 to 100 seconds
- 4 to 5 ml / min uniform average rate from 5% recovered to 5 ml in flask
- Volume of condensate observed in the receiving cylinder when the 5ml conditions are reached
- Volume of condensate observed in the receiving cylinder when the final boiling point is observed
- Maximum percent recovered
- Volume of residue in the flask expressed as a percentage of the charge volume
- Combined Percent Recovery and Percent Residue in the flask
- Time from 5 ml in flask to FBP =< 5 minutes
- 100 minus the Total Recovery
- Percent Recovery corrected for barometric pressure
- Percent Loss corrected for barometric pressure
- Combined Percent Recovery and Percent Residue in the flask corrected for barometric pressure

Comments:

FIG. X5.1 Percent Recovered Report Form



**X4. PROCEDURE TO EMULATE THE EMERGENT STEM ERROR OF A
MERCURY-IN-GLASS THERMOMETER**

X4.1 When an electronic or other sensor without an emergent stem error is used, the output of this sensor or the associated data system should emulate the output of a mercury-in-glass thermometer. Based on information supplied by four manufacturers of automated Test Method D 86 equipment, the averaged equations shown in X4.2 and X4.3 have been reported to be in use.

X4.1.1 The equations shown in X4.2 have limited applicability and are shown for information purposes only. In addition to the correction for the emergent stem, the electronic sensor and associated data system will also have to emulate the lag in response time observed for mercury-in-glass thermometers.

X4.2 When a low range thermometer would have been used, no stem correction is to be applied below 20°C. Above this temperature, the correction is calculated using the following formula:

$$ASTM\ 7C\ T_{em} = T_t - 0.000162 \times (T_t - 20^\circ C)^2 \quad (X4.1)$$

X4.3 When a high range thermometer would have been used, no stem correction is to be applied below 35°C. Above this temperature the correction is calculated using the following formula:

$$ASTM\ 8C\ T_{em} = T_t - 0.000131 \times (T_t - 35^\circ C)^2 \quad (X4.2)$$

where:

T_{em} = emulated temperature in °C for low range thermometers,

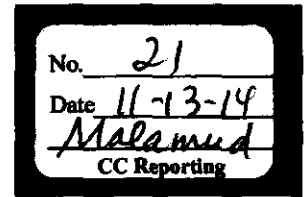
T_{em} = emulated temperature in °C for high range thermometers, and

T_t = true temperature in °C.

X5. EXPLANATORY REPORT FORMS

X5.1 Fig. X5.1 and Fig. X5.2 show report forms.

EXHIBIT 19



From: Carl Malamud
Sent: Sat 1/04/2014 12:01 PM (GMT -8)
To: Rebecca Malamud
Cc:
Bcc:
Subject: Re: SVG and MathML (India and NFPA / Q4)

ok. this works for me. You're not spending a lot on contractors. I just needed to know that. (If you were spending \$3k a month on contractors, that obviously would have been an easy place for me to save money. At \$1k/month, it's noise.)

Keep uploading to the dropbox. But, do let me know what's coming so that I don't dive in and process things and then see more showing up the next day.

The app is sort of interesting, but doesn't help me in my core work, which is showing that we make the standards better. I'm happy to look at it, I'll tweet it, but it isn't something I'd use.

All the docs you see are, in theory, double-keyed. Of course, they may cheat and do OCR first and then do their QA. In any case, I won't be paying for double-key work for the foreseeable future.

What I *am* getting, at least from India, is full and accurate text inside of the PDF files. So, setting that text into HTML is a possible path.

But, for now, let's take January and February and get as much svg/math done as possible.

Let's also make sure we've done any NFPA docs that are in HTML but not in SVG. Also, we can do any ASTM or ASHRAE docs as well as those are helpful to me in my suit. And, India is useful.

Definitely keep plowing away on that stuff ... that's the kind of output that makes it much easier for me to try and raise money to keep you going for the rest of the year. (The book work is also very valuable to me, but I can't raise money for that.)

The summer thing may or may not happen ... I wouldn't count on it though. Right now, just raising my salary, my overhead, and your \$60k is a challenge. I think I'll be able to do it, but I'm definitely running on fumes.

On Jan 4, 2014, at 11:48 AM, Rebecca Malamud <webchick@invisible.net> wrote:

>> I'll take the ones you just sent in and get them ready. Send me the next batch when they're ready.
>> I really wish this stuff were on a reasonable schedule. Nothing for 3 months and then a whole bunch of transactions as a flurry. Doesn't work for me.
>
> I could just upload the files to your server directly ... would that be easier for you?
>
>> You didn't answer my previous question, which was how much of the \$5k a month that I'm sending you is being turned around as salary for your contractor? I'm digging really deep to find money for you post-February and I need to understand where my money is going if I'm going to keep digging for you. I'm happy with the work, but I don't understand the finances.
>
> I suppose I could break everything down, however I use my contractor(s) on other things as well. If I had to gauge a rough ballpark estimate, I would say that about \$850 - \$1200 is paid out monthly to outside contractors trained through my program to do the work. I don't think that is unreasonable, and I do much of the work as well plus manage the project. I have to figure out how to manage my time effectively so I can work on other things related to my business. You mentioned not having the "Codes of the World" summer program this year, and if that is a strain for you then lets not do the SVG/MathML track.
>

> I also mentioned that my MathML coder is working on an app. I was writing it up if you want to see it. It isn't ready for prime time but it promises to speed up production on that front. Of course, I notice that more and more of the equations are in the code now. I presume it is being keyed in unless that process has switched over to OCR. I found a couple of mistakes that appear to be OCR-related like the one below:

>
> <Screen Shot 2013-12-30 at 9.28.54 AM.png>

>> I just went through processing the previous batch. If I knew there were more, I would have waited an hour. Basically just doubled my work.

> I thought you were expecting more India ... sorry!

> Becky

> On Jan 4, 2014, at 11:19 AM, Carl Malamud <carl@media.org> wrote:

>> I just went through processing the previous batch. If I knew there were more, I would have waited an hour. Basically just doubled my work.

>> I'll take the ones you just sent in and get them ready. Send me the next batch when they're ready.

>> I really wish this stuff were on a reasonable schedule. Nothing for 3 months and then a whole bunch of transactions as a flurry. Doesn't work for me.

>> You didn't answer my previous question, which was how much of the \$5k a month that I'm sending you is being turned around as salary for your contractor? I'm digging really deep to find money for you post-February and I need to understand where my money is going if I'm going to keep digging for you. I'm happy with the work, but I don't understand the finances.

>> On Jan 4, 2014, at 11:15 AM, Rebecca Malamud <webchick@invisible.net> wrote:

>>> Hi -

>>> I just placed six new docs in teh Dropbox folder - I just finished proofing them. I thought we would have 11, but some of them were more complex than anticipated (is.3025.04.1983_008_01.svg ... it's the CIE1931 color gamut!).

>>> I can finish the five in the queue if you like to reach the promised quota of 11 ... do you want me to do that?

>>> Becky

>>> On Jan 3, 2014, at 2:18 PM, Rebecca Malamud <webchick@invisible.net> wrote:

>>>> Yes - I should have the next delivery at 5PM today ...

>>>> On Jan 3, 2014, at 2:01 PM, Carl Malamud <carl@media.org> wrote:

>>>>> Hi -

>>>>> Just checking that this is still happening? If so, I'll work on it this weekend.

>>>>

>>>> Carl

>>>>

>>>> On Dec 31, 2013, at 3:02 PM, Rebecca Malamud <webchick@invisible.net> wrote:

>>>>

>>>>> All are completed (both diagrams and MathML), with the exception of nfpa.nec.2011 - we have about 12 more diagrams to complete on that and we should have that completed by Friday. If you look at the diagrams, you will see that many are very complex. All have been proofed against the original JPG.

>>>>>

>>>>

>>>>

>>>>

>>>

>>>

>>

>>

>

EXHIBIT 23

Try Our New BETA Version GO

EXHIBIT 52
Ashley Sorvyn, CSR No. 12019
Date 2/26/15
WITNESS: MALAMUD
GOVDOCS


Web Video Texts Audio Software About Account TVNews OpenLibrary

Home American Libraries | Canadian Libraries | Universal Library | Community Texts | Project Gutenberg | Biodiversity Heritage Library | Children's Library | Additional Collections

Search: Additional Collections Advanced Search Anonymous User (login or join us) Upload

eBooks and Texts > Additional Collections > Government Documents > Global Public Safety Codes > NFPA NEC (2011): National Electrical Code

View the book




Read Online

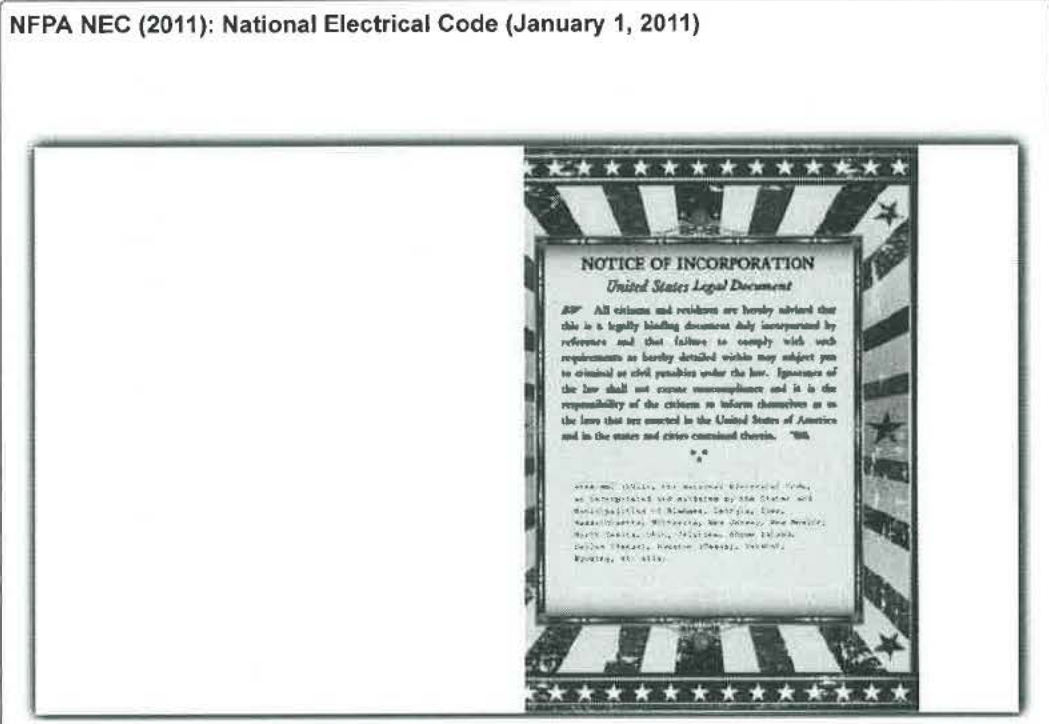
PDF	(47.6 K)
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[Errata 70-11-2](#) (issued 1/24/2012) (PDF, 18 KB)
[Errata 70-11-1](#) (issued 4/8/2011) (PDF, 48 KB)

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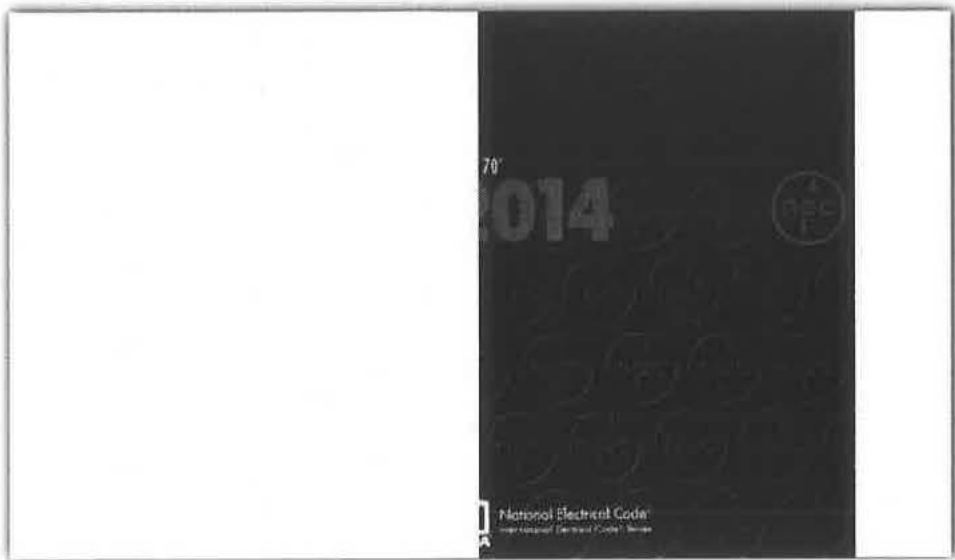
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Errata
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[Errata 70-14-2](#) (issued 12/3/2013) (PDF, 32 KB)
[Errata 70-14-3](#) (issued 4/21/2014) (PDF, 21 KB)
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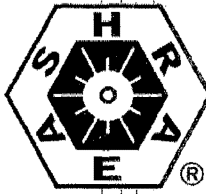
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EXHIBIT 25

ANSI/ASHRAE/IESNA Standard 90.1-2004

(Includes ANSI/ASHRAE/IESNA Addenda listed in Appendix F)



ASHRAE STANDARD

Energy Standard for Buildings Except Low-Rise Residential Buildings

I-P Edition

See Appendix F for approval dates by the ASHRAE Standards Committee, the ASHRAE Board of Directors, the IESNA Board of Directors, and the American National Standards Institute.

This standard is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. The change submittal form, instructions, and deadlines may be obtained in electronic form from the ASHRAE Web site, <http://www.ashrae.org>, or in paper form from the Manager of Standards. The latest edition of an ASHRAE Standard may be purchased from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org. Fax: 404-321-5478. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in US and Canada).

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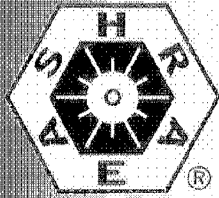
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ANSI/ASHRAE/IESNA Standard 90.1-2004 ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL



ANSI/ASHRAE Standard 90.1-2007
(Supersedes ANSI/ASHRAE/IESNA Standard 90.1-2004)
Includes ANSI/ASHRAE/IESNA Addenda listed in Appendix F

ASHRAE STANDARD

Energy Standard for Buildings Except Low-Rise Residential Buildings

SI Edition

See Appendix F for approval dates by the ASHRAE Standards Committee, the ASHRAE Board of Directors, the IESNA Board of Directors, and the American National Standards Institute.

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(Supersedes ANSI/ASHRAE/IESNA Standard 90.1-2007)
Includes ANSI/ASHRAE/IES Addenda listed in Appendix F

Energy Standard for Buildings Except Low-Rise Residential Buildings

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* *
*

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STANDARD	YEAR	ORGANIZATION	TITLE	CFR AUTHORITY
3M 0222	1995	3M Corporation	Organochlorine Pesticides and PCBs in Wastewater Using Empore Disk	40 CFR 136.3(a) Table ID
AA CONSTRUCT	1971	Aluminum Association	Aluminum Construction Manual	24 CFR 200, Subpart S
AA	1967	Aluminum Association	Aluminum Construction Manual	24 CFR 200, Subpart S
AA DATA	1982	Aluminum Association	Aluminum Standards and Data, Seventh Edition	49 CFR 178.65(b)(2)
AAMA 101-IS2	1997	American Architectural Manufacturers Association	Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors	10 CFR 434.402.2.2.4
AAMA 605	1998	American Architectural Manufacturers Association	Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels	40 CFR 59.401
AAMA 1002.10	1993	American Architectural Manufacturers Association	Aluminum Insulating Products for Windows and Sliding Glass Doors	24 CFR 200.938
AAMA 1102.7	1989	American Architectural Manufacturers Association	Voluntary Specifications for Aluminum Storm Doors	10 CFR 440 Appendix A
AAMA 1503.1	1988	American Architectural Manufacturers Association	Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections	24 CFR 3280.508(e)
AAMA 1702.2	1995	American Architectural	Swinging Exterior	24 CFR 3280.405(e)(2)

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		Manufacturers Association	Passage Doors Voluntary Standard for Utilization in Manufactured-Housing	
AAMA 1704	1985	American Architectural Manufacturers Association	Voluntary Standard Egress Window Systems for Utilization in Manufactured-Housing	24 CFR 3280.404(b)
AAMD	1973	American Association on Mental Deficiency	Classification in Mental Retardation	42 CFR 483.102(b)(3)(i)
AAMVA CDLIS.2.0	1998	American Association of Motor Vehicle Administrators	Commercial Driver License Information System (CDLIS) State Procedures	49 CFR 384.231(d)
AASHTO	1973	American Association of State Highway and Transportation Officials	Standard Specifications for Highway Bridges	24 CFR 200, Subpart S
AASHTO	2001	American Association of State Highway and Transportation Officials	A Policy on Geometric Design of Highways and Streets	23 CFR 625.4
AASHTO	2005	American Association of State Highway and Transportation Officials	A Guide for Accommodating Utilities Within Highway Right-of-Way	23 CFR 645.211
AATCC 118	1997	American Association of Textile Chemists and Colorists	Oil Repellency: Hydrocarbon Resistance Test	10 CFR 430 Subpart B, App. J1, 2.6.4.5.1
AATCC 124	1996	American Association of Textile Chemists and Colorists	Appearance of Durable Press Fabrics After Repeated Home Laundering	16 CFR 1615.32(a)(1)
ABYC A-01	1993	American Boat and Yacht Council	Marine Liquified Petroleum Gas Systems	46 CFR 184.240(a)
ABYC A-07	1973	American Boat and Yacht Council	Boat Heating Systems	46 CFR 184.200
ABYC A-16	1997	American Boat and Yacht Council	Electric Navigation Lights	46 CFR 25.10-3(a)(2)
ABYC A-22	1993	American Boat and Yacht Council	Marine Compressed Natural Gas Systems	46 CFR 184.240(b)
ABYC E-01	1973	American Boat and Yacht Council	Bonding of Direct Current Systems	46 CFR 28.345(b)
ABYC E-09	1990	American Boat and Yacht Council	Direct Current (DC) Electrical Systems on Boats	46 CFR 183.340(b)(4)
ABYC H-02	1989	American Boat and Yacht Council	Ventilation of Boats Using Gasoline	46 CFR 28.340(c)
ABYC H-22	1986	American Boat and	DC Electric Bilge	46 CFR 182.500(b)

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		Yacht Council	Pumps Operating Under 50 Volts	
ABYC H-24	1993	American Boat and Yacht Council	Gasoline Fuel Systems	46 CFR 182.455(c)
ABYC H-25	1994	American Boat and Yacht Council	Portable Gasoline Fuel Systems for Flammable Liquids	46 CFR 182.130
ABYC H-32	1987	American Boat and Yacht Council	Ventilation of Boats Using Diesel Fuel	46 CFR 182.470(c)
ABYC H-33	1989	American Boat and Yacht Council	Diesel Fuel Systems	46 CFR 182.130
ABYC P-01	1993	American Boat and Yacht Council	Safe Installation of Exhaust Systems for Propulsion and Auxiliary Engines	46 CFR 182.130
ABYC P-04	1989	American Boat and Yacht Council	Marine Inboard Engines	46 CFR 182.420(b)
ACGIH	1987	American Conference of Governmental Industrial Hygienists	Guidelines for the Selection of Chemical Protective Clothing, Third Edition	46 CFR 153.933(a)
ACGIH	1998	American Conference of Governmental Industrial Hygienists	Industrial Ventilation Manual	40 CFR 63.2984(e)
ACI 318	1995	American Concrete Institute	Building Code Requirements for Reinforced Concrete	30 CFR 250.901(d)(1)
ACI	1980	American Concrete Institute	Manual of Concrete Practice, Part 1	24 CFR 200, Subpart S
ACRI 210-240	2003	Air Conditioning and Refrigeration Institute	Unitary Air-Conditioning and Air-Source Heat Pump Equipment	10 CFR 431.96
ACRI 310/380	2004	Air-Conditioning, Heating and Refrigeration Institute	Packaged Terminal Air-Conditioners and Heat Pumps	10 CFR 431.96, Table 1
ACRI 320	1998	Air-Conditioning, Heating, and Refrigeration Institute	Water Source Heat Pumps	10 CFR 434.403
ACRI 325	1998	Air-Conditioning, Heating, and Refrigeration Institute	Ground Water-Source Heat Pumps	10 CFR 434.403
ACRI 330	1998	Air-Conditioning, Heating, and Refrigeration Institute	Ground-Source Closed-Loop Heat Pumps	10 CFR 434.403
ACRI 340-360	2004	Air Conditioning and Refrigeration Institute	Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment	10 CFR 434.403

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ACRI 365	1994	Air Conditioning and Refrigeration Institute	Commercial and Industrial Unitary Air-Conditioning Condensing Units	10 CFR 434.403
ACRI 1200	2006	Air Conditioning and Refrigeration Institute	Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets	10 CFR 431.66(a)(3)
AERA	1999	American Educational Research Association	Standard for Educational and Psychological Testing	34 CFR 668.148(a)(2)(iv)
AFFPA	2001	American Forest and Paper Association	National Design Specification for Wood Construction With Supplemental Design Values for Wood Construction	24 CFR 3280.304(b)(1)
AGA 3.1	1990	American Gas Association	Orifice Metering of Natural Gas and Other Related Hydrocarbon Fluids: Part 1	40 CFR 75, Appendix D
AGA	2001	American Gas Association	Purging Principles and Practices	49 CFR 193.2615
AHA A135.4	1995	American Hardboard Association	Basic Hardboard	24 CFR 3280.304(b)(1)
AHA A135.5	1995	American Hardboard Association	Prefinished Hardboard Paneling	24 CFR 3280.304(b)(1)
AHA A135.6	1998	American Hardboard Association	Hardboard Siding	24 CFR 3280.304(b)(1)
AHAM DW-1	1992	Association of Home Appliance Manufacturers	Household Electric Dishwashers	10 CFR 430 Subpart B
AHAM HLD-1	1974	Association of Home Appliance Manufacturers	Performance Evaluation Procedure for Household Tumble Type Clothes Dryers	10 CFR 430 Subpart B
AHAM HRF-1	1979	Association of Home Appliance Manufacturers	Household Refrigerators, Combination Refrigerator-Freezers, and Household Freezers	10 CFR 430 Subpart B
AHPA	1992	American Herbal Products Association	Herbs of Commerce	21 CFR 101.4(h)
AI MSI-1	1970	Asphalt Institute	Thickness Design--Full Depth Asphalt Pavement Structures for Highways and Streets	24 CFR 200, Subpart S

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AIHA	1994	American Industrial Hygiene Association	Laboratory Ventilation Workbook	42 CFR 52b.12(c)(10)
AiMM MS41	1996	Association for Information and Image Management	Dimensions of Unitized Microfilm Carriers and Apertures (Aperture, Camera, Copy and Image Cards)	36 CFR 1238.10(a)(1)
AiMM IT2.18	1996	Association for Information and Image Management	Photography—Density Measurements—Part 3: Spectral Conditions	36 CFR 1238.14(d)(2)
AiMM/PIMA IT9.2	1998	Association for Information and Image Management	Photographic Processed Films, Plates, and Papers—Filing Enclosures and Storage Containers	36 CFR 1238.10(a)(1)
AiMM/PIMA IT9.11	1998	Association for Information and Image Management	Imaging Materials—Processed Safety Photographic Film—Storage	36 CFR 1234.14(b)(1)
AiMM IT9.23	1996	Association for Information and Image Management	Imaging Materials—Polyester Based Magnetic Tape—Storage	36 CFR 1234.14(b)(2)
AiMM/PIMA IT9.25	1998	Association for Information and Image Management	Imaging Materials—Optical Disc Media—Storage	36 CFR 1234.14(b)(3)
AiMM MS1	1996	Association for Information and Image Management	Recommended Practice for Alphanumeric Computer-Output Microforms—Operational Practices for Inspection and Quality Control	36 CFR 1238.14(c)
AiMM MS5	1992	Association for Information and Image Management	Microfiche	36 CFR 1238.10(b)
AiMM MS14	1996	Association for Information and Image Management	Specifications for 16mm and 35mm Roll Microfilm	36 CFR 1238.10(a)(1)
AiMM MS19	1993	Association for Information and Image Management	Standard Recommended Practice—Identification of Microforms	36 CFR 1238.12(c)
AiMM MS23	1998	Association for Information and Image Management	Standard Recommended Practice—Production, Inspection, and Quality Assurance of First-Generation, Silver Microforms of Documents	36 CFR 1238.14(d)(2)

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AIMM MS32	1996	Association for Information and Image Management	Microrecording of Engineering Source Documents on 35 mm Microfilm	36 CFR 1238.10(a)(1)
AIMM MS43	1998	Association for Information and Image Management	Standard Recommended Practice—Operational Procedures—Inspection and Quality Control of Microfilms and Documents	36 CFR 1238.14(d)(1)(i)
AIMM MS45	1990	Association for Information and Image Management	Recommended Practice for Inspection of Stored Silver-Gelatin Microforms for Evidence of Deterioration	36 CFR 1238.22(d)(1)
AIMM TR34	1996	Association for Information and Image Management	Sampling Procedures for Inspection by Attributes of Images in Electronic Image Management and Micrographic Systems	36 CFR 1237.28(d)(2)
ALCIDE 980342EA	1995	Alcide Corporation	Determination of Sodium Chlorite: 50 ppm to 1500 ppm concentration	21 CFR 173.325(g)
AMCA 210	1999	Air Movement and Control Association	Laboratory Methods of Testing Fans for Ratings	10 CFR 430 Subpart B, App. M
J-STD-102	2011	Alliance for Telecommunications Industry Solutions	Joint ATIS/TIA CMAS Federal Alert Gateway to CMSP Gateway Interface Text Specification	Warning, Alert and Response Network (WARN) Act of 2006
TELCO FAQ	1891	American Telephone and Telegraph	Practical Information for Telephonists	
ANSI A10.3	1970	American National Standards Institute	Safety Requirements for Powder Actuated Fastening Systems	29 CFR 1926
ANSI A10.4 (pdf) ANSI A10.4 (html)	1963	American National Standards Institute	Safety Requirements for Workmens Hoists	29 CFR 1926
ANSI A10.5 (pdf) ANSI A10.5 (html)	1969	American National Standards Institute	Safety Requirements for Material Joists	29 CFR 1926
ANSI A14.1 (pdf) ANSI A14.1 (html) ANSI A14.1 (svg)	1990	American National Standards Institute	Ladders—Wood—Safety Requirements	29 CFR 1917

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ANSI A14.2 (pdf) ANSI A14.2 (html) ANSI A14.2 (svg)	1990	American National Standards Institute	Ladders—Portable Metal—Safety	29 CFR 1917
ANSI A92.2 (pdf) ANSI A92.2 (html)	1969	American National Standards Institute	Vehicle Mounted Elevating and Rotating Work Platforms	29 CFR 453
ANSI B7.1 (pdf) ANSI B7.1 (html)	1970	American National Standards Institute	Safety Code for the Use, Care, and Protection of Abrasive Wheels	29 CFR 1926
ANSI B20.1 (pdf) ANSI B20.1 (html) ANSI B20.1 (svg)	1957	American National Standards Institute	Safety Code for Conveyors, Cableways, and Related Equipment	29 CFR 1926
ANSI B30.6 (pdf) ANSI B30.6 (html) ANSI B30.6 (svg)	1969	American National Standards Institute	Safety Code for Demicks	29 CFR 1926
ANSI B36.19	1979	American National Standards Institute	Welded and Seamless Wrought Steel Pipe	24 CFR 3280.705(b)(1)
ANSI B56.1 (pdf) ANSI B56.1 (html) ANSI B56.1 (svg)	1969	American National Standards Institute	Safety Standard for Powered Industrial Trucks	29 CFR 1926
ANSI N14.1	2001	American National Standards Institute	Packaging of Uranium Hexafluoride for Transport	49 CFR 173.420(a)(1)
ANSI O1.1 (pdf) ANSI O1.1 (html)	1961	American National Standards Institute	Safety Code for Woodworking Machinery	29 CFR 1926
ANSI S1.4	1983	American National Standards Institute	Specifications for Sound Level Meters	7 CFR 1755.522(s)(3)(v)
ANSI S1.11	2004	American National Standards Institute	Specification for Octave, Half-Octave, and Third Octave Band Filter Sets	49 CFR 227
ANSI S1.25	1991	American National Standards Institute	Specification for Personal Noise Dosimeters	49 CFR 227.103(c)(2)(iii)
ANSI S1.40	1984	American National Standards Institute	Specification for Acoustical Calibrators	49 CFR 229, Appendix I
ANSI S1.43	1997	American National Standards Institute	Specifications for Integrating-Averaging Sound Level Meters	49 CFR 227.103(c)(2)(ii)
ANSI S3.22 (pdf) ANSI S3.22 (html)	2003	American National Standards Institute	Specification of Hearing Aid Characteristics	21 CFR 801
ANSI Z35.1 (pdf)	1968	American National	Specifications for	29 CFR 1926

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ANSI Z35.1 (html) ANSI Z35.1 (svg)		Standards Institute	Accident Prevention Signs	
ANSI Z35.2 (pdf) ANSI Z35.2 (html) ANSI Z35.2 (svg)	1968	American National Standards Institute	Specifications for Accident Prevention Tags	29 CFR 1926
ANSI Z49.1 (pdf) ANSI Z49.1 (html)	1967	American National Standards Institute	Safety in Welding and Cutting	29 CFR 1926
ANSI Z87.1 (pdf) ANSI Z87.1 (html) ANSI Z87.1 (svg)	2003	American National Standards Institute	Practice for Occupational and Educational Eye and Face Protection	29 CFR 1910
ANSI Z88.2 (pdf) ANSI Z88.2 (html) ANSI Z88.2 (svg)	1992	American National Standards Institute	American National Standard for Respiratory Protection	30 CFR 250
ANSI Z89.1 (pdf) ANSI Z89.1 (html)	1969	American National Standards Institute	Safety Requirements for Industrial Head Protection	29 CFR 1926
ANSI Z89.2 (pdf) ANSI Z89.2 (html)	1971	American National Standards Institute	Industrial Protective Helmets for Electrical Workers	29 CFR 1926
ANSI Z90.4 (pdf) ANSI Z90.4 (html)	1984	American National Standards Institute	Protective Headgear for Bicyclists	16 CFR 1203
ANSI Z245.1 (pdf) ANSI Z245.1 (html) ANSI Z245.1 (svg)	1992	American National Standards Institute	Mobile Refuse Collection and Compaction--Safety Requirements	40 CFR 243
ANSI Z245.2 (pdf) ANSI Z245.2 (html)	1997	American National Standards Institute	Stationary Compactors--Safety Requirements	40 CFR 243
AOAC	1990	AOAC International	Official Methods of Analysis (Volume 1)	9 CFR 318.19(b)
AOAC	1980	AOAC International	Official Methods of Analysis, 1980	21 CFR 131.150(c)
APA 87-1	2001	American Pyrotechnics Association	Standard for Construction and Approval for Transportation of Fireworks and Novelties	49 CFR 173.56(j)(1)
APHA Method 2120 (pdf) APHA Method 2120 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 2130 (pdf) APHA Method 2130 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method	1992	American Public Health	Standard Methods for	40 CFR 136.3(a)

Public Safety Standards of the United States

2320 (pdf) APHA Method 2320 (html)		Association	the Examination of Water and Wastewater	
APHA Method 2510 (pdf) APHA Method 2510 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 2550 (pdf) APHA Method 2550 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 2580	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 3111 (pdf) APHA Method 3111 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3112 (pdf) APHA Method 3112 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3113 (pdf) APHA Method 3113 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3114	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3120	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3500-AS	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3500-CA (pdf) APHA Method 3500-CA (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 3500-CD (pdf) APHA Method 3500-CD (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3500-CR	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 63.404(a)
APHA Method 3500-CU	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method	1992	American Public Health	Standard Methods for	40 CFR 136.3(a)

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3500-MG (pdf) APHA Method 3500-MG (html)		Association	the Examination of Water and Wastewater	
APHA Method 3500-PB (pdf) APHA Method 3500-PB (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3500-ZN (pdf) APHA Method 3500-ZN (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4110 (pdf) APHA Method 4110 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-CIO2 (pdf) APHA Method 4500-CIO2 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	21 CFR 165.110(b)(4)(iii) (l)(7)(ii)
APHA Method 4500-CL	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	21 CFR 165.110(b)(4)
APHA Method 4500-CN	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-F	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-H	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 4500-NO2	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-NO3	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-O3	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-P	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-S2	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-SI	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121

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APHA Method 4500-SO42	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 5540	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 6651	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 9215	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 9221	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 9222	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 9223	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
API 2INT-MET	2007	American Petroleum Institute	Interim Guidance on Hurricane Conditions in the Gulf of Mexico	30 CFR 250.901(a)(6)
API 5L	2004	American Petroleum Institute	Specification for Line Pipe	49 CFR 192.113
API 5L1	2002	American Petroleum Institute	Recommended Practice for Railroad Transportation of Line Pipe	49 CFR 192.65(a)
API 6A	2004	American Petroleum Institute	Specification for Wellhead and Christmas Tree Equipment	30 CFR 250.806(a)(3)
API 6D	2008	American Petroleum Institute	Specification for Pipeline Valves	49 CFR 195.116(d)
API 12F	1994	American Petroleum Institute	Specification for Shop Welded Tanks for Storage of Production Liquids	49 CFR 195.264(b)(1)
API RP 14C	2001	American Petroleum Institute	Recommended Practice for Analysis, Design, Installation, and Testing of Basic Surface Safety Systems for Offshore Production Platforms	30 CFR 250.1628(c)
API RP 14F	2008	American Petroleum Institute	Recommended Practice for Design and Installation of Electrical	30 CFR 250.114(c)

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			Systems for Offshore Production Platforms	
API 17J	2008	American Petroleum Institute	Specification for Unbonded Flexible Pipe	30 CFR 250.1002(b)(4)
API 80	2000	American Petroleum Institute	Guidelines for the Definition of Onshore Gas Gathering Lines	49 CFR 192.8(a)
API 510	2006	American Petroleum Institute	Pressure Vessel Inspection Code	30 CFR 250.803(b)(1)
API 620	2002	American Petroleum Institute	Design and Construction of Large Welded Low Pressure Storage Tanks	49 CFR 195.264(e)(3)
API 650	2007	American Petroleum Institute	Welded Steel Tanks for Oil Storage	195.132(b)(3)
API 651	1997	American Petroleum Institute	Cathodic Protection of Aboveground Petroleum Storage Tanks	49 CFR 195.565
API 652	1997	American Petroleum Institute	Lining of Aboveground Petroleum Storage Tank Bottoms	49 CFR 195.579(d)
API 653	2003	American Petroleum Institute	Tank Inspection, Repair, Alteration, and Reconstruction	49 CFR 195.432(b)
API 1104	1999	American Petroleum Institute	Standard for Welding Pipelines and Related Facilities	49 CFR 195.214(a)
API 1130	2002	American Petroleum Institute	Computational Pipeline Monitoring	49 CFR 195.444
API 1162	2003	American Petroleum Institute	Public Awareness Programs for Pipeline Operators	49 CFR 192.616(a)
API 2000	1998	American Petroleum Institute	Venting Atmospheric and Low-Pressure Storage Tanks	49 CFR 195.264(e)(2)
API 2003	1998	American Petroleum Institute	Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents	49 CFR 195.405(a)
API 2350	2005	American Petroleum Institute	Overfill Protection for Storage Tanks in Petroleum Facilities	49 CFR 195.428(c)
API 2510	2001	American Petroleum Institute	Design and Construction of LPG Installations	49 CFR 195.205(b)(3)
API RP 14G	2007	American Petroleum	Recommended	30 CFR 250.803(b)(9)(v)

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		Institute	Practice for Fire Prevention and Control on Open Type Offshore Production Platforms	
AFLIC	1996	Avian Power Line Interaction Committee	Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996	7 CFR 1724.52(a)(1)(i)
APSP 16	2011	Association of Pool and Spa Professionals	Standard Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs	16 CFR 1450.3
ARMA	1984	Asphalt Roofing Manufacturers Association	Residential Asphalt Roofing Manual	24 CFR 200, Subpart S
ASHRAE 15	1994	American Society of Heating, Refrigerating and Air Conditioning Engineers	Safety Code for Mechanical Refrigeration	49 CFR 173.306(e)(1)(i)
ASHRAE	1993	American Society of Heating, Refrigerating and Air Conditioning Engineers	Fundamentals	10 CFR 434.402.2.2.5(a)
ASME B16.9	2003	American Society of Mechanical Engineers	Factory Made Wrought Steel Buttwelding Fittings	49 CFR 195.118(a)
ASME B30.2 (pdf) ASME B30.2 (html) ASME B30.2 (svg)	2005	American Society of Mechanical Engineers	Safety Requirements for Overhead and Gantry Cranes	29 CFR 1926
ASME B30.5 (pdf) ASME B30.5 (html)	2004	American Society of Mechanical Engineers	Safety Requirements for Mobile and Locomotive Cranes	29 CFR 1926
ASME B30.7 (pdf) ASME B30.7 (html)	2001	American Society of Mechanical Engineers	Safety Requirements for Base-Mounted Drum Hoists	29 CFR 1926
ASME B30.14 (pdf) ASME B30.14 (html) ASME B30.14 (svg)	2004	American Society of Mechanical Engineers	Safety Requirements for Side Boom Tractors	29 CFR 1926
ASME B31.4	2002	American Society of Mechanical Engineers	Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids	49 CFR 195.110(a)

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ASME B31.8	2003	American Society of Mechanical Engineers	Gas Transmission and Distribution Piping Systems	49 CFR 192.619(a)(1)(i)
ASME B318S	2004	American Society of Mechanical Engineers	Managing System Integrity of Gas Pipelines	49 CFR 192.903(c)
ASME B31G	1991	American Society of Mechanical Engineers	Manual for Determining the Remaining Strength of Corroded Pipelines	49 CFR 192.485(c)
ASME UPV	1943	American Society of Mechanical Engineers	Code for Unfired Pressure Vessels	49 CFR 173.32(c)(4)
ASQC Q9001	1994	American Society for Quality Control	Quality Assurance in Design, Development, Production, Installation, and Servicing	33 CFR 96.430(a)(2)(ii)
ASQC Q9002	1994	American Society for Quality Control	Quality Systems – Model for Quality Assurance in Production, Installation, and Servicing	24 CFR 200.935(d)(4)(ii)(A)(3)
ASQC Q9003	1994	American Society for Quality Control	Quality Systems - Model for Quality Assurance in Final Inspection and Test	24 CFR 200.935(d)(4)(ii)(A)(4)
ASQC Q9004-1	1994	American Society for Quality Control	Quality Management and Quality Systems Elements-Guidelines	24 CFR 200.935(d)(4)(ii)(A)(5)
ASSE 1001	1990	American Society of Sanitary Engineering	Performance Requirements for Pipe Applied Atmospheric Type Vacuum Breakers	24 CFR 3280.604(b)(2)
ASSE 1006 (pdf) ASSE 1006 (html)	1986	American Society of Sanitary Engineering	Plumbing Requirements for Residential Use (Household) Dishwashers	24 CFR 3280.604(b)(2)
ASSE 1007 (pdf) ASSE 1007 (html)	1986	American Society of Sanitary Engineering	Performance Requirements for Home Laundry Equipment	24 CFR 3280.604(b)(2)
ASSE 1008 (pdf) ASSE 1008 (html)	1986	American Society of Sanitary Engineering	Performance Requirements for Household Food Waste Disposer Units	24 CFR 3280.604(b)(2)
ASSE 1016	1988	American Society of Sanitary Engineering	Performance Requirements for Individual Thermostatic	24 CFR 3280.604(b)(2)

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ASSE 1023 (pdf) ASSE 1023 (html)	1979	American Society of Sanitary Engineering	Pressure Balancing and Combination Control for Bathing Facilities Hot Water Dispensers, Household Storage Type, Electrical	24 CFR 3280.604(b)(2)
ASSE 1025	1978	American Society of Sanitary Engineering	Diverter for Plumbing Faucets with Hose Spray, Anti-Siphon Type, Residential Applications	24 CFR 3280.604(b)(2)
ASSE 1037 (pdf) ASSE 1037 (html)	1990	American Society of Sanitary Engineering	Performance Requirements for Pressurized Flushing Devices (Flushometers) for Plumbing Fixtures	24 CFR 3280.604(b)(2)
ASCE 7	2002	American Society of Civil Engineers	Minimum Design Loads for Buildings and Other Structures	49 CFR 193.2013
ASTM A36	1977	American Society for Testing and Materials	Standard Specification for Carbon Structural Steel	24 CFR Part 200
ASTM A36	1997	American Society for Testing and Materials	Standard Specification for Carbon Structural Steel	46 CFR 160.035-3(b)(2)
ASTM A47	1968	American Society for Testing and Materials	Standard Specification for Malleable Iron Castings	29 CFR 1910.111(b)(7) (vi)
ASTM A82	1979	American Society for Testing and Materials	Cold-Drawn Steel Wire for Concrete Reinforcement	24 CFR 200, Subpart S
ASTM A100	1969	American Society for Testing and Materials	Standard Specification for Ferrosilicon	40 CFR 60.261(s)
ASTM A106	2004	American Society for Testing and Materials	Standard Specification for Seamless Carbon Steel Pipe for High- Temperature Service	49 CFR 192.113
ASTM A134	1996	American Society for Testing and Materials	Standard Specification for Pipe, Steel, Electric Fusion (Arc)-Welded (Sizes NPS 16 and Over)	46 CFR 56.60-1(b)
ASTM A179	1990	American Society for Testing and Materials	Standard Specification for Seamless Cold- Drawn Low-Carbon Steel Heat-Exchanger and Condenser Tubes	46 CFR 56.60-1(b)
ASTM A184	1979	American Society for	Standard Specification	24 CFR 200, Subpart S

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		Testing and Materials	for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement	
ASTM A185	1979	American Society for Testing and Materials	Steel Wire Fabric for Concrete Reinforcement	24 CFR 200, Subpart S
ASTM A203	1997	American Society for Testing and Materials	Standard Specification for Pressure Vessel Plates, Alloy Steel, Nickel	46 CFR 54.05-20(b)
ASTM A214	1996	American Society for Testing and Materials	Standard Specification for Electric-Resistance-Welded Carbon Steel Heat-Exchanger and Condenser Tubes	46 CFR 56.60-1(b)
ASTM A242	1979	American Society for Testing and Materials	Standard Specification for High-Strength Low-Alloy Structural Steel	24 CFR 200, Subpart S
ASTM A285	1978	American Society for Testing and Materials	Standard Specification for Pressure Vessel Plates, Carbon Steel, Low- and Intermediate-Tensile Strength	49 CFR 179.300-7(a)
ASTM A307	1978	American Society for Testing and Materials	Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength	46 CFR 56.25-20(b)
ASTM A325	1979	American Society for Testing and Materials	High-Strength Bolts for Structural Steel Joists	24 CFR 200, Subpart S
ASTM A333	1994	American Society for Testing and Materials	Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service	46 CFR 56.50-105
ASTM A369	1992	American Society for Testing and Materials	Standard Specification for Carbon and Ferritic Alloy Steel Forged and Bored Pipe for High-Temperature Service	46 CFR 56.60-1(b)
ASTM A370	1977	American Society for Testing and Materials	Standard Test Method and Definitions for Mechanical Testing of Steel Products	49 CFR 179.102-1(a)(1)
ASTM A381	1996	American Society for Testing and Materials	Standard Specification for Metal-Arc-Welded Steel Pipe for Use with High-Pressure Transmission Systems	49 CFR 192.113
ASTM A391	1965	American Society for Testing and Materials	Standard Specification for Alloy Steel Chain	29 CFR 1910.184(e)(4)
ASTM A416	1974	American Society for	Uncoated Seven-Wire	24 CFR 200, Subpart S

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		Testing and Materials	Stress-Relieved Strand for Prestressed Concrete	
ASTM A441	1979	American Society for Testing and Materials	High-Strength Low-Alloy Structural Manganese Vanadium Steel	24 CFR 200, Subpart S
ASTM A449	1978	American Society for Testing and Materials	Quenched and Tempered Steel Bolts and Studs	24 CFR 200, Subpart S
ASTM A475	1978	American Society for Testing and Materials	Standard Specification for Zinc-Coated Steel Wire Strand	7 CFR 1755.370(b)
ASTM A483	1964	American Society for Testing and Materials	Standard Specification for Silicomanganese	40 CFR 60.261(o)
ASTM A490	1979	American Society for Testing and Materials	Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints	24 CFR 200, Subpart S
ASTM A496	1978	American Society for Testing and Materials	Deformed Steel Wire for Concrete Reinforcement	24 CFR 200, Subpart S
ASTM A497	1979	American Society for Testing and Materials	Welded Deformed Steel Wire, Fabric for Concrete Reinforcement	24 CFR 200, Subpart S
ASTM A500	1978	American Society for Testing and Materials	Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes	24 CFR 200, Subpart S
ASTM A501	1976	American Society for Testing and Materials	Hot-Formed Welded and Seamless Carbon Steel Structural Tubing	24 CFR 200, Subpart S
ASTM A502	1976	American Society for Testing and Materials	Steel Structural Rivets	24 CFR 200, Subpart S
ASTM A514	1977	American Society for Testing and Materials	High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding	24 CFR 200, Subpart S
ASTM A516	1990	American Society for Testing and Materials	Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate and Lower-Temperature Service	49 CFR 178.337-2(b)(2)(i)
ASTM A522	1995	American Society for Testing and Materials	Forged or Rolled 8 and 9% Nickel Alloy Steel Flanges, Fittings, Valves, and Parts for Low-Temperature	46 CFR 56.50-105

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			Service	
ASTM A529	1972	American Society for Testing and Materials	Structural Steel with 42,000PSI (290 Mpa) Minimum Yield Point (1/2 in (12.7 mm) Maximum Thickness	24 CFR 200, Subpart S
ASTM A529	1975	American Society for Testing and Materials	Structural Steel with 42,000PSI (290 Mpa) Minimum Yield Point (1/2 in (12.7 mm) Maximum Thickness	24 CFR 200, Subpart S
ASTM A539	1990	American Society for Testing and Materials	Standard Specification for Electric-Resistance-Welded Coiled Steel Tubing for Gas and Fuel Oil Lines	24 CFR 3280.705(b)(4)
ASTM A570	1979	American Society for Testing and Materials	Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality	24 CFR 200, Subpart S
ASTM A572	1979	American Society for Testing and Materials	High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality	24 CFR 200, Subpart S
ASTM A588	1979	American Society for Testing and Materials	High-Strength Low-Alloy Structural Steel with 50 ksi Minimum Yield Point to 4 inches Thick	24 CFR 200, Subpart S
ASTM A611	1972	American Society for Testing and Materials	Steel, Cold-rolled Sheet, Carbon, Structural	24 CFR 200, Subpart S
ASTM A615	1979	American Society for Testing and Materials	Deformed and Plain Billet-Steel Bars for Concrete Reinforcement	24 CFR 200, Subpart S
ASTM A616	1979	American Society for Testing and Materials	Rail-Steel Deformed and Plain Bars for Concrete Reinforcement	24 CFR 200, Subpart S
ASTM A617	1979	American Society for Testing and Materials	Axle-Steel Deformed and Plain Bars for Concrete Reinforcement	24 CFR 200, Subpart S
ASTM A618	1974	American Society for Testing and Materials	Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural Tubing	24 CFR 200, Subpart S
ASTM A633	1979	American Society for Testing and Materials	Standard Specification for Normalized High-Strength Low Alloy Structural Steel	49 CFR 178.338-2(a)

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ASTM A671	2004	American Society for Testing and Materials	Standard Specification for Electric-Fusion-Welded Steel Pipe for Atmospheric and Lower Temperatures	49 CFR 192.113
ASTM A672	1996	American Society for Testing and Materials	Standard Specification for Electric-Fusion-Welded Steel Pipe for High-Pressure Service at Moderate Temperatures	49 CFR 192.113
ASTM A691	1998	American Society for Testing and Materials	Standard Specification for Carbon and Alloy Steel Pipe, Electric-Fusion-Welded for High-Pressure Service at High Temperature	49 CFR 192.113
ASTM B16	1985	American Society for Testing and Materials	Standard Specification for Free-Cutting Brass Rod, Bar, and Shapes for Use in Screw Machines	46 CFR 56.60-2
ASTM B16	1992	American Society for Testing and Materials	Standard Specification for Free-Cutting Brass Rod, Bar, and Shapes for Use in Screw Machines	46 CFR 56.60-2
ASTM B21	1983	American Society for Testing and Materials	Standard Specification for Naval Brass Rod, Bar, and Shapes	46 CFR 56.60-2
ASTM B21	1996	American Society for Testing and Materials	Standard Specification for Naval Brass Rod, Bar, and Shapes	46 CFR 56.60-2
ASTM B42	1996	American Society for Testing and Materials	Standard Specification for Seamless Copper Pipe, Standard Sizes	46 CFR 56.60-1(b)
ASTM B68	1995	American Society for Testing and Materials	Standard Specification for Seamless Copper Tube, Bright Annealed	46 CFR 56.60-1(b)
ASTM B75	1997	American Society for Testing and Materials	Standard Specification for Seamless Copper Tube	46 CFR 56.60-1(b)
ASTM B85	1984	American Society for Testing and Materials	Standard Specification for Aluminum-Alloy Die Castings	46 CFR 56.60-2
ASTM B88	1996	American Society for Testing and Materials	Standard Specification for Seamless Copper Water Tube	46 CFR 56.60-1(b)
ASTM B96	1993	American Society for Testing and Materials	Standard Specification for Copper-Silicon Alloy	46 CFR 119.440

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ASTM B111	1995	American Society for Testing and Materials	Plate, Sheet, Strip, and Bolled Bar for General Purposes and Pressure Vessels Copper and Copper-Alloy Seamless Condenser Tubes and Ferrule Stock	46 CFR 56.60-1(b)
ASTM B117	1973	American Society for Testing and Materials	Standard Practice for Operating Salt Spray (Fog) Apparatus	49 CFR 571.209 S5.2(a)
ASTM B122	1995	American Society for Testing and Materials	Standard Specification for Copper-Nickel-Tin Alloy, Copper-Nickel-Zinc Alloy (Nickel Silver), and Copper-Nickel Alloy Plate, Sheet, Strip and Rolled Bar	46 CFR 119.440
ASTM B124	1996	American Society for Testing and Materials	Standard Specification for Copper and Copper-Alloy Forging Rod, Bar, and Shapes	46 CFR 56.60-2
ASTM B152	1997	American Society for Testing and Materials	Standard Specification for Copper, Sheet, Strip, Plate, and Rolled Bar	46 CFR 58.50-5(a)(4)
ASTM B193	1987	American Society for Testing and Materials	Standard Test Method for Resistivity of Electrical Conductor Materials	7 CFR 1755.390(i)(5)(v)(A)
ASTM B209	1996	American Society for Testing and Materials	Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate	46 CFR 58.50-5, Table 58.50-5(a)
ASTM B224	1980	American Society for Testing and Materials	Standard Classification of Coppers	7 CFR 1755.890(i)(5)(vi)
ASTM B227	1970	American Society for Testing and Materials	Hard-Drawn Copper-Clad Steel Wire	24 CFR 200, Subpart S
ASTM B280	1997	American Society for Testing and Materials	Seamless Copper Tube for Air Conditioning and Refrigeration Field Service	46 CFR 56.60-1(b)
ASTM B283	1996	American Society for Testing and Materials	Standard Specification for Copper and Copper-Alloy Die Forgings (Hot-Pressed)	46 CFR 56.60-2
ASTM B315	1993	American Society for Testing and Materials	Seamless Copper Alloy Pipe Tube	46 CFR 56.60-1(b)
ASTM B557	1984	American Society for Testing and Materials	Tension Testing Wrought and Cast	49 CFR 178.46(i)(3)(i)

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ASTM B580	1979	American Society for Testing and Materials	Aluminum and Magnesium-Alloy Products Standard Specification for Anodized Oxide Coatings on Aluminum	49 CFR 171.7
ASTM B694	1986	American Society for Testing and Materials	Standard Specification for Copper, Copper Alloy, and Copper-Clad Stainless Steel Sheet and Strip for Electrical Cable Shielding	7 CFR 1755.390(i)(5)(v)
ASTM B858	1995	American Society for Testing and Materials	Standard Test Method for Determination of Susceptibility to Stress Corrosion Cracking in Copper Alloys Using Ammonia Vapor Test	46 CFR 56.60-2
ASTM C4	1962	American Society for Testing and Materials	Standard Specification for Clay Drain Tile and Perforated Clay Drain Tile	24 CFR 200, Subpart S
ASTM C5	1979	American Society for Testing and Materials	Standard Specification for Quicklime for Structural Purposes	24 CFR 200, Subpart S
ASTM C32	1973	American Society for Testing and Materials	Standard Specification for Sewer and Manhole Brick	24 CFR 200, Subpart S
ASTM C34	1962	American Society for Testing and Materials	Standard Specification for Structural Clay Load-Bearing Wall Tile	24 CFR 200, Subpart S
ASTM C52	1954	American Society for Testing and Materials	Specification for Gypsum Partition Tile or Block	24 CFR 200, Subpart S
ASTM C56	1971	American Society for Testing and Materials	Standard Specification for Structural Clay Nonloadbearing Tile	24 CFR 200, Subpart S
ASTM C64	1972	American Society for Testing and Materials	Specification for Fireclay Brick Refractories for Heavy Duty Stationary Boiler Service	24 CFR 200, Subpart S
ASTM C90	1970	American Society for Testing and Materials	Standard Specification for Hollow Load-Bearing Concrete Masonry Units	49 CFR 223 Appendix A (b)(10)(ii)
ASTM C126	1971	American Society for Testing and Materials	Standard Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units	24 CFR 200, Subpart S

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ASTM C139	1973	American Society for Testing and Materials	Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes	24 CFR 200, Subpart S
ASTM C150	1917	American Society for Testing and Materials	Standard Specification for Portland Cement	49 CFR 571.108
ASTM C150	1999	American Society for Testing and Materials	Standard Specification for Portland Cement	30 CFR 250.198
ASTM C150	2007	American Society for Testing and Materials	Standard Specification for Portland Cement	30 CFR 250.901(d)(9)
ASTM C177	1997	American Society for Testing and Materials	Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot-Plate Apparatus	10 CFR 431.102
ASTM C177 (pdf) ASTM C177 (html)	2004	American Society for Testing and Materials	Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot-Plate Apparatus	16 CFR 460.5(a)
ASTM C236	1989	American Society for Testing and Materials	Standard Test Method for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box	10 CFR 434.402.1.2.1(a)
ASTM C330	1999	American Society for Testing and Materials	Standard Specification for Lightweight Aggregates for Structural Concrete	30 CFR 250.901(a)(18)
ASTM C476	1971	American Society for Testing and Materials	Standard Specification for Grout for Masonry	24 CFR 200, Subpart S
ASTM C509	1984	American Society for Testing and Materials	Standard Specification for Elastomeric Cellular Prefomed Gasket and Sealing Material	24 CFR 200, Subpart S
ASTM C516	1980	American Society for Testing and Materials	Standard Specification for Vermiculite Loose Fill Thermal Insulation	24 CFR 200, Subpart S
ASTM C518	1991	American Society for Testing and Materials	Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission	46 CFR 160.174-17(f)

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ASTM C518	2004	American Society for Testing and Materials	Properties by Means of the Heat Flow Meter Apparatus Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus	16 CFR 460.5(a)
ASTM C549	1981	American Society for Testing and Materials	Standard Specification for Perlite Loose Fill Insulation	10 CFR 440 Appendix A
ASTM C564	1970	American Society for Testing and Materials	Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings	24 CFR 3280.611(d)(5)(iv)
ASTM C720	1989	American Society for Testing and Materials	Spray Applied Fibrous Insulation for Elevated Temperature	10 CFR 440 Appendix A
ASTM C1045	2001	American Society for Testing and Materials	Standard Practice for Calculating Thermal Transmission Properties from Steady-State Heat Flux Measurements	16 CFR 460.5(a)
ASTM C1114	2000	American Society for Testing and Materials	Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Thin-Heater Apparatus	16 CFR 460.5(a)
ASTM C1149	2002	American Society for Testing and Materials	Standard Specification for Self-Supported Spray Applied Cellulosic Thermal Insulation	16 CFR 460.5(a)(4)
ASTM C1224	2003	American Society for Testing and Materials	Standard Specification for Reflective Insulation for Building Applications	16 CFR 460.5(c)
ASTM C1371	2004	American Society for Testing and Materials	Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emisometers	16 CFR 460.5(b)
ASTM C1374	2003	American Society for Testing and Materials	Standard Test Method for Determination of	16 CFR 460.5(a)(5)

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			Installed Thickness of Pneumatically Applied Loose-Fill Building Insulation	
ASTM D56	1970	American Society for Testing and Materials	Standard Test Method for Flash Point by Tag Closed Cup Tester	29 CFR 1910.106(a)(14)(i)
ASTM D86	2001	American Society for Testing and Materials	Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure	40 CFR 94.108(a)(1) Table B-5
ASTM D86	2004	American Society for Testing and Materials	Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure	40 CFR 1065.710
ASTM D86 (pdf) ASTM D86 (html)	2007	American Society for Testing and Materials	Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure	40 CFR 1065.710
ASTM D88	1956	American Society for Testing and Materials	Standard Test Method for Saybolt Viscosity	29 CFR 1910.106(a)(37)
ASTM D93	2002	American Society for Testing and Materials	Standard Test Method for Flash Point by Pensky-Martens Closed Cup Tester	40 CFR 94.108(a)(1) Table B-5
ASTM D129	1964	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)	40 CFR 60.106(j)(2)
ASTM D129	1995	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)	40 CFR 60.106(j)(2)
ASTM D129 (pdf) ASTM D129 (html)	2000	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)	40 CFR 60.335(b)(10)(i)
ASTM D257	1991	American Society for Testing and Materials	Standard Test Method for DC Resistance of Conductance of Insulating Materials	7 CFR 1755.860(e)(5)
ASTM D287	1992	American Society for Testing and Materials	Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method)	40 CFR 94.108(a)(1) Table B-5
ASTM D323	1958	American Society for Testing and Materials	Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method)	29 CFR 1910.106(a)(30)

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ASTM D388	1998	American Society for Testing and Materials	Standard Classification of Coals by Rank	40 CFR 60.251(b)
ASTM D396	1998	American Society for Testing and Materials	Standard Specification for Fuel Oils	40 CFR 60.41b
ASTM D396 (pdf) ASTM D396 (html)	2002	American Society for Testing and Materials	Standard Specification for Fuel Oils	40 CFR 63.7575
ASTM D412	1968	American Society for Testing and Materials	Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension	21 CFR 801.410(d)(2)
ASTM D413	1982	American Society for Testing and Materials	Standard Test Method for Rubber Property—Adhesion to Flexible Substrate	46 CFR 160.055-3 Table 160-055-3(j)
ASTM D445	1965	American Society for Testing and Materials	Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids	29 CFR 1910.106(a)(37)
ASTM D445	1972	American Society for Testing and Materials	Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids	21 CFR 177.1430(c)(2)
ASTM D512	1989	American Society for Testing and Materials	Standard Test Methods for Chloride Ion In Water	40 CFR 136.3(a)
ASTM D611	1982	American Society for Testing and Materials	Standard Test Method for Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents	21 CFR 177.1520(b)
ASTM D660	1944	American Society for Testing and Materials	Evaluating Degree of Resistant to Checking of Exterior Paints	24 CFR 200, Subpart S
ASTM D665	1998	American Society for Testing and Materials	Standard Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water	46 CFR 61.20-17(a)
ASTM D750	1968	American Society for Testing and Materials	Recommended Practice for Rubber Deterioration in Carbon-Arc or Weathering Apparatus	24 CFR 200, Subpart S
ASTM D756	1956	American Society for Testing and Materials	Standard Practice for Determination of Weight and Shape Changes of Plastics Under Accelerated Service Conditions	49 CFR 571.209 S5.2(b)

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ASTM D781	1968	American Society for Testing and Materials	Standard Test Methods for Puncture and Stiffness of Paperboard and Corrugated and Solid Fiberboard	24 CFR 3280.304(b)(1)
ASTM D785	1965	American Society for Testing and Materials	Standard Method of Test for Rockwell Hardness of Plastics and Electrical Insulating Materials	16 CFR 1201.4
ASTM D814	1995	American Society for Testing and Materials	Standard Test Method for Rubber Property— Vapor Transmission of Volatile Liquids	40 CFR 1051.245(e)(1)
ASTM D975	1998	American Society for Testing and Materials	Standard Specification for Diesel Fuel Oils	46 CFR 160.176-13(r)
ASTM D975 (pdf) ASTM D975 (html)	2007	American Society for Testing and Materials	Standard Specification for Diesel Fuel Oils	40 CFR 1065.701
ASTM D976	1991	American Society for Testing and Materials	Standard Test Method for Calculated Cetane Index of Distillate Fuels	40 CFR 92.113
ASTM D1056	1973	American Society for Testing and Materials	Standard Specification for Flexible Cellular Materials Sponge or Expanded Rubber	49 CFR 571.213
ASTM D1060	1965	American Society for Testing and Materials	Standard Method of Core Sampling of Raw Wool Packages for Determination of Percentage of Clean Wool Fiber Present	7 CFR 31.204
ASTM D1067	2002	American Society for Testing and Materials	Standard Test Method for Acidity or Alkalinity of Water	40 CFR 141.21
ASTM D1068	2003	American Society for Testing and Materials	Standard Test Methods for Iron in Water	40 CFR 136.3(a)
ASTM D1072	1990	American Society for Testing and Materials	Standard Test Method for Total Sulfur in Fuel Gases	40 CFR 60.335(b)(10)(ii)
ASTM D1081	1960	American Society for Testing and Materials	Test for Evaluating Rubber Property— Sealing Pressure	24 CFR 200, Subpart S
ASTM D1126 (pdf) ASTM D1126 (html) ASTM D1126 (svg)	2002	American Society for Testing and Materials	Standard Test Method for Hardness in Water	40 CFR 136

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ASTM D1193	1977	American Society for Testing and Materials	Standard Specification for Reagent Water	40 CFR 60, Appendix A-3
ASTM D1200	1970	American Society for Testing and Materials	Viscosity of Paints, Varnishes and Lacquers by Ford Viscosity Cup	49 CFR 171.8
ASTM D1217	1993	American Society for Testing and Materials	Standard Test Method for Density and Relative Density (Specific Gravity) of Liquids by Bingham Pycnometer	40 CFR 75, Appendix D
ASTM D1246	1995	American Society for Testing and Materials	Bromide - Titrimetric	40 CFR 136.3(a) Table IB
ASTM D1253	1986	American Society for Testing and Materials	Standard Test Method for Residual Chlorine in Water	21 CFR 165.110(b)(4)(iii)(1)(5)(i)
ASTM D1253 (pdf) ASTM D1253 (html)	2003	American Society for Testing and Materials	Standard Test Method for Residual Chlorine in Water	40 CFR 136.3(a) Table IB
ASTM D1266	1998	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Products (Lamp Method)	40 CFR 60.106(j)(2)
ASTM D1298	1999	American Society for Testing and Materials	Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products	40 CFR 75, Appendix D, Section 2.2.6
ASTM D1303	1955	American Society for Testing and Materials	Standard Method of Test for Total Chlorine in Vinyl Chloride Polymers and Copolymers	21 CFR 177.1610(a)
ASTM D1319 (pdf) ASTM D1319 (html)	2003	American Society for Testing and Materials	Standard Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption	40 CFR 80.2(z)
ASTM D1331	1989	American Society for Testing and Materials	Standard Test Methods for Surface and Interfacial Tension of Solutions of Surface Active Agents	40 CFR 63, Appendix A
ASTM D1335	1967	American Society for Testing and Materials	Standard Test Method for Tuft Bind of Pile Floor Coverings	24 CFR 200.945(a)(1)(ii)

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ASTM D1412	1993	American Society for Testing and Materials	Standard Test Method for Equilibrium Moisture of Coal at 96 to 97 Percent Relative Humidity and 30 Degrees Celsius	30 CFR 870.19
ASTM D1415	1968	American Society for Testing and Materials	Tentative Method of Test for International Hardness of Vulcanized Natural and Synthetic Rubbers	49 CFR 571.116 S7.4.1(b)
ASTM D1415	1988	American Society for Testing and Materials	Standard Practice for Rubber and Rubber Latices—Nomenclature	21 CFR 177.2600(c)(4)(i)
ASTM D1475	1960	American Society for Testing and Materials	Standard Test Method for Density of Paint, Varnish, Lacquer, and Related Products	40 CFR 60, Appendix A-7
ASTM D1480	1993	American Society for Testing and Materials	Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Bingham Pycnometer	40 CFR 75, Appendix D
ASTM D1481	1993	American Society for Testing and Materials	Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Lipkin Bicapillary Pycnometer	40 CFR 136.3(a) Table IC
ASTM D1505	1968	American Society for Testing and Materials	Standard Test Method for Density of Plastics by the Density-Gradient Technique	21 CFR 177.2480
ASTM D1518	1985	American Society for Testing and Materials	Standard Test Method for Thermal Transmittance of Textile Materials	46 CFR 160.174-17(f)
ASTM D1535	1968	American Society for Testing and Materials	Specifying Color by the Munsell System	16 CFR 1402
ASTM D1535	1968	American Society for Testing and Materials	Specifying Color by the Munsell System	16 CFR 1402.4(a)(1)(i)(E)(2)
ASTM D1535	1989	American Society for Testing and Materials	Specifying Color by the Munsell System	7 CFR 1755.860(c)(3)
ASTM D1552	1995	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Products (High-Temperature Method)	40 CFR 60, Appendix A-7
ASTM D1564	1971	American Society for	Standard Method of	40 CFR 136.3(a)

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		Testing and Materials	Testing Flexible Cellular Materials--Slab Urethane Foam	
ASTM D1687	1992	American Society for Testing and Materials	Standard Test Methods for Chromium in Water	40 CFR 444.12(b)(1)
ASTM D1688	1995	American Society for Testing and Materials	Standard Test Method for Copper in Water	40 CFR 141.23(k)(1)
ASTM D1692	1968	American Society for Testing and Materials	Test for Flammability of Plastic Sheet and Cellular Plastics	29 CFR 1910.103(c)(1)(v)(D)
ASTM D1785	1986	American Society for Testing and Materials	Standard Specification for Poly (Vinyl Chloride)(PVC) Plastic Pipe, Schedules 40, 80, and 120	46 CFR 56.01-2
ASTM D1835	1997	American Society for Testing and Materials	Standard Specification for Liquefied Petroleum (LP) Gases	49 CFR 180.209(e)
ASTM D1890	1996	American Society for Testing and Materials	Standard Test Method for Beta Particle Radioactivity of Water	40 CFR 136.3(a)
ASTM D1943	1996	American Society for Testing and Materials	Standard Test Method for Alpha Particle Radioactivity of Water	40 CFR 136.3(a)
ASTM D1945	1996	American Society for Testing and Materials	Standard Test Method for Analysis of Natural Gas By Gas Chromatography	40 CFR 60.45(f)(5)(i)
ASTM D1946	1990	American Society for Testing and Materials	Standard Method for Analysis of Reformed Gas by Gas Chromatography	40 CFR 60.614(e)(4)
ASTM D1962	1967	American Society for Testing and Materials	Standard Test Method for Saponification Value of Drying Oils, Fatty Acids, and Polymerized Fatty Acids	21 CFR 178.2010(b)
ASTM D2013	1986	American Society for Testing and Materials	Standard Method of Preparing Coal Samples for Analysis	40 CFR 60, Appendix A-7
ASTM D2015	1996	American Society for Testing and Materials	Standard Test Method for Gross Calorific Value of Solid Fuel by the Adiabatic Bomb Calorimeter	40 CFR 60.45(f)(5)(ii)
ASTM D2036	1998	American Society for Testing and Materials	Standard Test Method for Cyanides in Water	40 CFR 136.3(a) Table IB
ASTM D2099	2000	American Society for Testing and Materials	Standard Test Method for Dynamic Water	40 CFR 63.5350(b)

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ASTM D2156	1965	American Society for Testing and Materials	Resistance of Shoe Upper Maeser Water Penetration Tester Method of Tests for Smoke Density in Flue Gases from Distillate Fuels	10 CFR 430 Subpart B
ASTM D2161	1966	American Society for Testing and Materials	Standard Method of Conversion of Kinematic Viscosity to Saybolt Universal Viscosity or to Saybolt Furol Viscosity	29 CFR 1910.106(a)(37)
ASTM D2163	1991	American Society for Testing and Materials	Standard Test Method for Analysis of Liquefied Petroleum (LP) Gases and Propane Concentrates by Gas Chromatography	40 CFR 86.1313-94(f)(3)
ASTM D2216	1998	American Society for Testing and Materials	Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass	40 CFR 258.41(a)(4)(iii) (A)
ASTM D2234	1998	American Society for Testing and Materials	Standard Practice for Collection of a Gross Sample of Coal	40 CFR 60, Appendix A-7
ASTM D2236	1970	American Society for Testing and Materials	Standard Method of Test for Dynamic Mechanical Properties of Plastics by Means of a Torsional Pendulum	21 CFR 177.1810(c)(2)(i)
ASTM D2247	1968	American Society for Testing and Materials	Standard Practice for Testing Water Resistance of Coatings in 100 Percent Relative Humidity	24 CFR 200, Subpart S
ASTM D2267	1968	American Society for Testing and Materials	Standard Test Method for Aromatics in Light Naphthas and Aviation Gasoline by Gas Chromatography	40 CFR 61.67(h)(1)
ASTM D2460	1997	American Society for Testing and Materials	Standard Test Method for Alpha-Particle-Emitting Isotopes of Radium in Water	40 CFR 136.3(a) Table IE
ASTM D2502	1992	American Society for Testing and Materials	Standard Test Method for Estimation of Molecular Weight	40 CFR 75, Appendix G

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ASTM D2503	1992	American Society for Testing and Materials	(Relative Molecular Mass) of Petroleum Oils from Viscosity Measurements Standard Method of Test for Molecular Weight of Hydrocarbons by Thermoelectric Measurement of Vapor Pressure	40 CFR 98.254
ASTM D2505	1988	American Society for Testing and Materials	Standard Test Method for Ethylene, Other Hydrocarbons, and Carbon Dioxide in High-Purity Ethylene by Gas Chromatography	40 CFR 98.7
ASTM D2515	1966	American Society for Testing and Materials	Standard Specification for Kinematic Glass Viscosity	49 CFR 571.116 S6.3.2(a)
ASTM D2565	1970	American Society for Testing and Materials	Standard Practice for Operating Xenon Arc-Type Light-Exposure Apparatus With or Without Water for Exposure of Plastics	16 CFR 1201.4(b)(3)(ii)
ASTM D2597	1994	American Society for Testing and Materials	Standard Test Method for Analysis of Demethanized Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Gas Chromatography	40 CFR 60.335(b)(9)(i)
ASTM D2622	1998	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry	40 CFR 80.46(a)(1)
ASTM D2724	1987	American Society for Testing and Materials	Standard Test Method for Bonded, Fused, and Laminated Apparel Fabrics	49 CFR 238 Appendix B(a)(1)(ii)
ASTM D2777	1998	American Society for Testing and Materials	Standard Practice for Determination of Precision and Bias of Applicable Test Methods of Committee D-19 on Water	46 CFR 162.050-15(f)(1)
ASTM D2857	1970	American Society for	Standard Method of	21 CFR 177.2210(b)(3)

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		Testing and Materials	Test for Dilute Solution Viscosity of Polymers	
ASTM D2879	1997	American Society for Testing and Materials	Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope	40 CFR 60.116b(e)(3)(ii)
ASTM D2908	1974	American Society for Testing and Materials	Standard Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography	40 CFR 60.564(j)(1)
ASTM D2908	1991	American Society for Testing and Materials	Standard Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography	40 CFR 60.564(j)(1)
ASTM D2986	1995	American Society for Testing and Materials	Standard Method for Evaluation of Air, Assay Media by the Monodisperse DOP (Diocetyl Phthalate) Smoke Test	40 CFR 86.1310-2007(b)(7)(i)(A)
ASTM D3120	1996	American Society for Testing and Materials	Standard Test Method for Trace Quantities of Sulfur in Light Liquid Petroleum Hydrocarbons by Oxidative Microcoulometry	40 CFR 80.46(a)(3)(iii)
ASTM D3168	1973	American Society for Testing and Materials	Standard Recommended Practices for Qualitative Identification of Polymers in Emulsion Paints	21 CFR 200.946
ASTM D3173	1987	American Society for Testing and Materials	Standard Test Method for Moisture in the Analysis Sample of Coal and Coke	40 CFR 60, Appendix A-7
ASTM D3176	1989	American Society for Testing and Materials	Standard Practice for Ultimate Analysis of Coal and Coke	40 CFR 76.15(a)(1)
ASTM D3177	1989	American Society for Testing and Materials	Standard Test Method for Total Sulfur in the Analysis Sample of Coal and Coke	40 CFR 60, Appendix A-7

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ASTM D3178	1989	American Society for Testing and Materials	Standard Test Method for Carbon and Hydrogen in the Analysis Sample of Coal and Coke	40 CFR 60.45(f)(5)(i)
ASTM D3236	1988	American Society for Testing and Materials	Standard Test Method for Apparent Viscosity of Hot Metal Adhesives and Coating Materials	21 CFR 177.1520(b)
ASTM D3246	1996	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Gas by Oxidative Microcoulometry	40 CFR 60.335(b)(10)(ii)
ASTM D3286	1996	American Society for Testing and Materials	Standard Test Method for Gross Calorific Value of Coal and Coke by the Isoperibol Bomb Calorimeter	40 CFR 60.17
ASTM D3371	1995	American Society for Testing and Materials	Standard Test Method for Nitriles in Aqueous Solution by Gas-Liquid Chromatography	40 CFR 136.3(a) Table IF
ASTM D3454	1997	American Society for Testing and Materials	Standard Test Method for Radium-226 in Water	40 CFR 136.3(a) Table IE
ASTM D3559 (pdf) ASTM D3559 (html)	2003	American Society for Testing and Materials	Standard Test Methods for Lead in Water	40 CFR 136
ASTM D3588	1998	American Society for Testing and Materials	Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density (Specific Gravity) of Gaseous Fuels	40 CFR 75, Appendix F
ASTM D3695	1995	American Society for Testing and Materials	Standard Test Method for Volatile Alcohols in Water by Direct Aqueous-Injection Gas Chromatography	40 CFR 136.3(a) Table IF
ASTM D3697	1992	American Society for Testing and Materials	Standard Test Method for Antimony in Water	21 CFR 165.110(b)(4)(iii)(E)(1)(iv)
ASTM D4057	1995	American Society for Testing and Materials	Standard Practice for Manual Sampling of Petroleum and Petroleum Products	40 CFR 80.8(a)
ASTM D4084	1994	American Society for Testing and Materials	Standard Test Method for Analysis of Hydrogen Sulfide in Gaseous Fuels (Lead	40 CFR 60.334(h)(1)

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ASTM D4177	1995	American Society for Testing and Materials	Acetate Reaction Rate Method) Standard Practice for Automatic Sampling of Petroleum and Petroleum Products	40 CFR 80.330(b)(2)
ASTM D4239	1997	American Society for Testing and Materials	Standard Test Methods for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion Methods	40 CFR 60, Appendix A-7
ASTM D4268	1993	American Society for Testing and Materials	Standard Test Method for Testing Fiber Ropes	33 CFR 164.74(a)(3)(i)
ASTM D4294	1998	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectrometry	40 CFR 75, Appendix A, Section 2.1.1.1(c)
ASTM D4329	1999	American Society for Testing and Materials	Standard Practice for Fluorescent UV Exposure of Plastics	49 CFR 571.106
ASTM D4420	1994	American Society for Testing and Materials	Standard Test Method for Determination of Aromatics in Finished Gasoline by Gas Chromatography	40 CFR 61.67(h)(1)
ASTM D4442	1992	American Society for Testing and Materials	Standard Test Method for Direct Moisture Content Measurement of Wood and Wood-Based Materials	40 CFR 60, Appendix A-8
ASTM D4444	1992	American Society for Testing and Materials	Standard Test Method for Use and Calibration of Hand-Held Moisture Meters	40 CFR 60, Appendix A-8
ASTM D4763	1988	American Society for Testing and Materials	Standard Practice for Identification of Chemicals in Water by Fluorescence Spectroscopy	40 CFR 136.3(a) Table IF
ASTM D4809	1995	American Society for Testing and Materials	Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method)	40 CFR 61.245(e)(3)

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ASTM D4891 (pdf) ASTM D4891 (html)	1989	American Society for Testing and Materials	Standard Test Method for Heating Value of Gases in Natural Gas Range by Stolchiometric Combustion	40 CFR 75, Appendix F, Section 5.5.2
ASTM D4986	1998	American Society for Testing and Materials	Standard Test Method for Horizontal Buming Characteristics of Cellular Polymeric Materials	46 CFR 32.57-10(d)(7-a)
ASTM D5257	1997	American Society for Testing and Materials	Standard Test Method for Dissolved Hexavalent Chromium in Water by Ion Chromatography	40 CFR 136.3(a)
ASTM D5373	1993	American Society for Testing and Materials	Standard Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Laboratory Samples of Coal and Coke	40 CFR 75, Appendix G
ASTM D5392	1993	American Society for Testing and Materials	Standard Test Method for Isolation and Enumeration of Escherichia Coli in Water by the Two-Step Membrane Filter Procedure	40 CFR 136.3(a) Table IH
ASTM D5489	1996	American Society for Testing and Materials	Standard Guide for Care Symbols for Care Instructions on Textile Products	16 CFR 423.8(g)
ASTM D5673	1996	American Society for Testing and Materials	Standard Test Method for Elements in Water by Inductively Coupled Plasma	40 CFR 444.12(b)(1)
ASTM D5865	1998	American Society for Testing and Materials	Standard Test Method for Gross Calorific Value of Coal and Coke	40 CFR 60.45(f)(5)(ii)
ASTM D6216	1998	American Society for Testing and Materials	Standard Practice for Opacity Monitor Manufacturers to Certify Conformance with Design and Performance Specifications	40 CFR 60, Appendix B
ASTM D6228	1998	American Society for Testing and Materials	Standard Test Method for Determination of Sulfur Compounds in	40 CFR 60.334(h)(1)

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ASTM D6420	1999	American Society for Testing and Materials	Natural Gas and Gaseous Fuels by Gas Chromatography and Flame Photometric Detection Standard Test Method for Determination of Gaseous Organic Compounds by Direct Interface Gas Chromatography-Mass Spectrometry	40 CFR 63.5850(e)(4)
ASTM D6503	1999	American Society for Testing and Materials	Standard Test Method for Enterococci in Water Using Enterolert	40 CFR 136.3(a) Table IH
ASTM D6522	2000	American Society for Testing and Materials	Standard Test Method for Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas-Fired Reciprocating Engines, Combustion Turbines, Boilers, and Process Heaters Using Portable Analyzers	40 CFR 60.335(a)(2)
ASTM E11	1970	American Society for Testing and Materials	Standard Specification for Wire Cloth and Sieves for Testing Purposes	33 CFR 159.4
ASTM E11	1995	American Society for Testing and Materials	Standard Specification for Wire Cloth and Sieves for Testing Purposes	33 CFR 159.125
ASTM E23	1982	American Society for Testing and Materials	Standard Test Methods for Notched Bar Impact Testing of Metallic Materials	46 CFR 56.50-105(a)(1)(ii)
ASTM E23	1993	American Society for Testing and Materials	Standard Test Method for Notched Bar Impact Testing of Metallic Materials	46 CFR 56.50-105(a)(1)(ii)
ASTM E29	1967	American Society for Testing and Materials	Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications	40 CFR 86.609-98
ASTM E29	1990	American Society for Testing and Materials	Standard Practice for Using Significant Digits	40 CFR 86.000-28(a)(4)(iii)

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			in Test Data to Determine Conformance with Specifications	
ASTM E29 (pdf) ASTM E29 (html)	2002	American Society for Testing and Materials	Standard Specification for Diesel Fuel Oils	40 CFR 1065.701 Table 1
ASTM E72	1980	American Society for Testing and Materials	Standard Test Methods of Conducting Strength Tests of Panels for Building Construction	30 CFR 75.333(e)(1)(i)
ASTM E84 (pdf) ASTM E84 (html)	2001	American Society for Testing and Materials	Standard Test Method for Surface Burning Characteristics of Building Materials	24 CFR 3280.203(a)
ASTM E96	1995	American Society for Testing and Materials	Standard Test Methods for Water Vapor Transmission of Materials	24 CFR 3280.504(a)
ASTM E119 (pdf) ASTM E119 (html)	2000	American Society for Testing and Materials	Standard Test Methods for Fire Tests of Building Construction and Materials	49 CFR 238 Appendix B(a)(1)(v)
ASTM E145	1994	American Society for Testing and Materials	Standard Specification for Gravity-Convection and Forced-Ventilation Ovens	40 CFR 63.14
ASTM E145	1994	American Society for Testing and Materials	Standard Specification for Gravity-Convection and Forced-Ventilation Ovens	40 CFR 63.4581
ASTM E154	1968	American Society for Testing and Materials	Materials for Use as Vapor Barriers Under Concrete Slabs and as Ground Cover in Crawl Spaces	24 CFR 200, Subpart S
ASTM E163	1963	American Society for Testing and Materials	Methods for Fire Tests of Window Assemblies	24 CFR 200, Subpart S
ASTM E168	1967	American Society for Testing and Materials	Standard Practices for General Techniques of Infrared Quantitative Analysis	40 CFR 60.485(d)(1)
ASTM E168	1988	American Society for Testing and Materials	Standard Practices for General Techniques of Infrared Quantitative Analysis	40 CFR 264.1063(d)(1)
ASTM E169	1987	American Society for Testing and Materials	Standard Practices for General Techniques of Ultraviolet-Visible Quantitative Analysis	40 CFR 264.1063(d)(1)

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ASTM E185	1982	American Society for Testing and Materials	Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels	10 CFR 50 App. H, I
ASTM E258	1967	American Society for Testing and Materials	Standard Test Method for Total Nitrogen Inorganic Material by Modified Kjeldahl Method	40 CFR 761.71(b)(2)(vi)
ASTM E260	1996	American Society for Testing and Materials	Standard Practice for Packed Column Gas Chromatography	40 CFR 60.485(d)(1)
ASTM E283	1991	American Society for Testing and Materials	Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors	10 CFR 434.402.2
ASTM E298	1968	American Society for Testing and Materials	Standard Methods for Assay of Organic Peroxides	49 CFR 571.116 S6.11.3(a)
ASTM E408	1971	American Society for Testing and Materials	Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques	16 CFR 460.5(b)
ASTM E424	1971	American Society for Testing and Materials	Test for Solar Energy Transmittance and Reflectance (Terrestrial) of Sheet Materials	24 CFR 200, Subpart S
ASTM E606	1980	American Society for Testing and Materials	Standard Recommended Practice for Constant-Amplitude Low-Cycle Fatigue Testing	24 CFR 200.946
ASTM E681	1985	American Society for Testing and Materials	Standard Test Method for Concentration Limits of Flammability of Chemicals	49 CFR 173.115(a)(2)
ASTM E695	1979	American Society for Testing and Materials	Standard Method of Measuring Relative Resistance of Wall, Floor and Roof Construction to Impact Loading	24 CFR 200.946(a)(1) (vii)
ASTM E711	1987	American Society for Testing and Materials	Standard Test Method for Gross Calorific Value of Refuse-Derived Fuel by the	40 CFR 63, Subpart DDDDD, Table 6

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			Bomb Calorimeter	
ASTM E773	1997	American Society for Testing and Materials	Standard Test Method for Seal Durability of Sealed Insulating Glass Units	4 CFR 3280.403(d)(2)
ASTM E774	1997	American Society for Testing and Materials	Standard Specifications for Sealed Insulating Glass Units	24 CFR 3280.403(d)(2)
ASTM E775	1987	American Society for Testing and Materials	Standard Test Methods for Total Sulfur in the Analysis Sample of Refuse-Derived Fuel	40 CFR 49.123(e)
ASTM E776	1987	American Society for Testing and Materials	Standard Test Method for Forms of Chlorine in Refuse-Derived Fuel	40 CFR 63, Subpart DDDDD, Table 6
ASTM E885	1988	American Society for Testing and Materials	Standard Test Method for Analyses of Metals in Refuse-Derived Fuel by Atomic Absorption Spectroscopy	40 CFR 63, Subpart DDDDD, Table 6
ASTM E1333	1996	American Society for Testing and Materials	Standard Test Method for Determining Formaldehyde Levels from Wood Products Under Defined Test Conditions Using a Large Chamber	24 CFR 3280.406(b)
ASTM E1337	1990	American Society for Testing and Materials	Standard Test Method for Determining Longitudinal Peak Braking Coefficient of Paved Surfaces Using Standard Reference Test Tire	49 CFR 571.105 S6.9.2(a)
ASTM E1590 (pdf) ASTM E1590 (html)	2001	American Society for Testing and Materials	Standard Test Method for Fire Testing of Mattresses	49 CFR 238 Appendix B(a)(1)(xi)
ASTM E1625	1994	American Society for Testing and Materials	Standard Test Method for Determining Biodegradability of Organic Chemicals in Semi-Continuous Activated Sludge	40 CFR 799.5085
ASTM E1719	1997	American Society for Testing and Materials	Standard Test Method for Vapor Pressure of Liquids by Ebulliometry	40 CFR 799.5085
ASTM F462	1979	American Society for Testing and Materials	Slip-Resistant Bathing Facilities	24 CFR 200, Subpart S

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ASTM F476	1984	American Society for Testing and Materials	Standard Test Method for Security of Swinging Door Assemblies	24 CFR 200.949(a)(1)(ix)
ASTM F478	1992	American Society for Testing and Materials	Standard Specification for In-Service Care of Insulating Line Hose and Covers	29 CFR 1910.137(b)(2)(ix)
ASTM F631	1980	American Society for Testing and Materials	Standard Guide for Collecting Skimmer Performance Data in Controlled Environments	33 CFR 156.40
ASTM F631	1993	American Society for Testing and Materials	Standard Guide for Collecting Skimmer Performance Data in Controlled Environments	33 CFR 154 Appendix C
ASTM F682	1982	American Society for Testing and Materials	Standard Specification for Wrought Carbon Steel Sleeve-Type Pipe Couplings	46 CFR 56.01-2
ASTM F715	1981	American Society for Testing and Materials	Standard Test Methods for Coated Fabrics Used for Oil Spill Control and Storage	33 CFR 154.106
ASTM F715	1995	American Society for Testing and Materials	Standard Test Methods for Coated Fabrics Used for Oil Spill Control and Storage	33 CFR 155, Appendix B, 2.4
ASTM F722	1982	American Society for Testing and Materials	Standard Specification for Welded Joints for Shipboard Piping Systems	33 CFR 155.140
ASTM F808	1983	American Society for Testing and Materials	Guide for Collecting Skimmer Performance Data in Uncontrolled Environments	33 CFR 154, Appendix C
ASTM F808	1983	American Society for Testing and Materials	Guide for Collecting Skimmer Performance Data in Uncontrolled Environments	33 CFR 154, Appendix C, 6.3.1
ASTM F1003	1986	American Society for Testing and Materials	Standard Specification for Searchlights on Motor Lifeboats	46 CFR 199.175(a)(28)(i)
ASTM F1006	1986	American Society for Testing and Materials	Standard Specification for Entrainment Separators for Use in Marine Piping Applications	46 CFR 56.60-1(b)

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ASTM F1007	1986	American Society for Testing and Materials	Standard Specification for Pipe-Line Expansion Joints of the Packed Slip Type for Marine Application	46 CFR 56.60-1(b)
ASTM F1014	1992	American Society for Testing and Materials	Standard Specification for Flashlights on Vessels	46 CFR 35.30-20(c)(3)
ASTM F1020	1986	American Society for Testing and Materials	Standard Specification for Line-Blind Valves for Marine Applications	46 CFR 56.60-1(b)
ASTM F1120	1987	American Society for Testing and Materials	Standard Specification for Circular Metallic Bellows Type Expansion Joints for Piping Applications	46 CFR 56.60-1(b)
ASTM F1121	1987	American Society for Testing and Materials	Standard Specification for International Shore Connections for Marine Fire Applications	33 CFR 126.15(a)(5)
ASTM F1122	1987	American Society for Testing and Materials	Standard Specification for Quick Disconnect Couplings	33 CFR 154.500(d)(3)
ASTM F1123	1987	American Society for Testing and Materials	Standard Specification for Non-Metallic Expansion Joints	46 CFR 56.60-1(b)
ASTM F1139	1988	American Society for Testing and Materials	Standard Specification for Steam Traps and Drains	46 CFR 56.60-1(b)
ASTM F1155	1998	American Society for Testing and Materials	Standard Practice for Selection and Application of Piping System Materials	33 CFR 154
ASTM F1172	1988	American Society for Testing and Materials	Fuel Oil Meters of the Volumetric Positive Displacement Type	46 CFR 56.60-1(b)
ASTM F1173	1995	American Society for Testing and Materials	Standard Specification for Thermosetting Resin Fiberglass Pipe and Fittings to be Used for Marine Applications	46 CFR 56.60-1(b)
ASTM F1196	1994	American Society for Testing and Materials	Standard Specification for Sliding Watertight Door Assemblies	46 CFR 170.270(c)(1)
ASTM F1197	1989	American Society for Testing and Materials	Standard Specification for Sliding Watertight Door Control Systems	46 CFR 174.100(e)(2)
ASTM F1199	1988	American Society for Testing and Materials	Cast (All Temperatures and Pressures) and Welded Pipe Line Strainers (150 psig and	46 CFR 56.60-1(b)

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ASTM F1200	1988	American Society for Testing and Materials	150 Degrees F Maximum) Standard Specification for Fabricated (Welded) Pipe Line Strainers (Above 150 psig and 150°F)	46 CFR 56.60-1(b)
ASTM F1201	1988	American Society for Testing and Materials	Standard Specification for Fluid Conditioner Fittings in Piping Applications Above Zero Degrees F	46 CFR 56.60-1(b)
ASTM F1271	1990	American Society for Testing and Materials	Standard Specification for Spill Valves for Use in Marine Tank Liquid Overpressure Protection Applications	46 CFR 39.20-9(c)(1)
ASTM F1273	1991	American Society for Testing and Materials	Standard Specification for Tank Vent Flame Arresters	46 CFR 32.20-10
ASTM F1292	2004	American Society for Testing and Materials	Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment	36 CFR 1191, App B, 105.2.3
ASTM F1321	1992	American Society for Testing and Materials	Standard Guide for Conducting a Stability Test (Lightweight Survey and Inclining Experiment) to Determine Light Ship Displacement and Centers of Gravity of a Vessel	46 CFR 28.535(d)
ASTM F1323	1998	American Society for Testing and Materials	Standard Specification for Shipboard Incinerators	46 CFR 63.25-9
ASTM F1471	1993	American Society for Testing and Materials	Standard Test Method for Air Cleaning Performance of a High-Efficiency Particulate Air-Filter System	40 CFR 86.1310-2007(b)(1)(iv)(B)
ASTM F1546	1996	American Society for Testing and Materials	Standard Specification for Firehose Nozzles	46 CFR 162.027-3(a)
ASTM F1548	1994	American Society for Testing and Materials	Performance of Fittings for Use with Gasketed Mechanical Couplings Used in Piping Applications	46 CFR 56.30-35(a)
ASTM F1951	1999	American Society for	Standard Specification	36 CFR 1191, App B,

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		Testing and Materials	for Determination of Accessibility of Surface Systems Under and Around Playground Equipment	1008.2.6.1
ASTM F2412 (pdf)	2005	American Society for Testing and Materials	Standard Test Methods for Foot Protection	29 CFR 1910
ASTM F2412 (html)				
ASTM F2412 (svg)				
ASTM F2413 (pdf)	2005	American Society for Testing and Materials	Performance Requirements for Protective Footwear	29 CFR 1910
ASTM F2413 (html)				
ASTM G21	1990	American Society for Testing and Materials	Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi	7 CFR 1755.910(d)(5)(iv)
ASTM G23	1969	American Society for Testing and Materials	Standard Practice for Operating Light Exposure Apparatus (Carbon Arc Type) With and Without Water for Exposure of Nonmetallic Materials	49 CFR 571.209 S5.1(e)
ASTM G26	1970	American Society for Testing and Materials	Standard Recommended Practice for Light- and Water-Exposure Apparatus (Xenon-Arc Type) for Exposure of Non-metallic Materials	16 CFR 1201.4(b)(3)(ii)
ASTM G151	1997	American Society for Testing and Materials	Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources	49 CFR 571.106 S12.7(b)
ASTM G154	2000	American Society for Testing and Materials	Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials	49 CFR 571.106 S12.7(b)
ATAA 300	1996	Air Transport Association of America	Packaging of Airline Supplies, Revision 19	49 CFR 171.7
AWPA A1	1991	American Wood Preservers Association	Standard Methods for Analysis of Creosote and Oil-Type Preservatives	7 CFR 1728.201(i)(1)(i)

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AWPA A2	1991	American Wood Preservers Association	Standard Methods for Analysis of Waterborne Preservatives and Fire-Retardant Formulations	7 CFR 1728.201(i)(1)(iii) (A)
AWPA A3	1991	American Wood Preservers Association	Standard Methods for Determining Penetration of Preservatives and Fire Retardants	7 CFR 1728.201(k)(3)
AWPA A5	1991	American Wood Preservers Association	Standard Methods for Analysis of Oil-Borne Preservatives	7 CFR 1728.202(g)(1)(v) (B)
AWPA A6	1989	American Wood Preservers Association	Method for the Determination of Oil-Type Preservatives and Water in Wood	7 CFR 1728.202(g)(1)(v) (A)
AWPA A7	1975	American Wood Preservers Association	Standard Wet Ashing Procedure for Preparing Wood for Chemical Analysis	7 CFR 1728.202(g)(1)(v) (D)
AWPA A9	1990	American Wood Preservers Association	Standard Method for Analysis of Treated Wood and Treating Solutions by X-ray Spectroscopy	7 CFR 1728.202(g)(1)(v) (C)
AWPA A11	1983	American Wood Preservers Association	Standard Method for Analysis of Treated Wood and Treating Solutions by Atomic Absorption Spectroscopy	7 CFR 1728.201(i)(1)(iii) (B)
AWPA M3	1981	American Wood Preservers Association	Standard Quality Control Procedures for Wood Preserving Plants	7 CFR 1728.202(f)(1)
AWPA P1	1991	American Wood Preservers Association	Standard for Coal Tar Creosote for Land and Fresh Water and Marine (Coastal) Water Use	7 CFR 1728.201(i)(1)(i)
AWPA P5	1991	American Wood Preservers Association	Standard for Waterborne Preservative	7 CFR 1728.201(i)(1)(iii) (A)
AWPA P8	1991	American Wood Preservers Association	Standard for Oil-Borne Preservatives	7 CFR 1728.201(i)(1)(iv)
AWPA P9	1991	American Wood Preservers Association	Standard for Solvents and Formulations for Organic Preservative Systems	7 CFR 1728.201(i)(1)(iv)
AWS B3.0	1977	American Welding	Standard Qualification	49 CFR 178.356-2(e)

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		Society	Procedure	
AWS D1.1	2000	American Welding Society	Structural Welding Code—Steel	30 CFR 250.901(a)(20)
BHMA A156.10	1999	Builders Hardware Manufacturers Association	Power Operated Pedestrian Doors	36 CFR 1191, App B, 105.2.1
BHMA A156.19	2002	Builders Hardware Manufacturers Association	Power Assist and Low Energy Power Operated Doors	36 CFR 1191, App B, 408.3.2.1
BOCA	1993	Building Officials and Code Administrators International	Mechanical Code	24 CFR 200.925c(a)(1)(i)
BOCA	1993	Building Officials and Code Administrators International	Plumbing Code	24 CFR 200.925c(a)(1)(i)
BSI EN-13000 (pdf) BSI EN-13000 (html)	2004	British Standards Institute	Cranes—Safety—Mobile Cranes	29 CFR 1926
BSI EN-14439 (pdf) BSI EN-14439 (html)	2006	British Standards Institute	Cranes—Safety—Tower Cranes	29 CFR 1926
CEC Test Method	2004	California Energy Commission	Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies	10 CFR 430 Subpart B
CABO	1992	Council of American Building Officials	One and Two Family Dwelling Code	24 CFR 200.926b(c)
CABO	1993	Council of American Building Officials	One and Two Family Dwelling Code with Errata Package and 1993 Amendments	24 CFR 200.926(d)(1)(ii) ((B)(2)(ii))
CFTA	1977	Cosmetic, Toiletry, and Fragrance Association	Cosmetic Ingredient Dictionary	21 CFR 701.3(c)(2)(i)
CGA C-5	1991	Compressed Gas Association	Cylinder Service Life—Seamless Steel High Pressure Cylinders	49 CFR 173.302a(b)(3)(i) (A)
CGA C-8	1985	Compressed Gas Association	Standard for Requalification of DOT-3HT Cylinders	49 CFR 180.205(f)(1)
CGA C-11	2001	Compressed Gas Association	Recommended Practice for Inspection of Compressed Gas Cylinders at Time of Manufacture	49 CFR 178.35(g)
CGA C-12	1994	Compressed Gas Association	Qualification Procedure for Acetylene Cylinder	49 CFR 173.303(a)

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			Design	
CGA C-13	2000	Compressed Gas Association	Guidelines for Periodic Visual Inspection and Requalification of Acetylene Cylinders	49 CFR 173.303(e)
CGA G-1	2009	Compressed Gas Association	Acetylene	29 CFR 1910.102(a)
CGA G-2.2	1985	Compressed Gas Association	Guideline Method for Determining Minimum of 0.2% Water in Anhydrous Ammonia	49 CFR 173.315(l)(5)
CGA G-4.1	1985	Compressed Gas Association	Cleaning Equipment for Oxygen Service	49 CFR 178.338-15
CGA P-1	1965	Compressed Gas Association	Safe Handling of Compressed Gases	29 CFR 1910.101(b)
CGA P-20	2003	Compressed Gas Association	Standard for the Classification of Toxic Gas Mixtures	49 CFR 173.115
CGA S-1.1	2005	Compressed Gas Association	Pressure Relief Device Standards	49 CFR 173.301(c)
CGA S-1.2	1980	Compressed Gas Association	Safety Release Device Standard--Cargo and Portable Tanks for Compressed Gases	49 CFR 178.277(e)(4)(iv)
CGA S-7 (pdf) CGA S-7 (html)	2005	Compressed Gas Association	Method for Selecting Pressure Relief Devices for Compressed Gas Mixtures in Cylinders	49 CFR 173.301(c)
CGA TB-2	1980	Compressed Gas Association	Guidelines for Inspection and Repair of MC-330 and MC-331 Cargo Tanks	49 CFR 180.407(g)(3)
CGA TB-25	2008	Compressed Gas Association	Design Considerations for Tube Trailers	49 CFR 173.301
CGSB 43.147	2005	Canadian General Standards Board	Construction, Modification, Qualification, Maintenance, and Selection and Use of Means of Containment for the Handling, Offering for Transport, or Transportation of Dangerous Goods by Rail	49 CFR 171.12
CGSB 43.147	2005	Office des Normes Generales du Canada	Construction, Modification, Qualification, Entretien, Selection Et Utilisation	49 CFR 171.12

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			Des Contenants Pour La Manutention, La Demande De Transport Ou La Transport Des Marchandises Dangereuses Par Chemin De Fer	
CI 57	2009	Chlorine Institute	Emergency Shut-Off Systems for Bulk Transfer of Chlorine	49 CFR 177.840(u)
CI 101-7	1993	Chlorine Institute	Excess Flow Valve with Removable Seat	49 CFR 178.276(c)(7)(i)
CI 104-9	2002	Chlorine Institute	Standard Chlorine Angle Valve Assembly	49 CFR 178.337-9(b)(8)
CI 106-6	1993	Chlorine Institute	Excess Flow Valve with Removable Baskets	49 CFR 178.276(c)(7)(ii)
CI 166	2002	Chlorine Institute	Angle Valve Guidelines for Chlorine Bulk Transportation	49 CFR 178.337-9(b)(8)
CI H50155	1996	Chlorine Institute	Pressure Relief Device for Chlorine Service	49 CFR 173.315(i)(13)
CI H51970	1996	Chlorine Institute	Safety Valve for Chlorine Service	49 CFR 173.315(i)(13)
CI	2009	Chlorine Institute	Chlorine Institute Emergency Kit A for 100-lb. and 150-lb. Chlorine Cylinders	49 CFR 173.3(e)(1)
CI	2009	Chlorine Institute	Chlorine Institute Emergency Kit B for Chlorine Ton Containers	49 CFR 173.3(e)(1)
CIE 15	2004	International Commission on Illumination	Technical Report: Colorimetry, 3rd edition	10 CFR 430 Subpart B, App. R, 4.1.1
CIE 15A (xls)	2004	International Commission on Illumination	Supplementary Spectra	10 CFR 430 Subpart B, App. R, 4.1.1
CIE 15B (xls)	2004	International Commission on Illumination	Supplementary Tables	10 CFR 430 Subpart B, App. R, 4.1.1
CRA A-20	1986	Corn Refiners Association	Analysis for Starch in Corn	7 CFR 801.7(a)(2)
CSA C390	1993	Canadian Standards Association	Energy Efficiency Test Methods for Three-Phase Induction Motors	10 CFR 431.19(b)(4)
CTIOA R8-103-62	1969	Ceramic Tile Institute of America	Standard Specifications for the	24 CFR 200, Subpart S

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CSVA	2004	Commercial Vehicle Safety Alliance	Installation of Tile Lined Shower Receptors North American Standard Out-of-Service Criteria and Level VI Inspection Procedures and Out-of-Service Criteria for Commercial Highway Vehicles	49 CFR 385.415(b)(1)
EI IP-501	2005	Energy Institute	Determination of aluminum, silicon, vanadium, nickel, iron, sodium, calcium, zinc and phosphorus in residual fuel oil	40 CFR 1065.705 Table 1
FGMA	1990	Flat Glass Marketing Association	Glazing Manual	24 CFR 200, Subpart S
GLI METHOD 2	2009	Great Lakes Instruments	Turbidity	40 CFR 141.74(a)(1)
GPA 2261	2000	Gas Producers Association	Analysis of Natural Gas and Similar Gaseous Mixtures by Gas Chromatography	40 CFR 75, Appendix F, Section 5.5.2
GPA 2261	2000	Gas Processors Association	Analysis of Natural Gas and Similar Gaseous Mixtures by Gas Chromatography	40 CFR 75, Appendix F
GPA 2377	1986	Gas Processors Association	Test for Hydrogen Sulfide and Carbon Dioxide in Natural Gas Using Length of Stain Tubes	40 CFR 60.334(h)(1)
GRI 02-0057	2002	Gas Research Institute	Internal Corrosion Direct Assessment of Gas Transmission Pipelines Methodology	49 CFR 192.927(c)(2)
HACH 8000	2007	Hach Chemical Company	Oxygen Demand, Chemical Using Reactor Digestion Method	40 CFR 136.3(a)
HACH 8008	2007	Hach Chemical Company	1, 10--Phenanthroline Method Using FerroVer Iron Reagent for Water	40 CFR 136.3(a)
HACH 8009	2007	Hach Chemical Company	Zincon Method for Zinc, Hatch Handbook of Water Analysis	40 CFR 444.12(b)(1)
HACH 8034	2007	Hach Chemical Company	Periodate Oxidation Method for Manganese	40 CFR 136.3(a)
HACH 8507	2007	Hach Chemical	Nitrogen Nitrite--Low	40 CFR 136.3(a)

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		Company	Range, Diazotization Method for Water and Wastewater	
HI BTS-2000	2007	Hydronics Institute	Method to Determine Efficiency of Commercial Space Heating Boilers	10 CFR 431.86
HPMA HP-SG-96	1996	Hardwood Plywood Manufacturers Association	Structural Design Guide for Hardwood Plywood Wall Panels	24 CFR 3280.304(b)(1)
IAPMO PS-2	1989	International Association of Plumbing and Mechanical Officials	Material and Property Standard for Cast Brass and Tubing P-Traps	24 CFR 3280.604(b)(2)
IAPMO PS-5	1984	International Association of Plumbing and Mechanical Officials	Material and Property Standard for Special Cast Iron Fittings	24 CFR 3280.604(b)(2)
IAPMO PS-9	1984	International Association of Plumbing and Mechanical Officials	Material and Property Standard for Diversion Tees and Twin Waste Elbow	24 CFR 3280.604(b)(2)
IAPMO PS-14	1989	International Association of Plumbing and Mechanical Officials	Material and Property Standard for Flexible Metallic Water Connectors	24 CFR 3280.604(b)(2)
IAPMO PS-23	1989	International Association of Plumbing and Mechanical Officials	Material and Property Standard for Dishwasher Drain Airgaps	24 CFR 3280.604(b)(2)
IAPMO PS-31	1977	International Association of Plumbing and Mechanical Officials	Material and Property Standard for Backflow Prevention Devices	24 CFR 3280.604(b)(2)
ICAO 9284	2011	International Civil Aviation Organization	Technical Instructions for the Safe Transport of Dangerous Goods by Air	49 CFR 171.7
ICAO Annex 2	1990	International Civil Aviation Organization	Convention on International Civil Aviation, Rules of the Air	14 CFR 135.3(a)(2)
ICAO Annex 16	2008	International Civil Aviation Organization	Environmental Protection, Volume II – Aircraft Engine Emissions	40 CFR 87.89
ICBO	1991	International Conference of Building Officials	Uniform Building Code (1991)	24 CFR 200.925c(a)(1)(iii)
ICBO	1991	International	Uniform Mechanical	24 CFR 200.925c(c)(3)

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		Conference of Building Officials	Code (1991)	
ICEA S-87-640	2006	Insulated Cable Engineers Association	Standard for Optical Fiber Outside Plant Communications Cable	7 CFR 901(c)
ICEA S-110-717	2003	Insulated Cable Engineers Association	Standard for Optical Drop Cable	7 CFR 901(c)
ICS	1973	International Chamber of Shipping	Clean Seas Guide for Oil Tankers	33 CFR 157.23(b)
IEEE 45	2002	Institute of Electrical and Electronics Engineers	Recommended Practice for Electrical Installations on Shipboard	46 CFR 110.10-1
IEEE 112	2004	Institute of Electrical and Electronics Engineers	Test Procedure for Polyphase Induction Motors and Generators	10 CFR 431.15
IEEE 114	2010	Institute of Electrical and Electronics Engineers	IEEE Standard Test Procedure for Single-Phase Induction Motors	10 CFR 431
IEEE 1202 (pdf) IEEE 1202 (html)	1991	Institute of Electrical and Electronics Engineers	Standard for Flame Testing of Cables	46 CFR 111
IEEE C2	1997	Institute of Electrical and Electronics Engineers	National Electrical Safety Code	7 CFR 1755.503(d)(1)
IEEE C2	2007	Institute of Electrical and Electronics Engineers	National Electrical Safety Code (2007)	7 CFR 1755.901(b)
IEEE C37.14	2002	Institute of Electrical and Electronics Engineers	Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures	46 CFR 110.10-1
IEEE P730.1	1989	Institute of Electrical and Electronics Engineers	Standard for Software Quality Assurance Plans	7 CFR 1755.522(n)(2)
IESNA LM-45	2000	Illuminating Engineering Society of North America	Method for Electrical and Photometric Measurements of General Service Incandescent Filament Lamps	10 CFR 430 Subpart B
IME 22	2011	Institute of Makers of Explosives	Recommendations for the Safe Transportation of Detonators in a Vehicle with Certain Other Explosive Materials	30 CFR 57.6133(b)
IME	1940	Institute of Makers of	Safety in the Handling	29 CFR 1910.261(a)(4)

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		Explosives	and Use of Explosives	(iii)
IMO IMDG.1	2006	International Maritime Organization	International Maritime Dangerous Goods Code (Volume 1)	49 CFR 172.519(f)
IMO IMDG.2	2006	International Maritime Organization	International Maritime Dangerous Goods Code (Volume 2)	49 CFR 172.519(f)
IMO ISPS	2003	International Maritime Organization	International Ship and Port Facility Security Code	33 CFR 101.410(a)
AG ENG	1965	Interstate Printers and Publishers, Inc.	Agriculture Engineering	29 CFR 570.71(b)
ISO 535	1991	International Organization for Standardization	Paper and Board--Determination of Water Absorptiveness--Cobb Method	49 CFR 178.516(b)(1)
ISO 1496-1	1990	International Organization for Standardization	Series 1 Freight Containers--Specification and Testing--Part 1, General Cargo Containers	49 CFR 173.411(b)(6)(iii)
ISO 1496-3	1995	International Organization for Standardization	Series 1 Freight Containers--Specification and Testing--Part 3, Tank containers for Liquids, Gases and Pressurized Dry Bulk	49 CFR 178.74(c)(5)(ii)
ISO 3807-2	2000	International Organization for Standardization	Cylinders for acetylene--Basic requirements--Part 2: Cylinders with fusible plugs	49 CFR 173.303(f)(1)
ISO 6406 (pdf) ISO 6406 (html)	2005	International Organization for Standardization	Seamless Steel Gas Cylinders--Inspection and Testing	49 CFR 180
ISO 7225	2005	International Organization for Standardization	Gas Cylinders--Precautionary Labels	49 CFR 178.71(r)(2)
ISO 7866	1999	International Organization for Standardization	Gas Cylinders--Refillable Seamless Aluminum Alloy Gas Cylinders--Design, Construction and Testing	49 CFR 178.71(h)
ISO 8115	1986	International Organization for Standardization	Cotton bales--Dimensions and density	49 CFR 171.7
ISO 9809-1	1999	International	Gas Cylinders--	49 CFR 178.71(g)(1)

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		Organization for Standardization	Refillable Seamless Steel Gas Cylinders-- Design, Construction and Testing--Part 1: Quenched and Tempered Steel Cylinders with Tensile Strength less than 1 100 MPa	
ISO 9809-2	2000	International Organization for Standardization	Gas Cylinders-- Refillable Seamless Steel Gas Cylinders-- Design, Construction and Testing--Part 2: Quenched and Tempered Steel Cylinders with Tensile Strength Greater than or Equal to 1 100 MPa	49 CFR 178.71(g)(2)
ISO 9809-3	2000	International Organization for Standardization	Gas Cylinders-- Refillable Seamless Steel Gas Cylinders-- Design, Construction and Testing--Part 3: Normalized Steel Cylinders	49 CFR 178.71(g)(3)
ISO 9978	1992	International Organization for Standardization	Sealed Radioactive Sources--Leak Test Methods	49 CFR 173.469(a)(4)(ii)
ISO 10297	1999	International Organization for Standardization	Gas cylinders-- Refillable gas cylinder valves--Specification and type testing	49 CFR 173.301b(c)(1)
ISO 10461 (pdf) ISO 10461 (html)	2005	International Organization for Standardization	Seamless Aluminum Alloy Gas Cylinders-- Inspection and Testing	49 CFR 180
ISO 10462 (pdf) ISO 10462 (html)	2005	International Organization for Standardization	Transportable Cylinders for Dissolved Acetylene	49 CFR 180
ISO 11114-1	1997	International Organization for Standardization	Transportable gas cylinders--Compatibility of cylinder and valve materials with gas contents--Part 1: Metallic materials	49 CFR 173.301b(a)(2)
ISO 11114-2	2000	International Organization for Standardization	Transportable gas cylinders-- Compatibility of cylinder and valve materials with gas contents--Part 2: Non-metallic materials	49 CFR 173.301b(a)(2)

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ISO 11117	1998	International Organization for Standardization	Gas cylinders--Valve protection caps and valve guards for industrial and medical gas cylinders--Design, construction and tests	49 CFR 173.301b(c)(2)(ii)
ISO 11118	1999	International Organization for Standardization	Gas cylinders--Non-refillable metallic gas cylinders--Specification and test methods	49 CFR 178.71(i)
ISO 11119-1	2002	International Organization for Standardization	Gas cylinders--Gas cylinders of composite construction--Specification and test methods--Part 1: Hoop-wrapped composite gas cylinders	49 CFR 171.7
ISO 11119-2	2002	International Organization for Standardization	Gas cylinders--Gas cylinders of composite construction--Specification and test methods--Part 2: Fully wrapped fibre reinforced composite gas cylinders with load-sharing metal liners	49 CFR 171.7
ISO 11119-3	2002	International Organization for Standardization	Gas cylinders of composite construction--Specification and test methods--Part 3: Fully wrapped fibre reinforced composite gas cylinders with non-load-sharing metallic or non-metallic liners	49 CFR 171.7
ISO 11120	1999	International Organization for Standardization	Gas cylinders--Refillable seamless steel tubes of water capacity between 150 L and 3000 L--Design, construction and testing	49 CFR 178.71(j)
ISO 11621	1997	International Organization for Standardization	Gas cylinders--Procedures for change of gas service	49 CFR 173.301b(a)(2)
ISO 11623 (pdf) ISO 11623 (html)	2002	International Organization for Standardization	Periodic Inspection and Testing of Composite Gas Cylinders	49 CFR 180
ISO 11660-1 (pdf) ISO 11660-1	2008	International Organization for	Cranes: Access, Guards and Restraints:	29 CFR 1926

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(html)		Standardization	General	
ISO 11660-2 (pdf) ISO 11660-2 (html)	1994	International Organization for Standardization	Cranes: Access, Guards and Restraints: Mobile Cranes	29 CFR 1926
ISO 11660-3 (pdf) ISO 11660-3 (html)	2008	International Organization for Standardization	Cranes: Access, Guards and Restraints: Tower Cranes	29 CFR 1926
ISO 14230-4	2000	International Organization for Standardization	Road Vehicles— Diagnostic Systems	40 CFR 1048.110(g)(2)
ISO 18902 (pdf) ISO 18902 (html)	2001	International Organization for Standardization	Photographic Processed Films, Plates, and Papers	36 CFR 1237
ISO 18906 (pdf) ISO 18906 (html)	2000	International Organization for Standardization	Photographic Films— Specifications for Safety Film	36 CFR 1237
ITU-R M-493-11	2004	International Telecommunication Union	Digital Selective-calling System for Use in the Maritime Mobile Service, with Annexes 1 and 2	47 CFR 80.1101(c)(2)(ii)
ITU-R M-541-8	1997	International Telecommunication Union	Operational Procedures for the Use of Digital Selective- Calling Equipment in the Maritime Mobile Service	47 CFR 80.1101(c)(4)(iii)
ITU-R M-541-9	2004	International Telecommunication Union	Operational Procedures for the Use of Digital Selective- Calling Equipment in the Maritime Mobile Service	47 CFR 80.1101(c)(2)(iii)
ITU-R M-628-3	1994	International Telecommunication Union	Technical Characteristics for Search and Rescue Radar Transponders	47 CFR 80.1101(c)(6)(ii)
ITU-R M-632-3	1997	International Telecommunication Union	Transmission Characteristics of a Satellite Emergency Position Indicating Radio Beacon	47 CFR 80.1101(c)(11) (iii)
ITU-R M-633-3	2004	International Telecommunication Union	Transmission characteristics of a satellite emergency position-indicating radiobeacon system operating through a low polar-orbiting satellite system	47 CFR 80.1101(c)(5)(iii)
ITU-R M-1371-1	2001	International	Technical	47 CFR 80.1101(c)(12)(i)

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		Telecommunication Union	Characteristics for a Universal Shipborne Automatic Identification System Using Time Division Multiple Access	
ITU-T E.161	2001	International Telecommunication Union	Arrangement of Digits, Letters and Symbols on Telephones and Other Devices that Can Be Used for Gaining Access to a Telephone Network	47 CFR 80.1101(b)(2)
ITU-T E.164.1	2008	International Telecommunication Union	Numbering Plan of the International Telephone Service	47 CFR 80.1101(b)(3)
LACHAT 10-204	2008	Lachat Instruments	Digestion and Distillation of Total Cyanide in Drinking and Wastewaters	40 CFR 136.3(a) Table IB
STEAM	1917	Commonwealth of Massachusetts	District Police Steam Boiler Rules	
MSS SP-44	1996	Manufacturers Standardization Society	Steel Pipe Line Flanges	46 CFR 56.01-2
MSS SP-75	2004	Manufacturers Standardization Society	Specification for High-Test Wrought Butt Welding Fittings	49 CFR 118(a)
NACE RP-0502	2002	National Association of Corrosion Engineers	Pipeline External Corrosion Direct Assessment Methodology	49 CFR 192.925(b)(3)
NACM	2003	National Association of Chain Manufacturers	Welded Steel Chain Specifications	49 CFR 393.104(e)(2)
NAS	1972	National Academy of Sciences	Food Chemicals Codex (1972)	21 CFR 701.3(c)(2)(iv)
NAS	1996	National Academy of Sciences	Food Chemicals Codex (1996)	21 CFR 184
NAS	2011	National Academy of Sciences	Prudent Practices in the Laboratory: Handling and Disposal of Chemicals	42 CFR 52b.12(c)(6)
NCASI 98-01	1998	National Council of the Paper Industry for Air and Stream Improvements	Chilled Impinger Method For Use At Wood Products Mills to Measure Formaldehyde, Methanol, and Phenol	40 CFR 63, Subpart DDDD
NCASII 94-03	2002	National Council of the Paper Industry for Air	Methanol in Process Liquids by Gas	40 CFR 63.457(c)(3)(ii)

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		and Stream Improvements	Chromatography/Flame Ionization Detection	
NCASI A105	2001	National Council of the Paper Industry for Air and Stream Improvements	Impinger Source Sampling Method for Selected Aldehydes, Ketones, and Polar Compounds	40 CFR 63, Subpart DDDD
NCASI 99-02	2002	National Council of the Paper Industry for Air and Stream Improvements	Impinger/Canister Source Sampling Method For Selected HAPs and Other Compounds at Wood Products Facilities	40 CFR 63, Subpart DDDD
NCCA	2011	National Cotton Council of America	Specifications for Cotton Bale Packaging Material	7 CFR 1427.5(b)(10)
UCC	2002	National Conference of Commissioners on Uniform State Laws	2002 Official Text and Comments, Sections 8-102 and 8-103	17 CFR 270.17f-4(c)(1)
UCC	2002	National Conference of Commissioners on Uniform State Laws	2002 Official Text and Comments, Sections 8-501 through 8-511	17 CFR 270.17f-4(c)(1)
NCUTLO	1969	National Committee on Uniform Traffic Laws and Ordinances	Uniform Vehicle Code and Model Ordinance	41 CFR 50-204.75
NFPA 10 (pdf) NFPA 10 (html) NFPA 10 (svg)	2002	National Fire Protection Association	Standard for Portable Fire Extinguishers	29 CFR 1915
NFPA 11 (pdf) NFPA 11 (html)	2005	National Fire Protection Association	Standard for Foam	29 CFR 1915
NFPA 12 (pdf) NFPA 12 (html)	2005	National Fire Protection Association	Standard for Carbon Dioxide Extinguishing Systems	29 CFR 1915
NFPA 13	2002	National Fire Protection Association	Standard for the Installation of Sprinkler Systems	36 CFR 1234.12(i)
NFPA 25 (pdf) NFPA 25 (html)	2002	National Fire Protection Association	Standard for Water-Based Fire Protection Systems	29 CFR 1915
NFPA 30 (pdf) NFPA 30 (html)	2003	National Fire Protection Association	Flammable and Combustible Liquids Code	49 CFR 192
NFPA 54 (pdf) NFPA 54 (html) NFPA 54 (svg)	2002	National Fire Protection Association	National Fuel and Gas Code	24 CFR 3280
NFPA 58 (pdf) NFPA 58 (html)	2001	National Fire Protection Association	Standard for Liquefied Petroleum Gases	49 CFR 173
NFPA 58	2004	National Fire Protection	Standard for the	49 CFR 192.11(b)

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		Association	Storage and Handling of Liquefied Petroleum Gases	
NFPA 59	2004	National Fire Protection Association	Standard for the Storage and Handling of Liquefied Petroleum Gases at Utility Gas Plants	49 CFR 192.11(b)
NFPA 72 (pdf) NFPA 72 (html) NFPA 72 (svg)	2002	National Fire Protection Association	National Fire Alarm Code	29 CFR 1915
NFPA 99	2005	National Fire Protection Association	Standard for Health Care Facilities	38 CFR 51.200(b)(4)
NFPA 101 (pdf) NFPA 101 (html)	2000	National Fire Protection Association	Life Safety Code	59 CFR 130
NFPA 704	2007	National Fire Protection Association	Standard System for the Identification of the Hazards of Materials for Emergency Response	6 CFR 27.204(a)(2)
NFPA DUST	1957	National Fire Protection Association	Report of Important Dust Explosions	
NFPA HOST	1953	National Fire Protection Association	Handling Hose and Ladders	
NFPA 70	2005	National Fire Protection Association	National Electrical Code	49 CFR 192.189(c)
NACHA	2005	National Automated Clearing House Association	A Complete Guide to the Rules Governing the ACH Network	45 CFR 162.920
ISS-MCB	2011	International Space Station Multilateral Coordination Board	International Docking Standard	1 Code of Intergalactic Regulations 32
NCRP 33	1968	National Council on Radiation Protection and Measurement	Medical X-ray and Gamma-Ray Protection for Energies Up to 10 MeV—Equipment Design and Use	42 CFR 37.43
NCRP 48	1976	National Council on Radiation Protection and Measurement	Medical Radiation Protection for Medical and Allied Health Personnel	42 CFR 37.43
NCRP 49	1976	National Council on Radiation Protection and Measurement	Structural Shielding Design and Evaluation for Medical Use of X-Rays and Gamma-Rays up to 10 MeV	42 CFR 37.43
NEMA MG-1	2009	National Electrical Manufacturers Association	Motors and Generators	10 CFR 431

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NSF 61 (pdf) NSF 61 (html)	2001	National Sanitation Foundation	Drinking Water System Components—Health Effects	24 CFR 3280
OECD 404	2002	Organization for Economic Cooperation and Development	Guideline for Testing of Chemicals, Acute Dermal Irritation/Corrosion	49 CFR 173.137
OECD C93	1974	Organization for Economic Cooperation and Development	Green List of Wastes	40 CFR 262.89(e)
OR REG	1975	State of Oregon	Oregon Grade Standards Hazelnuts in Shell	7 CFR 982.45(a)
ORION	1970	ORION Research Incorporated	Residual Chlorine Electrode Model 97-70	40 CFR 136.3(a) Table IB
PCI MNL-121	1977	Precast/Prestressed Concrete Institute	Manual for Structural Design of Architectural Precast Concrete	24 CFR 200, Subpart S
PCI MNL-117-77	1977	Precast/Prestressed Concrete Institute	Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products	24 CFR 200, Subpart S
PCSA 1	1968	Power Crane and Shovel Association	Mobile Crane and Excavator Standards	29 CFR 1926.602(b)(3)
PCSA 2	1968	Power Crane and Shovel Association	Mobile Hydraulic Crane Standards	29 CFR 1926.602(b)(3)
PCSA 3	1969	Power Crane and Shovel Association	Mobile Hydraulic Excavator Standards	29 CFR 1926.602(b)(3)
PPI TR-3	2004	Plastics Pipe Institute	Policies and Procedures for Developing Hydrostatic Design Bases (HDB), Pressure Design Bases (PDB), and Minimum Required Thermoplastic Piping Materials	49 CFR 192.121
RTCM C071	1995	Radio Technical Commission for Maritime Services	Recommended Standards for Marine Radar Equipment Installed on Ships of Less Than 300 Tons Gross Tonnage	33 CFR 164.72(a)(1)(i) (B)
RTCM C191	1993	Radio Technical Commission for Maritime Services	Recommended Standards for Marine Radar Equipment Installed on Ships of 300 Tons Gross Tonnage and Upwards	33 CFR 164.72(a)(1)(iii) (B)

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SAE Paper 770141	1977	Society of Automotive Engineers	Optimization of a Flame Ionization Detector for Determination of Hydrocarbon in Diluted Automotive Exhausts	40 CFR 1065.360(c)
SAE J4C	1965	Society of Automotive Engineers	Motor Vehicle Seat Belt Assembly	29 CFR 1928.51(b)(2)(ii)
SAE J30	1998	Society of Automotive Engineers	Fuel and Oil Hoses	40 CFR 1051.501(c)(2)
SAE J166	1971	Society for Automotive Engineering	Minimum Performance Criteria for Brake Systems for Off-Highway Trucks and Wagons	29 CFR 1926.602(a)(4)
SAE J166	1971	Society of Automotive Engineers	Minimum Performance Criteria for Brake Systems for Off-Highway Trucks and Wagons	29 CFR 1926.602(a)(4)
SAE J167	1970	Society for Automotive Engineering	Protective Frame with Overhead Protection	29 CFR 1926.1003(g)
SAE J167	1974	Society of Automotive Engineers	Protective Frame with Overhead Protection	30 CFR 77.403-1(d)(1)(v)
SAE J168	1970	Society for Automotive Engineering	Protective Enclosures—Test Procedures and Performance Requirements	29 CFR 1926.1002(a)(5)(i)
SAE J185	1988	Society of Automotive Engineers	Recommended Practice for Access Systems for Off-Road Machines	29 CFR 1910.266(f)(5)(i)
SAE J186A	1977	Society of Automotive Engineers	Supplemental High Mounted Stop and Rear Turn Signal Lamps	49 CFR 571.108
SAE J211-1 (pdf) SAE J211-1 (html)	1995	Society of Automotive Engineers	Instrumentation for Impact Test	49 CFR 571
SAE J211	1971	Society of Automotive Engineers	Instrumentation for Impact Tests	49 CFR 571.222 S6.6.2
SAE J222	1970	Society of Automotive Engineers	Parking Lamps (Position Lamps)	49 CFR 571.108 S5.1.1.6
SAE J231	1971	Society for Automotive Engineering	Minimum Performance Criteria for Falling Object Protective Structures (FOPS)	30 CFR 77.403(a)
SAE J231	1971	Society of Automotive Engineers	Minimum Performance Criteria for Falling Object Protective	30 CFR 77.403(a)

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SAE J231	1981	Society of Automotive Engineers	Structures (FOPS) Minimum Performance Criteria for Falling Object Protective Structures (FOPS)	29 CFR 1910.266(f)(3)(iii)
SAE J236	1971	Society for Automotive Engineering	Minimum Performance Criteria for Brake Systems for Rubber Tire Self-Propelled Graders	29 CFR 1926.602(a)(4)
SAE J237	1971	Society for Automotive Engineering	Minimum Performance Criteria for Brake Systems for Off-Highway Rubber-Tired Front End Loaders and Dozers	29 CFR 1926.602(a)(4)
SAE J244	1983	Society for Automotive Engineering	Recommend Practice for Measurement of Intake Air or Exhaust Gas Flow of Diesel Engines	40 CFR 92.108(a)(3)
SAE J319	1971	Society of Automotive Engineers	Minimum Performance Criteria for Brake Systems for Off-Highway Rubber-Tired Self-Propelled Scrapers	29 CFR 1926.602(a)(4)
SAE J320	1972	Society for Automotive Engineering	Minimum Performance Criteria for Roll-Over Protective Structures for Rubber-Tired Self-Propelled Scrapers	29 CFR 1926.1001(h)
SAE J320A	1969	Society of Automotive Engineers	Minimum Performance Criteria for Roll-Over Protective Structures for Rubber-Tired Self-Propelled Scrapers	30 CFR 77.403-1(d)(1)(i)
SAE J321	1970	Society of Automotive Engineers	Fenders for Pneumatic-Tired Earthmoving Haulage Equipment	29 CFR 1926.602(a)(5)
SAE J333	1970	Society for Automotive Engineering	Operation Protection for Wheel-Type Agricultural and Industry Tractors	29 CFR 1926.602(a)(2)
SAE J334	1968	Society of Automotive Engineers	Protective Frame Test Procedures and Performance Requirements	30 CFR 77.403-1(d)(1)(vi)
SAE J334	1970	Society for Automotive Engineering	Protective Frame Test Procedures and Performance	30 CFR 77.403-1(d)(1)(vi)

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			Requirements	
SAE J386	1969	Society of Automotive Engineers	Operator Restraint Systems for Off-Road Work Machines	29 CFR 1926.602(a)(2)
SAE J386	1985	Society for Automotive Engineering	Operator Restraint Systems for Off-Road Work Machines	30 CFR 56.14130(h)
SAE J386	1993	Society of Automotive Engineers	Operator Restraint Systems for Off-Road Work Machines	30 CFR 56.14130(h)
SAE J386	1997	Society of Automotive Engineers	Operator Restraint Systems for Off-Road Work Machines	30 CFR 57.14131(c)
SAE J387 (pdf) SAE J387 (html)	1987	Society of Automotive Engineers	Terminology: Motor Vehicle Lighting	49 CFR 571
SAE J394	1969	Society of Automotive Engineers	Minimum Performance Criteria for Roll-Over Protective Structures for Rubber-Tired Front End Loaders and Rubber-Tired Dozers	30 CFR 77.403-1(d)(1)(ii)
SAE J394	1972	Society of Automotive Engineers	Minimum Performance Criteria for Rollover Protective Structures for Wheeled Front-End Loaders and Wheeled Dozers	30 CFR 77.403-1(d)(1)(ii)
SAE J395	1969	Society of Automotive Engineers	Minimum Performance Criteria for Roll-Over Protective Structures for Crawler Tractors and Crawler-Type Loaders	30 CFR 77.403-1(d)(1)(iii)
SAE J396	1972	Society for Automotive Engineering	Minimum Performance Criteria for Roll-Over Protective Structures for Motor Graders	30 CFR 77.403-1(d)(1)(iv)
SAE J397	1969	Society of Automotive Engineers	Deflection Limiting Volume-Protective Structures Laboratory Evaluation	29 CFR 1926.1001(f)(1)(ii)
SAE J397	1988	Society of Automotive Engineers	Deflection Limiting Volume-Protective Structures Laboratory Evaluation	29 CFR 1910.266(f)(3)(iv)
SAE J429	1971	Society for Automotive Engineering	Mechanical and Quality Requirements for Externally Threaded Fasteners	30 CFR 77.403-1(d)(2)(iii)(B)
SAE J429	1983	Society of Automotive	Mechanical and	46 CFR 58.30-15(c)

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		Engineers	Quality Requirements for Externally Threaded Fasteners	
SAE J429D	1967	Society of Automotive Engineers	Mechanical and Quality Requirements for Externally Threaded Fasteners	30 CFR 77.403-1(d)(2)(iii)(B)
SAE J449a	1963	Society of Automotive Engineers	Surface Texture Control	49 CFR 581.6(b)(1)
SAE J476a	1961	Society of Automotive Engineers	Dryseal Pipe Threads	49 CFR 393.67(c)(3)
SAE J527	1967	Society of Automotive Engineers	Brazed Double Wall Low Carbon Steel Tubing	49 CFR 571.116 S6.13.3(b)
SAE J533	1972	Society of Automotive Engineers	Flares for Tubing	24 CFR 3280.703
SAE J557	1968	Society of Automotive Engineers	High Tension Ignition Cable	33 CFR 183.440(a)
SAE J565	1969	Society of Automotive Engineers	Semi-Automatic Headlamp Beam Switching Devices	49 CFR 571.108 S5.5.1
SAE J566	1960	Society of Automotive Engineers	Headlamp Mountings	49 CFR 571.108
SAE J571	1976	Society of Automotive Engineers	Dimensional Specification for Sealed Beam Headlamp Units	49 CFR 571.108
SAE J573d (pdf) SAE J573d (html)	1968	Society of Automotive Engineers	Requirements for Lamp Bulbs and Sealed Units	49 CFR 571
SAE J575	1970	Society of Automotive Engineers	Test for Motor Vehicle Lighting Devices and Components	49 CFR 571.108 S6.1
SAE J575	1983	Society for Automotive Engineering	Test for Motor Vehicle Lighting Devices and Components	49 CFR 571.131 S6.2.3
SAE J575	1988	Society of Automotive Engineers	Test for Motor Vehicle Lighting Devices and Components	49 CFR 571.108 S7.5.8.3(e)
SAE J576	1970	Society of Automotive Engineers	Plastic Materials for Use in Optical Parts, such as Lenses and Reflectors, of Motor Vehicle Lighting Devices	49 CFR 571.108 S6.2
SAE J576 (pdf) SAE J576 (html)	1991	Society of Automotive Engineers	Plastic Materials for Use in Optical Parts	49 CFR 571
SAE J576B	1966	Society of Automotive Engineers	Plastic Materials for Use in Optical Parts,	49 CFR 571.108 S6.2

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			such as Lenses and Reflectors, of Motor Vehicle Lighting Devices	
SAE J578 (pdf) SAE J578 (html)	1995	Society of Automotive Engineers	Color Specifications for Electric Signal Lighting Devices	49 CFR 571.403
SAE J584	1964	Society of Automotive Engineers	Motorcycle and Motor Driven Cycle Headlamps	49 CFR 571.108 S7.9.1(a)
SAE J584 (pdf) SAE J584 (html)	1993	Society of Automotive Engineers	Requirements for Motorcycle Headlamps	49 CFR 571
SAE J585	1970	Society for Automotive Engineering	Tail Lamps (Rear Position Lamps) for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 571.108 S5.8.8
SAE J585	1977	Society for Automotive Engineering	Tail Lamps (Rear Position Lamps) for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 571.108 S5.1.1.6
SAE J585	2000	Society of Automotive Engineers	Tail Lamps (Rear Position Light)	49 CFR 571.108 S6.1
SAE J586	1970	Society of Automotive Engineers	Stop Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width	49 CFR 571.108 S5.8.3(b)
SAE J586	1984	Society for Automotive Engineering	Stop Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 571.108 S6.1
SAE J586	2000	Society of Automotive Engineers	Stop Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width	49 CFR 571.108 S6.1
SAE J586B	1966	Society of Automotive Engineers	Stop Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width	49 CFR 571.108 S5.8.3(a)
SAE J587 (pdf) SAE J587 (html)	1981	Society of Automotive Engineers	License Plate Lamps (Rear Registration Lamps)	49 CFR 571
SAE J588	1970	Society for Automotive Engineering	Turn Signal Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 571.108 S5.1.1.1
SAE J588	1970	Society of Automotive Engineers	Turn Signal Lamps for Use on Motor Vehicles	49 CFR 571.108 S5.8.4(b)

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			Less Than 2032 mm in Overall Width	
SAE J588 (pdf) SAE J588 (html)	1984	Society of Automotive Engineers	Requirements for Turn Signal Lamps	49 CFR 571
SAE J588	2000	Society of Automotive Engineers	Turn Signal Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 393.25(c)
SAE J588D	1966	Society of Automotive Engineers	Turn Signal Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 571.108 S5.8.4(a)
SAE J592	1972	Society of Automotive Engineers	Clearance, Side Marker and Identification Lamps	49 CFR 571.108 Table III
SAE J592 (pdf) SAE J592 (html)	1992	Society of Automotive Engineers	Clearance, Side Marker, and Identification Lamps	49 CFR 571
SAE J593C	1968	Society of Automotive Engineers	Back-up Lamps	49 CFR 571.108
SAE J594f (pdf) SAE J594f (html)	1977	Society of Automotive Engineers	Requirements for Reflex Reflectors	49 CFR 571
SAE J599	1997	Society of Automotive Engineers	Lighting Inspection Code	49 CFR 581.5(c)(1)
SAE J602 (pdf) SAE J602 (html)	1980	Society of Automotive Engineers	Mechanically Aimable Sealed Beam Headlamps	49 CFR 571
SAE J743A	1964	Society of Automotive Engineers	Tractor Mounted Side Boom	29 CFR 1926.550(a)(18)
SAE J759 (pdf) SAE J759 (html)	1995	Society of Automotive Engineers	Lighting Identification Code	49 CFR 571
SAE J800C	1973	Society of Automotive Engineers	Recommended Practice, Motor Vehicle Seat Belt Installations	49 CFR 571.209
SAE J826	1962	Society of Automotive Engineers	Devices for Use in Defining and Measuring Vehicle Seating Accommodations	49 CFR 571.3(b)
SAE J826	1980	Society for Automotive Engineering	Devices for Use in Defining and Measuring Vehicle Seating Accommodations	49 CFR 571.214 S12.1.3(b)(1)
SAE J826 (pdf) SAE J826 (html)	1995	Society of Automotive Engineers	Defining and Measuring Vehicle Seating Accommodation	49 CFR 571
SAE J839	1991	Society of Automotive Engineers	Passenger Car Side Door Latch System	49 CFR 571.206

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SAE J839B	1965	Society of Automotive Engineers	Passenger Car Side Door Latch System	49 CFR 571.201
SAE J845	1997	Society of Automotive Engineers	Optical Warning Devices for Authorized Emergency, Maintenance and Service Vehicles	49 CFR 393.25(e)
SAE J887	1964	Society of Automotive Engineers	School Bus Red Signal Lamps	49 CFR 571.108
SAE J902A	1967	Society of Automotive Engineers	Passenger Car Windshield Defrosting Systems	49 CFR 571.103
SAE J934	1965	Society of Automotive Engineers	Recommended Practice for Vehicle Passenger Door Hinge Systems	49 CFR 571.206
SAE J942	1965	Society of Automotive Engineers	Passenger Car Windshield Washer System	49 CFR 571.104
SAE J944	1980	Society for Automotive Engineering	Steering Control System-Passenger Car-Laboratory Test Procedure	49 CFR 571.203 S5.1(a)
SAE J945	1966	Society of Automotive Engineers	Vehicular Hazard Warning Signal Flashers	49 CFR 571.108 Table I
SAE J959	1966	Society of Automotive Engineers	Lifting Crane Wire-Rope Strength Factors	29 CFR 1926.550(a)(7)(v)
SAE J964	1984	Society for Automotive Engineering	Test Procedure for Determining Reflectivity of Rear View Mirrors	49 CFR 571.111
SAE J972	1966	Society of Automotive Engineers	Moving Barrier Collision Test	49 CFR 571.105
SAE J995	1967	Society of Automotive Engineers	Mechanical and Quality Requirements for Steel Nuts	30 CFR 77.403-1(d)(2)(iii)(B)
SAE J995	1971	Society of Automotive Engineers	Mechanical and Quality Requirements for Steel Nuts	30 CFR 77.403-1(d)(2)(iii)(B)
SAE J1040	1994	Society of Automotive Engineers	Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry and Mining Machines	30 CFR 56.14130(b)(1)
SAE J1063	1993	Society of Automotive Engineers	Cantilevered Boom Crane Structures—Method of Test	29 CFR 1926.1433(c)
SAE J1100	1984	Society for Automotive	Motor Vehicle	49 CFR 571.3(b)

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		Engineering	Dimensions	
SAE J1100 (pdf) SAE J1100 (html)	2001	Society of Automotive Engineers	Motor Vehicle Dimensions	49 CFR 571
SAE J1127	1980	Society for Automotive Engineering	Battery Cable	33 CFR 183.430(a)(2)(ii)
SAE J1128	1975	Society of Automotive Engineers	Low Tension Primary Cable	33 CFR 183.430(a)(2)(ii)
SAE J1133	1984	Society for Automotive Engineering	School Bus Stop Arm	49 CFR 571.131 S6.2.3
SAE J1151	1991	Society of Automotive Engineers	Methane Measurement Using Gas Chromatography	40 CFR 86.111-94(b)(3)(vi)
SAE J1194	1983	Society for Automotive Engineering	Roll-Over Protective Structures for Wheeled Agricultural Tractors	30 CFR 56.14130(h)
SAE J1194	1994	Society of Automotive Engineers	Roll-Over Protective Structures for Wheeled Agricultural Tractors	30 CFR 56.14130(h)
SAE J1194	1999	Society of Automotive Engineers	Roll-Over Protective Structures for Wheeled Agricultural Tractors	30 CFR 57.14130(h)
SAE J1228	1991	Society of Automotive Engineers	Small Craft-Marine Propulsion Engine and Systems-Power Measurements and Declarations	40 CFR 91.115(a)
SAE J1292	1981	Society of Automotive Engineers	Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring	49 CFR 393.28
SAE J1318	1986	Society of Automotive Engineers	Gaseous Discharge Warning Lamp for Authorized Emergency, Maintenance, and Service Vehicles	49 CFR 393.25(e)
SAE J1383 (pdf) SAE J1383 (html)	1985	Society of Automotive Engineers	Performance Requirements for Motor Vehicle Headlamps	49 CFR 571
SAE J1395 (pdf) SAE J1395 (html)	1985	Society of Automotive Engineers	Turn Signal Lamps for Use on Motor Vehicles	49 CFR 571
SAE J1398 (pdf) SAE J1398 (html)	1985	Society of Automotive Engineers	Stop Lamps for Use on Motor Vehicles	49 CFR 571
SAE J1475	1984	Society for Automotive Engineering	Hydraulic Hose Fittings for Marine Applications	46 CFR 27.211(e)(2)(v)(B)
SAE J1527	1993	Society of Automotive Engineers	Marine Fuel Hoses	33 CFR 183.540(a)
SAE J1703	1983	Society for Automotive	Motor Vehicle Brake	49 CFR 571.116

Public Safety Standards of the United States

		Engineering	Fluid	S6.5.4.1
SAE J1703 (pdf) SAE J1703 (html)	1995	Society of Automotive Engineers	Motor Vehicle Brake Fluids	49 CFR 571
SAE J1733 (pdf) SAE J1733 (html)	1994	Society of Automotive Engineers	Sign Convention for Vehicle Crash Testing	49 CFR 572
SAE J1817	2001	Society of Automotive Engineers	Long Stroke Air Brake Actuator Marking	49 CFR 393.47(e)
SAE J1850	1995	Society of Automotive Engineers	Class B Data Communication Network Interface	40 CFR 86.099-17(h)(1)(i)
SAE J1850	2001	Society of Automotive Engineers	Class B Data Communication Network Interface	40 CFR 86.1806-05(h)(1)(i)
SAE J1877	1994	Society of Automotive Engineers	Recommended Practice for Bar-Coded Vehicle Identification Number Label	40 CFR 86.095-35(h)(2)(i)
SAE J1892	1993	Society of Automotive Engineers	Recommended Practice for Bar-Coded Vehicle Emission Configuration Label	40 CFR 86.095-35(h)(2)(i)
SAE J1930	1993	Society of Automotive Engineers	Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms	40 CFR 1039.135(c)(8)
SAE J1930	2002	Society of Automotive Engineers	Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms	40 CFR 86.1806-05(h)(1)(v)
SAE J1937	1989	Society of Automotive Engineers	Recommended Practice for Engine Testing with Low Temperature Charge Air Cooler Systems in a Dynamometer Test Cell	40 CFR 86.1330-90(b)(5)
SAE J1962	1995	Society of Automotive Engineers	Diagnostic Connector Equivalent to ISO/DIS	40 CFR 86.094-17(h)(4)
SAE J1962	2002	Society of Automotive Engineers	Diagnostic Connector Equivalent to ISO/DIS 15031	40 CFR 86.1806-05(h)(1)(iv)
SAE J1978	2002	Society of Automotive Engineers	OBD II Scan Tool Equivalent to ISO/DIS 15031-4	40 CFR 86.1806-05(h)(1)(v)
SAE J1979	2002	Society of Automotive Engineers	E/E Diagnostic Test Modes	40 CFR 86.1806-05(h)(1)(ii)
SAE J2009 (pdf)	1993	Society of Automotive	Discharge Forward	49 CFR 571

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Public Safety Standards of the United States

SAE J2009 (html)		Engineers	Lighting Systems	
SAE J2012	2002	Society of Automotive Engineers	Diagnostic Trouble Code Definitions	40 CFR 86.1806-04(h)(1)(ii)
SAE J2040	2002	Society of Automotive Engineers	Tail Lamps (Rear Position Lamps) for Use on Vehicles 2032 mm or More in Overall Width	9 CFR 393.25(c)
SAE J2260	1996	Society of Automotive Engineers	Non-metallic Fuel System Tubing with One or More Layers	40 CFR 1048.105(a)(2)
SAE J2261	2002	Society of Automotive Engineers	Stop Lamps and Front- and Rear-Turn Signal Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width	49 CFR 393.25(c)
SAE J2534	2002	Society of Automotive Engineers	Recommended Practice for Pass-Thru Vehicle Programming	40 CFR 86.096-38(g)(17)(iv)
SCTE 26	2010	Society of Cable Telecommunications Engineers	Home Digital Network Interface Specification with Copy Protection	47 CFR 76.640(b)(4)(iii)
SCTE 28	2007	Society of Cable Telecommunications Engineers	Host-POD Interface Standard	47 CFR 15.123(b)(4)
SCTE 40	2004	Society of Cable Telecommunications Engineers	Digital Cable Network Interface Standard (2004)	47 CFR 15.123(b)(2)
SCTE 40	2011	Society of Cable Telecommunications Engineers	Digital Cable Network Interface Standard (2011)	47 CFR 15.123(b)(2)
SCTE 41	2011	Society of Cable Telecommunications Engineers	POD Copy Protection System	47 CFR 76.640(b)(2)(ii)
SCTE 54	2009	Society of Cable Telecommunications Engineers	Digital Video Service Multiplex and Transport System Standard for Cable Television	47 CFR 15.123(b)(3)
SCTE 65	2008	Society of Cable Telecommunications Engineers	Service Information Delivered Out-of-Band for Digital Cable Television	47 CFR 76.640(b)(1)(ii)
SEAC	1996	Structural Engineers Association of California	Recommended Lateral Force Requirements and Commentary including Errata	42 CFR 52b.12(c)(5)
SJI	1994	Steel Joist Institute	Standard Specification Load Tables and	24 CFR 3280.304(b)(1)

Public Safety Standards of the United States

			Weight Tables for Steel Joists and Joist Girders	
SMACCNA HVAC (pdf) SMACCNA HVAC (html) SMACCNA HVAC (svg)	1985	Sheet Metal and Air Conditioning Contractors National Association	SMACNA: HVAC Air Duct Leakage Test Manual	10 CFR 434.403.2.9.3
SMACCNA DUCT (pdf) SMACCNA DUCT (html) SMACCNA DUCT (svg)	1995	Sheet Metal and Air Conditioning Contractors National Association	SMACCNA: HVAC Duct Construction Standards – Metal and Flexible (RS-34)	10 CFR 434.403.2.9.3
SMACCNA GLASS (pdf)	1992	Sheet Metal and Air Conditioning Contractors National Association	SMACCNA: Fibrous Glass Duct Construction Standards (RS-36)	10 CFR 434.403.2.9.3
SMACCNA AIR (pdf)	1978	Sheet Metal and Air Conditioning Contractors National Association	SMACCNA: Energy Recovery Equipment and Systems, Air-to-Air	10 CFR 440 Appendix A
NIST Handbook H-28	1942	Department of Commerce	Handbook of Screw-Thread Standards for Federal Service	49 CFR 178.45(f)(5)(ii)
DOD AFTO 11A-1-47	1988	Department of Defense	Explosive Hazard Classification Procedures	49 CFR 173.56(b)(2)(i)
FedSpec RR-C-901D	2003	Department of Transportation	Cylinders, Compressed Gas: High Pressure, Steel DOT 3AA, and Aluminum Applications	49 CFR 173.302(b)(3)
RTCA 23-63	1963	Radio Technical Commission for Aeronautics	Standard Adjustment Criteria for Airborne Localizer and Glide Slope Receivers	14 CFR 91 App. A, 3(a)(1)
SNELL B-90	1998	Snell Memorial Foundation	Standard for Protective Headgear for Use in Bicycling	16 CFR 1203.53(a)(4)
SNELL B-95	1998	Snell Memorial Foundation	Standard for Protective Headgear for Use in Bicycling	16 CFR 1203.53(a)(7)
SRCC OG-300	2008	Solar Rating and Certification Corporation	Operating Guidelines and Minimum Standards for Certifying Solar Water Heating Systems	24 CFR 200.950(a)(1)
TPI	1985	Truss Plate Institute	Design Specifications for Metal Plate Connected Wood	24 CFR 3280.304(b)(1)

Public Safety Standards of the United States

			Trusses	
TTMA RP-61	1998	Truck Trailer Manufacturers Association	Performance of Manhole and/or Fill Opening Assemblies	49 CFR 180.405(g)(2)(i)
TTMA RP-81	1997	Truck Trailer Manufacturers Association	Performance of Spring Loaded Pressure Relief Valves	49 CFR 178.345-10(b)(3)(i)
TTMA RP-107	1998	Truck Trailer Manufacturers Association	Procedure for Testing In-Service Unmarked and/or Uncertified MC 306 and Non-ASME MC 312 Type Cargo Tank Manhole	49 CFR 180.405(g)(2)(i)
UL 17	1988	Underwriters Laboratories	Vent or Chimney Connector Dampers for Oil-Fired Appliances	10 CFR 440 Appendix A
UL 38	1993	Underwriters Laboratories	Standard for Manually Actuated Signaling Boxes for Use with Fire-Protective Signaling Systems	46 CFR 161.002-4(b)(1)
UL 44	2002	Underwriters Laboratories	Standard for Thermoset-Insulated Wire and Cable	46 CFR 110.10-1
UL 50	1995	Underwriters Laboratories	Standard for Enclosures for Electrical Equipment	46 CFR 111.81-1(d)
UL 62	1997	Underwriters Laboratories	Standard for Flexible Cord and Fixture Wire	46 CFR 110.10-1
UL 127	1996	Underwriters Laboratories	Factory-Built Fireplaces	24 CFR 3280
UL 142 (pdf) UL 142 (html)	1968	Underwriters Laboratories	Steel Above Ground Tanks for Flammable and Combustible Liquids	49 CFR 1910
UL 174	1989	Underwriters Laboratories	Household Electric Storage Tank Water Heaters	46 CFR 63.25-3(a)
UL 217	1993	Underwriters Laboratories	Single and Multiple Station Smoke Detectors	46 CFR 181.450(a)(1)
UL 486A	1990	Underwriters Laboratories	Wire Connections and Soldering Lugs for Use With Copper Conductors	46 CFR 175.600
UL 521	1993	Underwriters Laboratories	Heat Detectors for Fire Protective Signaling Systems	46 CFR 161.002-4(b)(1)
UL 727	1994	Underwriters	Oil-Fired Central	10 CFR 431.76(c)(1)

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		Laboratories	Furnaces	
UL 746C	1995	Underwriters Laboratories	Polymeric Material– Use in Electrical Equipment Evaluations	16 CFR 1211.10(e)(2)
UL 913	1988	Underwriters Laboratories	Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III Division 1, Hazardous (Classified) Locations	46 CFR 111.105-11(a)
UL 991	1995	Underwriters Laboratories	Tests for Safety-Related Controls Employing Solid-State Devices	16 CFR 1211.4(c)
UL 1042	1995	Underwriters Laboratories	Electric Baseboard Heating Equipment	24 CFR 3280.703
UL 1072	1995	Underwriters Laboratories	Standard for Medium-Voltage Power Cables	46 CFR 111.60-1(e)
UL 1096	1986	Underwriters Laboratories	Electrical Central Air Heating Equipment	24 CFR 3280.703
UL 1104	1983	Underwriters Laboratories	Standard for Marine Navigation Lights	46 CFR 120.420
UL 1426	1986	Underwriters Laboratories	Cables for Boats	33 CFR 183.435(a)(4)
UL 1570	1995	Underwriters Laboratories	Fluorescent Lighting Fixtures	46 CFR 183.410(d)
UL 1571	1995	Underwriters Laboratories	Incandescent Lighting Fixtures	46 CFR 111.75-20(e)
UL 1572	1995	Underwriters Laboratories	High Intensity Discharge Lighting Fixtures	46 CFR 120.410(d)
UL 1574	1995	Underwriters Laboratories	Track Lighting Systems	46 CFR 111.75-20(e)
UL 1995	1995	Underwriters Laboratories	Heating and Cooling Equipment, Second Edition, with 1999 revisions	24 CFR 3280.4
UN ECE	1996	United Nations Economic Commission of Europe	Uniform Provisions Concerning the Approval of Vehicles with Regard to the Installation of Lighting and Light-Signaling Devices	49 CFR 571.108
UN ESC	2009	United Nations Economic and Social Council	Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria	49 CFR 173.128(c)(3)

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UN ESC	2005	United Nations Economic and Social Council	Recommendations on the Transport of Dangerous Goods	49 CFR 173.40(d)(2)
FAO 4	1995	UN Food and Agriculture Organization	Requirements for the Establishment of Pest-free Areas	7 CFR 319.56
IAEA Circular 225	1999	International Atomic Energy Agency	Physical Protection of Nuclear Material and Nuclear Facilities	10 CFR 110.44(b)(1)
IAEA TS-R-1	2009	International Atomic Energy Agency	Regulations for the Safe Transport of Radioactive Material	49 CFR 171.23
IMO Resolution A.264	1960	International Maritime Organization	Amendment to Chapter VI of the International Convention for the Safety of Life at Sea	46 CFR 172.015(a)(2)
IMO Resolution A.265	1973	International Maritime Organization	Carriage of Grain	46 CFR 170.135(a)
IMO Resolution A.342	1975	International Maritime Organization	Recommendations on Performance Standards for Automatic Pilots	33 CFR 164.13(d)(1)
IMO Resolution A.414	1979	International Maritime Organization	Code for Construction and Equipment of Mobile Offshore Drilling Units	33 CFR 143.207(c)
IMO Resolution A.520	1983	International Maritime Organization	Code of Practice for the Evaluation, Testing and Acceptance of Prototype Novel Life-Saving Appliances and Arrangements	46 CFR 108.105(c)(1)
IMO Resolution A.525	1983	International Maritime Organization	Performance Standards for Narrow-band Direct Printing Telegraph Equipment for the Reception of Navigational and Meteorological Warnings	47 CFR 80.1101(c)(1)(i)
IMO Resolution A.601	1987	International Maritime Organization	Provision and Display of Manoeuvring Information on Board Ships	33 CFR 157.450
IMO Resolution A.649	1991	International Maritime Organization	Code for the Construction and Equipment of Mobile Offshore Drilling Units (MODU Code)	46 CFR 108.503
IMO Resolution	1989	International Maritime	Graphical Symbols for	46 CFR 109.563(a)(6)

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		Organization	Fire Control Plans	
A.654				
IMO Resolution A.657	1989	International Maritime Organization	Instructions for Action in Survival Craft	46 CFR 160.151-21(v)(3)
IMO Resolution A.658	1989	International Maritime Organization	Use and Fitting of Retro-Reflective Materials on Life-Saving Appliances	46 CFR 108.645(a)(4)
IMO Resolution A.662	1989	International Maritime Organization	Performance Standards for Float-Free Release and Activation Arrangements for Emergency Radio Equipment	47 CFR 80.1101(c)(11)(ii)
IMO Resolution A.664	1989	International Maritime Organization	Performance Standards for Enhanced Group Call Equipment	47 CFR 80.1101(c)(10)
IMO Resolution A.688	1991	International Maritime Organization	Fire Test Procedures for Ignitability of Bedding Components	46 CFR 116.405(j)(2)
IMO Resolution A.689	1996	International Maritime Organization	Recommendation on Testing Life-Saving Appliances	46 CFR 160.151-21(f)
IMO Resolution A.694	1991	International Maritime Organization	General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System and for Electronic Navigational Aids	47 CFR 80.1101(b)(1)
IMO Resolution A.700	1991	International Maritime Organization	Performance Standards for Narrow-band Direct-printing Telegraph Equipment for the Reception of Navigational and Meteorological Warnings and Urgent Information to Ships	47 CFR 80.1101(c)(4)(iv)
IMO Resolution A.739	1993	International Maritime Organization	Guidelines for the Authorization of Organizations Acting on Behalf of the Administration	33 CFR 96.440(a)(12)
IMO Resolution A.741	1993	International Maritime Organization	International Management Code for the Safe Operation of Ships and for Pollution Prevention	33 CFR 96.220(b)

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IMO Resolution A.744	1993	International Maritime Organization	Guidelines on the Enhanced Program of Inspections During Surveys of Bulk Carriers and Oil Tankers	33 CFR 157.430(a)
IMO Resolution A.751	1994	International Maritime Organization	Interim Standards for Ship Manoeuvrability	33 CFR 157.445(a)
IMO Resolution A.753	1993	International Maritime Organization	Guidelines for the Application of Plastic Pipe on Ships	46 CFR 56.60-25(a)
IMO Resolution A.760	1993	International Maritime Organization	Symbols Related to Life-Saving Appliances and Arrangements	46 CFR 108.646(a)
IMO Resolution A.788	1995	International Maritime Organization	Guidelines on Implementation of the International Safety Management (ISM) Code by Administrations	33 CFR 96.320(c)(2)
IMO Resolution A.802	1995	International Maritime Organization	Performance Standards for Survival Craft Radar Transponders for Use in Search and Rescue Operations	47 CFR 80.1101(c)(6)(i)
IMO Resolution A.803	1995	International Maritime Organization	Performance Standards for Shipborne VHF Radio Installations Capable of Voice Communication and Digital Selective Calling	47 CFR 80.1101(c)(2)(i)
IMO Resolution A.804	1995	International Maritime Organization	Performance Standards for Shipborne MF Radio Installations Capable of Voice Communication and Digital Selective Calling	47 CFR 80.1101(c)(3)(i)
IMO Resolution A.806	1995	International Maritime Organization	Performance Standards for Shipborne MF/HF Radio Installations Capable of Voice Communication, Narrow-Band Direct Printing and Digital Selective Calling	47 CFR 80.1101(c)(4)(i)
IMO Resolution A.807	1995	International Maritime Organization	Performance Standards for INMARSAT Standard-C	47 CFR 80.1101(c)(9)

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			Ship Earth Stations Capable of Transmitting and Receiving Direct-Printing Communications	
IMO Resolution A.808	1995	International Maritime Organization	Performance Standards for Ship Earth Stations Capable of Two-Way Communications	47 CFR 80.1101(c)(8)
IMO Resolution A.809	1995	International Maritime Organization	Performance Standards for Survival Craft Two-Way VHF Radiotelephone Apparatus	47 CFR 80.1101(c)(7)(i)
IMO Resolution A.810	1995	International Maritime Organization	Performance Standards for Float-free Satellite Emergency Position-Indicating Radio Beacons (EPIRBs) Operating on 406 MHz	47 CFR 80.1101(c)(5)(i)
IMO Resolution A.812	1995	International Maritime Organization	Performance Standards for Float-Free Satellite EPIRBs Operating Through the Geostationary INMARSAT Satellite System on 1.6 GHz	47 CFR 80.1101(c)(11)(i)
USEC 651	1995	United States Enrichment Corporation	Good Handling Practices for Uranium Hexafluoride	49 CFR 173.417(a)(3)(i)
USPHS 934	1962	U.S. Public Health Service	Food Service Sanitation Ordinance and Code	29 CFR 1910.142(i)(1)
USPHS 956	1962	U.S. Public Health Service	Drinking Water Standards	46 CFR 160.026-4(a)
USPHS 934	1962	U.S. Public Health Service	Food Service Sanitation Ordinance and Code	29 CFR 1910.142(i)(1)
USPHS 9	2003	U.S. Public Health Service	The Ships Medicine Chest and Medical Aid at Sea	33 CFR 143.405(a)(15)
WCLIB R17	2004	West Coast Lumber Inspection Bureau	Grading Rules for West Coast Lumber	7 CFR 1728.201(f)(1)(i)
WHO	1973	World Health Organization	Laboratory Techniques in Rabies	9 CFR 113.209(d)(3)
WIPO ST.25	2001	World Intellectual Property Organization	Handbook on Industrial Property Information	37 CFR 1.821(a)(1)

Public Safety Standards of the United States				
WQA S-100	1985	Water Quality Association	and Documentation Water Softeners	24 CFR 200, Subpart S
WQA S-200	1988	Water Quality Association	Water Filters	24 CFR 200, Subpart S
WQA S-300	1984	Water Quality Association	Point-of-Use, Low Pressure Reverse Osmosis Drinking Water Systems	24 CFR 200, Subpart S
WQA S-400	1986	Water Quality Association	Point-of-Use Distillation Drinking Water Systems	24 CFR 200, Subpart S
WSTDA T-1	2005	Web Sling and Tiedown Association	Recommended Standard Specification for Synthetic Web Tiedowns	49 CFR 393.104(e)(3)

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Building	Fire	Mechanical	Plumbing	Fuel/Gas	Electrical	Accessibility	Energy
ALABAMA							
Authority: Building Commission							
IBC2009 IBC2009 Storm: ICC500- 2008	IFC2009 IBC2009	IMC2009 IBC2009	IPC2009 IPC2009	IFGC2009	NEC2011 NEC2011		ASHRAE 90.1-2007
ALASKA							
Authority: Fire Authority: Energy							
IBC2009 IBC2009	IFC2009 IBC2009	IMC2009 IBC2009	UPC2003	IFGC2006	NEC2005 IEE C2- 2002		
ARIZONA							
Authority: SOS Authority: Fire							
	IFC2006						IECC2006
Phoenix							
Authority: Building							
IBC2012 IRC2012 IEBC2012 IPMC2012	IFC2012	IMC2012	UPC2012	IFGC2012	NEC2011 NEC2011	A117.1-2009	IECC2012
ARKANSAS							
Authority: Fire Authority: Building							
IBC2006	IFC2006	IMC2006	IPC2006	IFGC2006			
CALIFORNIA							
Authority: BSC							
2013 Building	2013 FIRE	2013 MECH	2013 PLUM		2013 ELEC		ENERGY GREEN
COLORADO							
Authority: Architect							
IBC2012	IFC2006	IMC2012	IPC2009 IPC2009	IFGC2009	NEC2011 	A117.1-2003	IECC2012

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							NEC2011
Denver							Authority: Building
IBC2009 IBC2009 IRC2009	IFC2009 IBC2009	IMC2009 IBC2009	IPC2009 IPC2009	IFGC2009	NEC2008		IECC2009 IECC2009
CONNECTICUT							Authority: Construction
IBC2003 IRC2009		IMC2003	IPC2003		NEC2005	A117.1-2003	IECC2009 IECC2009
DELAWARE							
			IPC2009 IPC2009		NEC2011 NEC2011	A117.1-1992	IECC2009 IECC2009
Sussex County							Authority: Building
IBC2012 IRC2012							
DISTRICT OF COLUMBIA							Authority: Building
IBC2006 IRC2006	IFC2006	IMC2006	IPC2006	IFGC2006	NEC2005		IECC2006
FLORIDA							Authority: Building
IBC2009 IBC2009 IRC2009 IRC2009 IEBC2009 ICC HURRICANE		IMC2009 IMC2009		IFGC2009			
GEORGIA							Authority: Building
IBC2012 IRC2012 IEBC2012 IPMC2012	IFC2012	IMC2012	IPC2012	IFGC2012	NEC2011 NEC2011		IECC2009 IECC2009
HAWAII							Authority: Building
IBC2006	NFPA1-2006		UPC2006		NEC2008		IECC2006
IDAHO							Authority: Rules, Fire, Building
IBC2012 IEBC2012 IRC2009 IRC2009	IFC2012	IMC2012	UPC2009	IFGC2012	NEC2008	A117.1-2009	
ILLINOIS							Authority: Codes
IBC2009 IBC2009	IFC2009 IFC2009	IMC2009 IMC2009	Illinois	IFGC2009		Verbiage Images	

Public Safety Codes of the United States

Chicago		Authority: Building					
Code (Official) Code (Bulk)							
INDIANA		Authority: Housing					
IBC2006	IFC2006	IMC2006	UPC1997	IFGC2006	NEC2008	A117.1-2003	ASHRAE 90.1-2007
IOWA		Authority: Building					
IBC2009 IBC2009 IRC2009 IRC2009 IEBC2009		IMC2009 IMC2009	UPC2012		NEC2011 NEC2011		IECC2009 IECC2009
KANSAS		Authority: Building					
Wichita		Authority: Building					
IBC2006 IRC2006 IEBC2006	IFC2006	IMC2006	UPC2000		NEC2005		
KENTUCKY		Authority: Building Authority: Plumbing					
IBC2012 IRC2012	IFC2012 NFPA101-2012	IMC2012			NEC2008	A117.1-2009	IECC2009 IECC2009
LOUISIANA		Authority: Safety					
IBC2012		IMC2009 IMC2009		IFGC2009	NEC2008	Accessibility	ASHRAE 90.1-2007
MAINE		Authority: Building Authority: Fire					
IBC2009 IBC2009 IRC2009 IRC2009 IEBC2009	NFPA1-2006		UPC2006		NEC2011 NEC2011		IECC2009 IECC2009 ASHRAE 90.1-2007
MARYLAND		Authority: Housing					
IBC2012 IRC2012	IFC2012 NFPA101-2012	IMC2006	PHCC-NSPC-2006	IFGC2006	NEC2011 NEC2011		IECC2012
MASSACHUSETTS		Authority: Building					
IBC2009 IBC2009 IEBC2009	IFC2009 IFC2009	IMC2009 IMC2009			NEC2014		IECC2009 IECC2009 ASHRAE 90.1-2007
MICHIGAN		Authority: Labor					

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IBC2009 IBC2009 IRC2009 IRC2009		IMC2009 IMC2009	IPC2009 IPC2009	IFGC2009	NEC2008		IECC2009 IECC2009
MINNESOTA		Authority: DLI					
IBC2006 IRC2006		IMC2006		IFGC2006	NEC2011 NEC2011		ASHRAE 90.1-2004
MISSISSIPPI							
Jackson		Authority: Building					
IBC2003	IFC2003		IPC2003	IFGC2003	NEC2005		
MISSOURI							
St. Louis		Authority: Building					
IBC2009 IBC2009 IRC2009 IRC2009 IEBC2009	IFC2009 IFC2009	IMC2009 IMC2009	UPC2009	IFGC2009	NEC2011 NEC2011		IECC2009 IECC2009
MONTANA		Authority: Building					
IBC2009 IBC2009 IRC2009 IRC2009 IEBC2009		IMC2009 IMC2009	UPC2009	IFGC2009	NEC2011 NEC2011		IECC2009 IECC2009
NEBRASKA		Authority: Fire Authority: Energy					
	NFPA101- 2003						ASHRAE 90.1-2007
Lincoln		Authority: Building					
IBC2009 IBC2009 IRC2009 IRC2009	IFC2009 IFC2009	IMC2009 IMC2009		IFGC2009	NEC2011 NEC2011		
NEVADA		Authority: Fire					
IBC2006	IFC2006	UMC2006	UPC2006				
Las Vegas		Authority: Building Authority: Amusement					
IBC2009 IBC2009 IRC2009 IRC2009		UMC2009	UPC2009	Fuel/Gas	NEC2008		IECC2009 IECC2009
NEW HAMPSHIRE		Authority: Building					
IBC2009							

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IBC2009 IRC2009 IRC2009		IMC2009 IMC2009	IPC2009 IPC2009		NEC2011 NEC2011		IECC2009 IECC2009
NEW JERSEY Authority: Building							
IBC2009 IBC2009 IRC2009 IRC2009		IMC2009 IMC2009	NSPC2009	IFGC2009	NEC2011 NEC2011	A117.1-2003	IECC2009 IECC2009
NEW MEXICO Authority: Building Authority: Fire							
IBC2009 IBC2009 IRC2009 IRC2009 IEBC2009	IFC2003	UMC2009	UPC2009 USPSHTC2009		NEC2011 NEC2011		IECC2009 IECC2009 USEC2009
NEW YORK Authority: Building							
IBC2006 IRC2006 IEBC2006	IFC2006	IMC2006	IPC2006	IFGC2006			IECC2006
New York City Authority: Building (Get the Updates!)							
Building Zoning	Fire	Mechanical	Plumbing	Fuel/Gas	Electrical		
NORTH CAROLINA Authority: Building							
IBC2009 IBC2009 IRC2009 IRC2009	IFC2009 IFC2009	IMC2009 IMC2009	IPC2009 IPC2009	IFGC2009	NEC2011 NEC2011		IECC2009 IECC2009
NORTH DAKOTA Authority: Building Authority: Electric Authority: Plumbing							
IBC2012 IRC2012		IMC2012	UPC2009	IFGC2012	NEC2011 NEC2011		
OHIO Authority: Building							
IBC2009 IBC2009	IFC2009 IFC2009	IMC2009 IMC2009	IPC2009 IPC2009	IFGC2009	NEC2011 NEC2011	A117.1-2009 A117.1-2009	ASHRAE 90.1-2009 IECC2009 IECC2009
OKLAHOMA Authority: Building							
IBC2009 IBC2009 IRC2009 IRC2009 IEBC2009	IFC2009 IFC2009	IMC2009 IMC2009	IPC2009 IPC2009	IFGC2009	NEC2011 NEC2011		

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OREGON								Authority: Building
Structural Residential	Fire	Mechanical					Energy	
PENNSYLVANIA								Authority: Building
IBC2009 IBC2009 IRC2009 IRC2009 IEBC2009	IFC2009 IFC2009	IMC2009 IMC2009	IPC2009 IPC2009	IFGC2009	NEC2008		IECC2009 IECC2009	
RHODE ISLAND								Authority: Building
IBC2012 IRC2012	NFPA1-2003	IMC2012	IPC2012	IFGC2012	NEC2011 NEC2011		IECC2012	
SOUTH CAROLINA								Authority: Building
IBC2006 IRC2006	IFC2006		IPC2006	IFGC2006	NEC2008			
SOUTH DAKOTA								Authority: Plumbing Authority: Electrical
			UPC2003		NEC2008			
Sioux City								Authority: Building Authority: Reed
IBC2012 IRC2012 IEBC2012		IMC2012	UPC2009	IFGC2012	NEC2011 NEC2011			
TENNESSEE								Authority: SOS
IBC2006 IRC2009 IRC2009	IFC2006 NFPA 101- 2006	IMC2006					IECC2006 ASHRAE 90.1-2007	
TEXAS								Authority: Reed
IBC2003					NEC2008			
Dallas								Authority: Building
IBC2012 IRC2012	IFC2006	IMC2012	IPC2012	IFGC2012	NEC2011 NEC2011		IECC2012 IECC2009	
Houston								Authority: Building
IBC2006 IRC2006	IFC2006	UMC2006	UPC2006		NEC2011 NEC2011		ASHRAE 90.1-2007 IECC2009 IECC2009	
UTAH								Authority: Building

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IBC2009 IBC2009 IRC2009 IRC2009 IEBC2009 UCADB 1997	IFC2012 NFPA101- 2012	IMC2009 IMC2009	IPC2009 IPC2009	IFGC2009	NEC2008		IECC2009 IECC2009
VERMONT Authority: Fire							
IBC2012	IFC2012 NFPA101- 2012		IPC2012		NEC2011 NEC2011		
VIRGINIA Authority: Building							
IRC2009 IRC2009 IEBC2009	IFC2009 IFC2009	IMC2009 IMC2009		IFGC2009	NEC2008		IECC2009 IECC2009
WASHINGTON Authority: Building							
IBC2012 IRC2012 IEBC2012	IFC2012	IMC2012	UPC2012		NEC2005	A117.1-2003	
WEST VIRGINIA Authority: Fire							
IBC2009 IBC2009 IRC2009 IRC2009 IEBC2009	NFPA101- 2012	IMC2009 IMC2009	IPC2009 IPC2009	IFGC2009	NEC2008	A117.1-2003	IECC2003
WISCONSIN Authority: Public Safety							
IBC2009 IBC2009 IEBC2009		IMC2009 IMC2009		IFGC2009		A117.1-2003	IECC2009 IECC2009
WYOMING Authority: Fire							
IBC2006 IEBC2006	IFC2006	IMC2006		IFGC2006	NEC2011 NEC2011		
BOILER CODES Authority: National Board Synopsis							
API 510 (2006): Pressure Vessel Inspection Code: In-Service Inspection, Rating, Repair, and Alteration							
ASME B31.1 (2007): Code for Pressure Piping, Power Piping							
ASME B31.1 (2007): 2008 Addendum to the 2007 Edition							
ASME B31.1 (2007): 2009 Addendum to the 2007 Edition							
ASME B31.5 (2001): Code for Pressure Piping, Refrigeration Piping and Heat Transfer Components							
ASME B31.5 (2001): 2004 Addendum to the 2001 Edition							
ASME B31.9 (2008): Building Services Piping							
ASME BPVCI (2010): Boiler and Pressure Vessel Code, Part I, Rules for the Construction of Power Boilers							

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ASME BPVCI (2010): 2011 Addendum to the 2010 Edition
ASME BPVC IV (2007): Boiler and Pressure Vessel Code, Part IV, Rules for Construction of Heating Boilers
ASME BPVC IV (2007): 2008 Addendum to the 2007 Edition
ASME BPVC V (2010): Boiler and Pressure Vessel Code, Part V, Nondestructive Examination
ASME BPVC VI (2007): Boiler and Pressure Vessel Code, Part VI, Recommended Rules for the Care and Operation of Heating Boilers
ASME BPVC VI (2007): 2008 Addendum to the 2007 Edition
ASME BPVC VI (2010): Boiler and Pressure Vessel Code, Part VI, Recommended Rules for the Care and Operation of Heating Boilers
ASME BPVC VII (2010): Boiler and Pressure Vessel Code, Part VII, Recommended Guidelines for the Care of Power Boilers
ASME BPVC IX (2010): Boiler and Pressure Vessel Code, Part IX, Welding and Brazing Qualifications
ASME BPVC IX (2010): 2011 Addendum to the 2010 Edition
ASME CSD-1 (2009): Controls and Safety Devices for Automatically Fired Boilers
ASME PHVO-1 (2007): Safety Standard for Pressure Vessels for Human Occupancy
NB NBIC 1 (2007): National Board Inspection Code, Part 1, Installation
NB NBIC 1 (2007): 2008 Addendum to Part 1
NB NBIC 1 (2007): 2009 Addendum to Part 1
NB NBIC 2 (2007): National Board Inspection Code, Part 2, Inspection
NB NBIC 2 (2007): 2008 Addendum to Part 2
NB NBIC 2 (2007): 2009 Addendum to Part 2
NB NBIC 3 (2007): National Board Inspection Code, Part 3, Repair and Alteration
NB NBIC 3 (2007): 2008 Addendum to Part 3
NB NBIC 3 (2007): 2009 Addendum to Part 3

**ELEVATOR
CODES**

ANSI A10.4 (2007): Safety Requirements for Personnel Hoists on Construction and Demolition Sites
ANSI A10.5 (2006): Safety Requirements for Material Hoists - American National Standard for Construction and Demolition Operations
ASCE 21.1 (2005): Automated People Mover Standards, Part 1
ASCE 21.2 (2008): Automated People Mover Standards, Part 2
ASCE 21.3 (2008): Automated People Mover Standards, Part 3
ASCE 21.4 (2008): Automated People Mover Standards, Part 4
ASME A17.1 (1971): Safety Code for Elevators and Escalators
ASME A17.1 (2004): Safety Code for Elevators and Escalators
ASME A17.1 (2004): Addenda to the 2004 Edition
ASME A17.1 (2004): Addenda to the 2004 Edition
ASME A17.1 (2007): Safety Code for Elevators and Escalators
ASME A17.1 (2007): Addenda to the 2007 Edition
ASME A17.1 (2007): Addenda to the 2007 Edition

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ASME A17.2 (2007): Guide for Inspection of Elevators, Escalators, and Moving Walks
ASME A17.2 (2010): Guide for Inspection of Elevators, Escalators, and Moving Walks
ASME A17.3 (2002): Safety Code for Existing Elevators and Escalators (Includes Requirements for Electric and Hydraulic Elevators and Escalators)
ASME A17.3 (2008): Safety Code for Existing Elevators and Escalators (Includes Requirements for Electric and Hydraulic Elevators and Escalators)
ASME A17.4 (1999): Guide for Emergency Personnel
ASME A17.5 (2004): Elevator and Escalator Electrical Equipment
ASME A17.6 (2010): Standard for Elevator Suspension, Compensation, and Governor Systems
ASME A17.7 (2007): Performance-Based Safety Code for Elevators and Escalators
ASME A18.1 (2005): Safety Standard for Platform Lifts and Stairway Chairlifts
ASME A18.1 (2008): Safety Standard for Platform Lifts and Stairway Chairlifts
ASME A90.1 (2003): Safety Standard for Belt Manlifts
ASME QEI-1 (2007): Standard for the Qualification of Elevator Inspectors

**AMUSEMENT
CODES**

ASTM F698 (1994): Standard Specification for Physical Information to be Provided for Amusement Rides and Devices
ASTM F747 (1997): Standard Terminology Relating to Amusement Rides and Devices
ASTM F747 (2006): Standard Terminology Relating to Amusement Rides and Devices
ASTM F770 (1993): Standard Practice for Ownership and Operation of Amusement Rides and Devices
ASTM F770 (2006): Standard Practice for Ownership and Operation of Amusement Rides and Devices
ASTM F846 (1992): Standard Guide for Testing Performance of Amusement Rides and Devices
ASTM F853 (2004): Standard Practice for Maintenance Procedures for Amusement Rides and Devices
ASTM F853 (2005): Standard Practice for Maintenance Procedures for Amusement Rides and Devices
ASTM F893 (2005): Standard Guide for Inspection of Amusement Rides and Devices
ASTM F1159 (2003): Standard Practice for Design and Manufacture of Patron Directed, Artificial Climbing Walls, Dry Slide, and Purposeful Water Immersion Amusement
ASTM F1193 (2004): Standard Practice for Quality, Manufacture, and Construction of Amusement Rides and Devices
ASTM F1193 (2006): Standard Practice for Quality, Manufacture, and Construction of Amusement Rides and Devices
ASTM F1305 (1994): Standard Guide for Classification of Amusement Ride and Device Related Injuries and Illnesses
ASTM F1950 (1999): Standard Specification for Physical Information to be Transferred With Used Amusement Rides and Devices
ASTM F1957 (1999): Standard Test Method for Composite Foam Hardness Durometer Hardness
ASTM F2007 (2000): Standard Practice for Design, Manufacture, and Operation of Concession Go Karts and Facilities
ASTM F2007 (2006): Standard Practice for Design, Manufacture, and Operation of Concession

Public Safety Codes of the United States

Go Karts and Facilities

ASTM F2137 (2001): Standard Practice for Measuring the Dynamic Characteristics of Amusement Rides and Devices

ASTM F2291 (2004): Standard Practice for Design of Amusement Rides and Devices

ASTM F2291 (2006): Standard Practice for Design of Amusement Rides and Devices

ASTM F2374 (2000): Standard Practice for Design, Manufacture, Operation, and Maintenance of Inflatable Amusement Devices

ASTM F2376 (2006): Standard Practice for Classification, Design, Manufacture, Construction, and Operation of Water Slide Systems

Last Updated: March 12, 2014



EXHIBIT 29

PREAMBLE (NOT PART OF THE STANDARD)

In order to promote public education and public safety, equal justice for all, a better informed citizenry, the rule of law, world trade and world peace, this legal document is hereby made available on a noncommercial basis, as it is the right of all humans to know and speak the laws that govern them.

END OF PREAMBLE (NOT PART OF THE STANDARD)

An American National Standard



Designation: D 86 – 07

Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure¹

This standard is issued under the fixed designation D 86; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This test method covers the atmospheric distillation of petroleum products using a laboratory batch distillation unit to determine quantitatively the boiling range characteristics of such products as light and middle distillates, automotive spark-ignition engine fuels, aviation gasolines, aviation turbine fuels, 1-D and 2-D regular and low sulfur diesel fuels, special petroleum spirits, naphthas, white spirits, kerosines, and Grades 1 and 2 burner fuels.

1.2 The test method is designed for the analysis of distillate fuels; it is not applicable to products containing appreciable quantities of residual material.

1.3 This test method covers both manual and automated instruments.

1.4 Unless otherwise noted, the values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for information only.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 All standards are subject to revision, and parties to agreement on this test method are to apply the most recent edition of the standards indicated below, unless otherwise specified, such as in contractual agreements or regulatory rules where earlier versions of the method(s) identified may be required.

2.2 ASTM Standards:²

- D 97 Test Method for Pour Point of Petroleum Products
- D 323 Test Method for Vapor Pressure of Petroleum Products (Reid Method)
- D 2892 Test Method for Distillation of Crude Petroleum (15-Theoretical Plate Column)
- D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products
- D 4177 Practice for Automatic Sampling of Petroleum and Petroleum Products
- D 4953 Test Method for Vapor Pressure of Gasoline and Gasoline-Oxygenate Blends (Dry Method)
- D 5190 Test Method for Vapor Pressure of Petroleum Products (Automatic Method)
- D 5191 Test Method for Vapor Pressure of Petroleum Products (Mini Method)
- D 5842 Practice for Sampling and Handling of Fuels for Volatility Measurement
- D 5949 Test Method for Pour Point of Petroleum Products (Automatic Pressure Pulsing Method)
- D 5950 Test Method for Pour Point of Petroleum Products (Automatic Tilt Method)
- D 5985 Test Method for Pour Point of Petroleum Products (Rotational Method)
- E 1 Specification for ASTM Liquid-in-Glass Thermometers
- E 77 Test Method for Inspection and Verification of Thermometers
- E 1272 Specification for Laboratory Glass Graduated Cylinders
- E 1405 Specification for Laboratory Glass Distillation Flasks

EXHIBIT 64
Ashley Soevyn, CSR No. 12019

Date 2/27/15

Witness: MALAMUD

JA907

2.3 Energy Institute Standards:³

IP 69 Determination of Vapour Pressure—Reid Method

IP 123 Petroleum Products—Determination of Distillation Characteristics

IP 394 Determination of Air Saturated Vapour Pressure

IP Standard Methods for Analysis and Testing of Petroleum and Related Products 1996—Appendix A

¹ This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.08.0A on Distillation.

In the IP, the equivalent test method is published under the designation IP 123. It is under the jurisdiction of the Standardization Committee.

Current edition approved Jan. 15, 2007. Published February 2007. Originally approved in 1921. Last previous edition approved in 2005 as D 86-05.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from Energy Institute, 61 New Cavendish St., London, W1G 7AR, U.K., http://www.energyinst.org.uk.

*A Summary of Changes section appears at the end of this standard.

TABLE 1 Preparation of Apparatus

	Group 1	Group 2	Group 3	Group 4
Flask, mL	125	125	125	125
ASTM distillation thermometer	7C (7F)	7C (7F)	7C (7F)	8C (8F)
IP distillation thermometer range	low	low	low	high
Flask support board	B	B	C	C
diameter of hole, mm	38	38	50	50
Temperature at start of test				
Flask C	13-18	13-18	13-18	not above
	°F 55-65	55-65	55-65	ambient
Flask support and shield	not above ambient	not above ambient	not above ambient	
Receiving cylinder and 100 mL charge				
	°C 13-18	13-18	13-18 ^A	13-ambient ^A
	°F 55-65	55-65	55-65 ^A	55-ambient ^A

^ASee 10.3.1.1 for exceptions.

3. Terminology

3.1 Definitions:

3.1.1 *charge volume, n*—the volume of the specimen, 100 mL, charged to the distillation flask at the temperature specified in Table 1.

3.1.2 *decomposition, n—of a hydrocarbon*, the pyrolysis or cracking of a molecule yielding smaller molecules with lower boiling points than the original molecule.

3.1.2.1 *Discussion*—Characteristic indications of thermal decomposition are evolution of fumes and erratic temperature readings that usually decrease after any attempt is made to adjust the heat.

3.1.3 *decomposition point, n*—the corrected thermometer reading that coincides with the first indications of thermal decomposition of the liquid in the flask.

3.1.3.1 *Discussion*—The decomposition point, as determined under the conditions of this test method, does not necessarily correspond to the decomposition temperature in other applications.

3.1.4 *dry point, n*—the corrected thermometer reading that is observed at the instant the last drop of liquid (exclusive of any drops or film of liquid on the side of the flask or on the temperature sensor), evaporates from the lowest point in the distillation flask.

3.1.4.1 *Discussion*—The end point (final boiling point), rather than the dry point, is intended for general use. The dry point can be reported in connection with special purpose naphthas, such as those used in the paint industry. Also, it is substituted for the end point (final boiling point) whenever the sample is of such a nature that the precision of the end point (final boiling point) cannot consistently meet the requirements given in the precision section.

3.1.5 *dynamic holdup, n*—the amount of material present in the neck of the flask, in the sidearm of the flask, and in the condenser tube during the distillation.

3.1.6 *emergent stem effect, n*—the offset in temperature reading caused by the use of total immersion mercury-in-glass thermometers in the partial immersion mode.

3.1.6.1 *Discussion*—In the partial immersion mode, a portion of the mercury thread, that is, the emergent portion, is at a lower temperature than the immersed portion, resulting in a shrinkage of the mercury thread and a lower temperature reading.

3.1.7 *end point (EP) or final boiling point (FBP), n*—the maximum corrected thermometer reading obtained during the test.

3.1.7.1 *Discussion*—This usually occurs after the evaporation of all liquid from the bottom of the flask. The term maximum temperature is a frequently used synonym.

3.1.8 *front end loss, n*—loss due to evaporation during transfer from receiving cylinder to distillation flask, vapor loss during the distillation, and uncondensed vapor in the flask at the end of the distillation.

3.1.9 *initial boiling point (IBP), n*—the corrected thermometer reading that is observed at the instant the first drop of condensate falls from the lower end of the condenser tube.

3.1.10 *percent evaporated, n*—the sum of the percent recovered and the percent loss.

3.1.11 *percent loss (or observed loss), n*—one hundred minus the percent total recovery.

3.1.11.1 *corrected loss, n*—percent loss corrected for barometric pressure.

3.1.12 *percent recovered, n*—the volume of condensate observed in the receiving cylinder, expressed as a percentage of the charge volume, associated with a simultaneous temperature reading.

3.1.13 *percent recovery, n*—the maximum percent recovered, as observed in accordance with 10.18.

3.1.13.1 *corrected percent recovery, n*—the percent recovery, adjusted for the difference between the observed loss and the corrected loss, as described in Eq 8.

3.1.13.2 *percent total recovery, n*—the combined percent recovery and residue in the flask, as determined in accordance with 11.1.

3.1.14 *percent residue, n*—the volume of residue in the flask, measured in accordance with 10.19, and expressed as a percentage of the charge volume.

3.1.15 *rate of change (or slope), n*—the change in temperature reading per percent evaporated or recovered, as described in 13.2.

3.1.16 *temperature lag, n*—the offset between the temperature reading obtained by a temperature sensing device and the true temperature at that time.

3.1.17 *temperature measurement device, n*—a thermometer, as described in 6.3.1, or a temperature sensor, as described in 6.3.2.

3.1.18 *temperature reading, n*—the temperature obtained by a temperature measuring device or system that is equal to the thermometer reading described in 3.1.19.

3.1.18.1 *corrected temperature reading, n*—the temperature reading, as described in 3.1.18, corrected for barometric pressure.

3.1.19 *thermometer reading (or thermometer result), n*—the temperature of the saturated vapor measured in the neck of the flask below the vapor tube, as determined by the prescribed thermometer under the conditions of the test.

3.1.19.1 *corrected thermometer reading, n*—the thermometer reading, as described in 3.1.19, corrected for barometric pressure.

4. Summary of Test Method

4.1 Based on its composition, vapor pressure, expected B₃P or expected EP, or combination thereof, the sample is placed in one of four groups. Apparatus arrangement, condenser temperature, and other operational variables are defined by the group in which the sample falls.

4.2 A 100-mL specimen of the sample is distilled under prescribed conditions for the group in which the sample falls. The distillation is performed in a laboratory batch distillation unit at ambient pressure under conditions that are designed to provide approximately one theoretical plate fractionation. Systematic observations of temperature readings and volumes of condensate are made, depending on the needs of the user of the data. The volume of the residue and the losses are also recorded.

4.3 At the conclusion of the distillation, the observed vapor temperatures can be corrected for barometric pressure and the data are examined for conformance to procedural requirements, such as distillation rates. The test is repeated if any specified condition has not been met.

4.4 Test results are commonly expressed as percent evaporated or percent recovered versus corresponding temperature, either in a table or graphically, as a plot of the distillation curve.

5. Significance and Use

5.1 The basic test method of determining the boiling range of a petroleum product by performing a simple batch distillation has been in use as long as the petroleum industry has existed. It is one of the oldest test methods under the jurisdiction of ASTM Committee D02, dating from the time when it was still referred to as the Engler distillation. Since the test method has been in use for such an extended period, a tremendous number of historical data bases exist for estimating end-use sensitivity on products and processes.

5.2 The distillation (volatility) characteristics of hydrocarbons have an important effect on their safety and performance, especially in the case of fuels and solvents. The boiling range gives information on the composition, the properties, and the behavior of the fuel during storage and use. Volatility is the major determinant of the tendency of a hydrocarbon mixture to produce potentially explosive vapors.

5.3 The distillation characteristics are critically important for both automotive and aviation gasolines, affecting starting, warm-up, and tendency to vapor lock at high operating

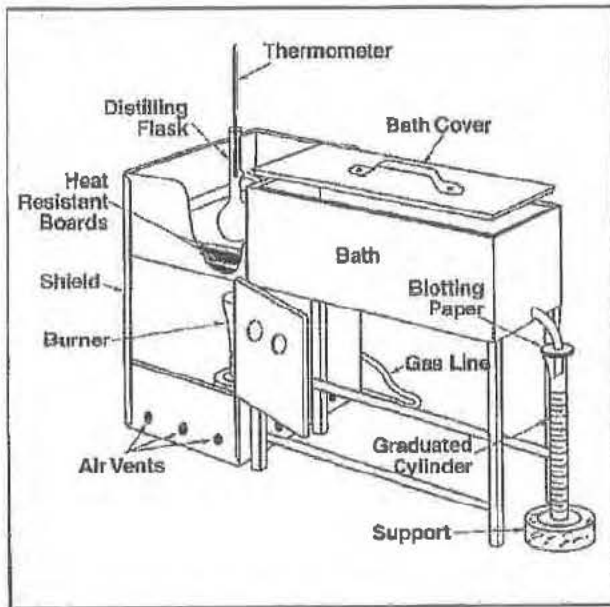


FIG. 1 Apparatus Assembly Using Gas Burner

temperature or at high altitude, or both. The presence of high boiling point components in these and other fuels can significantly affect the degree of formation of solid combustion deposits.

5.4 Volatility, as it affects rate of evaporation, is an important factor in the application of many solvents, particularly those used in paints.

5.5 Distillation limits are often included in petroleum product specifications, in commercial contract agreements, process refinery/control applications, and for compliance to regulatory rules.

6. Apparatus

6.1 Basic Components of the Apparatus:

6.1.1 The basic components of the distillation unit are the distillation flask, the condenser and associated cooling bath, a metal shield or enclosure for the distillation flask, the heat source, the flask support, the temperature measuring device, and the receiving cylinder to collect the distillate.

6.1.2 Figs. 1 and 2 are examples of manual distillation units.

6.1.3 In addition to the basic components described in 6.1.1, automated units also are equipped with a system to measure and automatically record the temperature and the associated recovered volume in the receiving cylinder.

6.2 A detailed description of the apparatus is given in Annex A2.

6.3 Temperature Measuring Device:

6.3.1 Mercury-in-glass thermometers, if used, shall be filled with an inert gas, graduated on the stem and enamel backed. They shall conform to Specification E1 or IP Standard Methods for Analysis and Testing of Petroleum and Related Products 1996—Appendix A, or both, for thermometers ASTM

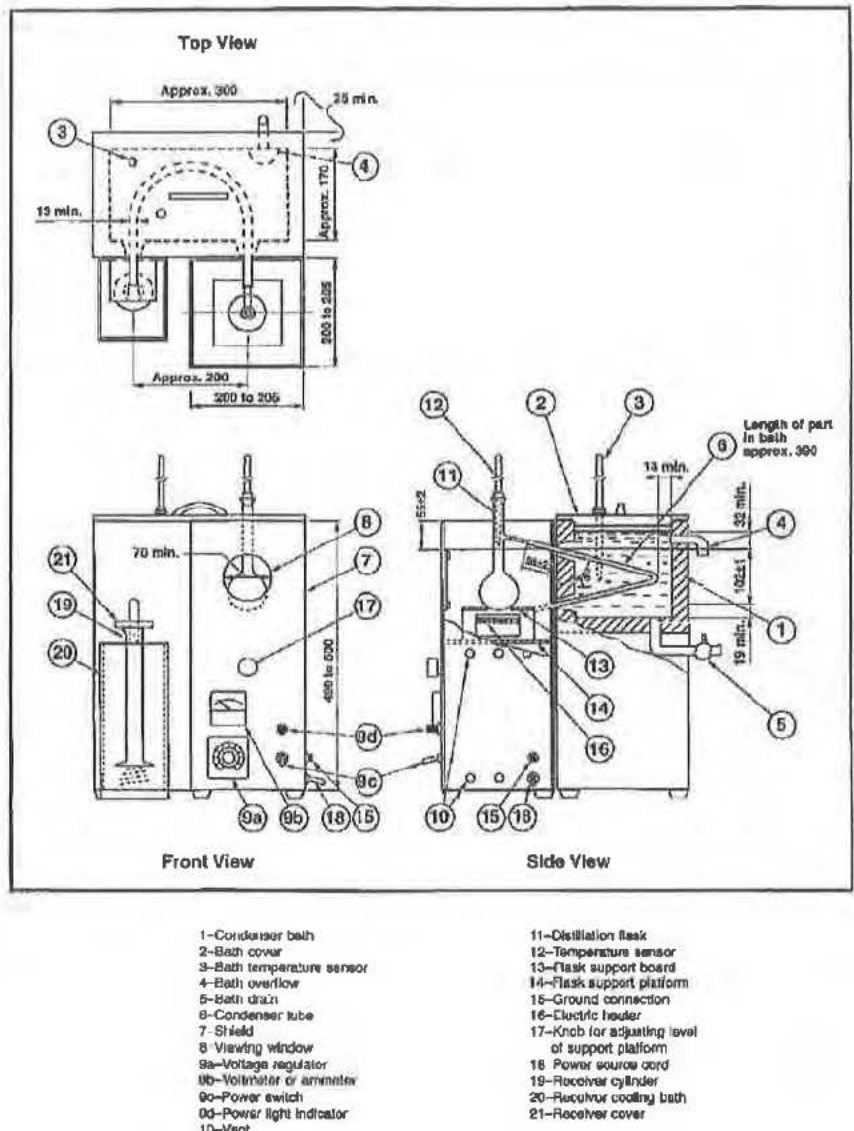


FIG. 2 Apparatus Assembly Using Electric Heater

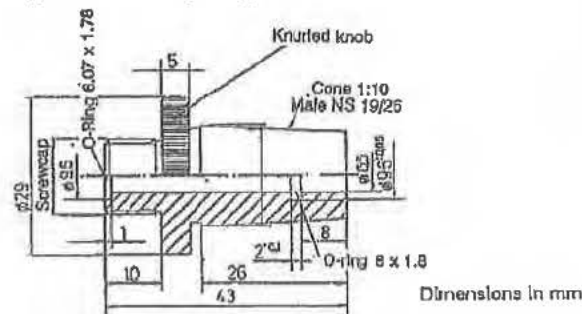


FIG. 3 PTFE Centering Device for Ground Glass Joint

7C/IP 5C and ASTM 7F for the low range thermometers, and ASTM 8C/IP 6C and ASTM 8F for the high range thermometers.

6.3.1.1 Thermometers that have been exposed for an extended period above an observed temperature of 370°C shall not be reused without a verification of the ice point or checked as prescribed in Specification E 1 and Test Method E 77.

NOTE 1—At an observed thermometer reading of 370°C, the temperature of the bulb is approaching a critical range in the glass and the thermometer may lose its calibration.

6.3.2 Temperature measurement systems other than those described in 6.3.1 are satisfactory for this test method, provided that they exhibit the same temperature lag, emergent stem effect, and accuracy as the equivalent mercury-in-glass thermometer.

6.3.2.1 The electronic circuitry or the algorithms, or both, used shall include the capability to simulate the temperature lag of a mercury-in-glass thermometer.

6.3.2.2 Alternatively, the sensor can also be placed in a casing with the tip of the sensor covered so that the assembly, because of its adjusted thermal mass and conductivity, has a temperature lag time similar to that of a mercury-in-glass thermometer.

NOTE 2—In a region where the temperature is changing rapidly during the distillation, the temperature lag of a thermometer can be as much as 3 seconds.

6.3.3 In case of dispute, the referee test method shall be carried out with the specified mercury-in-glass thermometer.

6.4 Temperature Sensor Centering Device:

6.4.1 The temperature sensor shall be mounted through a snug-fitting device designed for mechanically centering the sensor in the neck of the flask without vapor leakage. Examples of acceptable centering devices are shown in Figs. 3 and 4. (Warning—The use of a plain stopper with a hole drilled through the center is not acceptable for the purpose described in 6.4.1.)

NOTE 3—Other centering devices are also acceptable, as long as they position and hold the temperature sensing device in the proper position in the neck of the distillation column, as shown in Fig. 5 and described in 10.5.

NOTE 4—When running the test by the manual method, products with

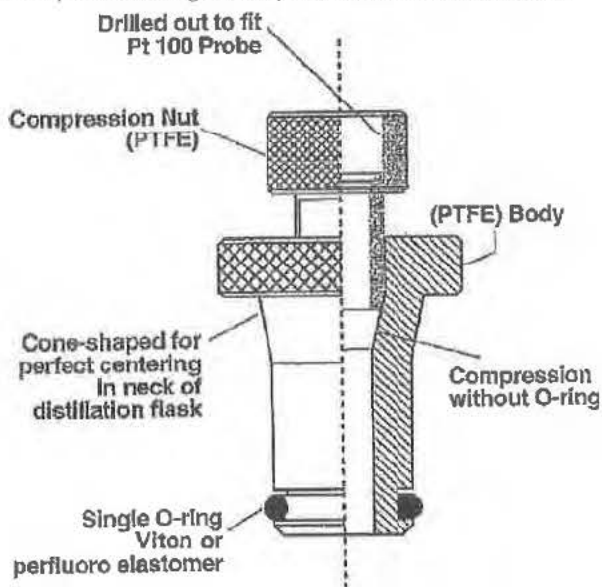


FIG. 4 Example of Centering Device Designs for Straight-Bore Neck Flasks

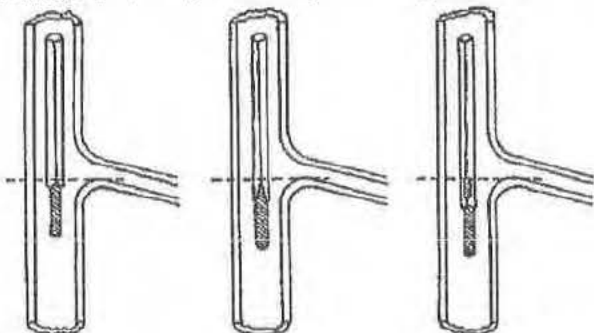


FIG. 5 Position of Thermometer in Distillation Flask

a low IBP may have one or more readings obscured by the centering device. See also 10.14.3.1.

6.5 Automated equipment manufactured in 1999 and later shall be equipped with a device to automatically shut down power to the unit and to spray an inert gas or vapor in the chamber where the distillation flask is mounted in the event of fire.

NOTE 5—Some causes of fires are breakage of the distillation flask, electrical shorts, and foaming and spilling of liquid sample through the top opening of the flask.

6.6 Barometer—A pressure measuring device capable of measuring local station pressure with an accuracy of 0.1 kPa (1 mm Hg) or better, at the same elevation relative to sea level as the apparatus in the laboratory. (Warning—Do not take readings from ordinary aneroid barometers, such as those used

TABLE 2 Group Characteristics

	Group 1	Group 2	Group 3	Group 4
Sample characteristics Distillate type Vapor pressure at				
37.8°C, kPa	≥65.5	<65.5	<65.5	<65.5
100°F, psi	≥9.5	<9.5	<9.5	<9.5

	Group 1	Group 2	Group 3	Group 4
(Test Methods D 323, D 4953, D 5190, D 5191, D 5482, IP 69 or IP 394)				
Distillation, IBP °C			≤100	>100
°F			≤212	>212
EP °C	≤250	≤250	>250	>250
°F	≤482	≤482	>482	>482

at weather stations and airports, since these are precorrected to give sea level readings.)

7. Sampling, Storage, and Sample Conditioning

7.1 Determine the Group characteristics that correspond to the sample to be tested (see Table 2). Where the procedure is dependent upon the group, the section headings will be so marked.

7.2 Sampling:

7.2.1 Sampling shall be done in accordance with Practice D 4057 or D 4177 and as described in Table 3.

7.2.1.1 *Group 1*—Condition the sample container to below 10°C, preferably by filling the bottle with the cold liquid sample and discarding the first sample. If this is not possible because, for instance, the product to be sampled is at ambient temperature, the sample shall be drawn into a bottle prechilled to below 10°C, in such a manner that agitation is kept at a minimum. Close the bottle immediately with a tight-fitting closure. (**Warning**—Do not completely fill and tightly seal a cold bottle of sample because of the likelihood of breakage on warming.)

7.2.1.2 *Groups 2, 3, and 4*—Collect the sample at ambient temperature. After sampling, close the sample bottle immediately with a tight-fitting closure.

7.2.1.3 If the sample received by the testing laboratory has been sampled by others and it is not known whether sampling has been performed as described in 7.2, the sample shall be assumed to have been so sampled.

7.3 Sample Storage:

7.3.1 If testing is not to start immediately after collection, store the samples as indicated in 7.3.2, 7.3.3, and Table 3. All samples shall be stored away from direct sunlight or sources of direct heat.

7.3.2 *Group 1*—Store the sample at a temperature below 10°C.

NOTE 6—If there are no, or inadequate, facilities for storage below 10°C, the sample may also be stored at a temperature below 20°C, provided the operator ensures that the sample container is tightly closed and leak-free.

7.3.3 *Group 2*—Store the sample at a temperature below 10°C.

NOTE 7—If there are no, or inadequate, facilities for storage below 10°C, the sample may also be stored at a temperature below 20°C, provided the operator ensures that the sample container is tightly closed and leak-free.

7.3.4 *Groups 3 and 4*—Store the sample at ambient or lower temperature.

7.4 Sample Conditioning Prior to Analysis:

7.4.1 Samples shall be conditioned to the temperature shown in Table 3 before opening the sample container.

7.4.1.1 *Groups 1 and 2*—Samples shall be conditioned to a temperature of less than 10°C (50°F) before opening the sample container.

7.4.1.2 *Groups 3 and 4*—If the sample is not fluid at ambient temperature, it is to be heated to a temperature of 9 to 21°C above its pour point (Test Method D 97, D 5949, or D 5985) prior to analysis. If the sample has partially or completely solidified during storage, it shall be vigorously shaken after melting prior to opening the sample container to ensure homogeneity.

7.4.1.3 If the sample is not fluid at room temperature, the temperature ranges shown in Table 3 for the flask and for the sample do not apply.

7.5 Wet Samples:

7.5.1 Samples of materials that visibly contain water are not suitable for testing. If the sample is not dry, obtain another sample that is free from suspended water.

7.5.2 *Groups 1 and 2*—If such a sample cannot be obtained, the suspended water can be removed by maintaining the sample at 0 to 10°C, adding approximately 10 g of anhydrous sodium sulfate per 100 mL of sample, shaking the mixture for approximately 2 min, and then allowing the mixture to settle for approximately 15 min. Once the sample shows no visible signs of water, use a decanted portion of the sample, maintained between 1 and 10°C, for the analysis. Note in the report that the sample has been dried by the addition of a desiccant.

NOTE 8—Suspended water in hazy samples in Groups 1 and 2 can be removed by the addition of anhydrous sodium sulfate and separating the liquid sample from the drying agent by decanting without statistically affecting the results of the test.⁴

7.5.3 *Groups 3 and 4*—In cases in which a water-free sample is not practical, the suspended water can be removed by shaking the sample with anhydrous sodium sulfate or other suitable drying agent and separating it from the drying agent by decanting. Note in the report that the sample has been dried by the addition of a desiccant.

8. Preparation of Apparatus

8.1 Refer to Table 1 and prepare the apparatus by choosing the appropriate distillation flask, temperature measuring device, and flask support board, as directed for the indicated group. Bring the temperature of the receiving cylinder, the flask, and the condenser bath to the indicated temperature.

8.2 Make any necessary provisions so that the temperature of the condenser bath and the receiving cylinder will be maintained at the required temperatures. The receiving cylinder shall be in a bath such that either the liquid level is at least

⁴ Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR: D02-1455.

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TABLE 3 Sampling, Storage, and Sample Conditioning

		Group 1	Group 2	Group 3	Group 4
Temperature of sample bottle	°C	<10			
	°F	<50			
Temperature of stored sample	°C	<10 ^A	<10	ambient	ambient
	°F	<50 ^A	<50	ambient	ambient
Temperature of sample after conditioning prior to analysis	°C	<10	<10	Ambient or	Ambient or
	°F	<50	<50	9 to 21°C above pour point ^B	
				Ambient or	Ambient or
				48 to 70°F above pour point ^B	
If sample is wet		resample	resample	dry in accordance with 7.5.3	
If resample is still wet ^C		dry in accordance with 7.5.2			

^A Under certain circumstances, samples can also be stored at temperatures below 20°C (68°F). See also 7.3.2 and 7.3.3.
^B If sample is (semi)-solid at ambient temperature, see also 10.3.1.1.
^C If sample is known to be wet, resampling may be omitted. Dry sample in accordance with 7.5.2 and 7.5.3.

as high as the 100-mL mark or the entire receiving cylinder is surrounded by an air circulation chamber.

8.2.1 *Groups 1, 2, and 3*—Suitable media for low temperature baths include, but are not limited to, chopped ice and water, refrigerated brine, and refrigerated ethylene glycol.

8.2.2 *Group 4*—Suitable media for ambient and higher bath temperatures include, but are not limited to, cold water, hot water, and heated ethylene glycol.

8.3 Remove any residual liquid in the condenser tube by swabbing with a piece of soft, lint-free cloth attached to a cord or wire.

9. Calibration and Standardization

9.1 *Temperature Measurement System*—Temperature measurement systems using other than the specified mercury-in-glass thermometers shall exhibit the same temperature lag, emergent stem effect, and accuracy as the equivalent mercury-in-glass thermometer. Confirmation of the calibration of these temperature measuring systems shall be made at intervals of not more than six months, and after the system has been replaced or repaired.

9.1.1 The accuracy and the calibration of the electronic circuitry or computer algorithms, or both, shall be verified by the use of a standard precision resistance bench. When performing this verification, no algorithms shall be used to correct the temperature for lag and the emergent stem effect (see manufacturer's instructions).

9.1.2 Verification of the calibration of temperature measuring devices shall be conducted by distilling toluene in accordance with Group 1 of this test method and comparing the 50 % recovered temperature with that shown in Table 4.⁵

9.1.2.1 If the temperature reading is not within the values shown in Table 4 for the respective apparatus being used (see Note 10 and Table 4), the temperature measurement system shall be considered defective and shall not be used for the test.

NOTE 9—Toluene is used as a verification fluid for calibration; it will yield almost no information on how well an electronic measurement system simulates the temperature lag of a liquid-in-glass thermometer.

9.1.2.2 Reagent grade toluene and hexadecane (cetane), conforming to the specifications of the Committee on Analytical Reagents of the American Chemical Society,⁶ shall be used. However, other grades may also be used, provided it is first ascertained that the reagent is of sufficient purity to permit its use without lessening the accuracy of the determination.

NOTE 10—At 101.3 kPa, toluene is shown in reference manuals as boiling at 110.6°C when measured using a partial immersion thermometer. Because this test method uses thermometers calibrated for total immersion, the results typically will be lower and, depending on the thermometer and the situation, may be different for each thermometer. At 101.3 kPa, hexadecane is shown in reference manuals as boiling at 287.0°C when measured using a partial immersion thermometer. Because this test method uses thermometers calibrated for total immersion, the results typically will be lower, and, depending on the thermometer and the situation, may be different for each thermometer.

9.1.3 A procedure to determine the magnitude of the temperature lag is described in Annex A3.

9.1.4 A procedure to emulate the emergent stem effect is described in Appendix X4.

9.1.5 To verify the calibration of the temperature measurement system at elevated temperatures, use hexadecane. The temperature measurement system shall indicate, at 50% recovered, a temperature comparable to that shown in Table 4 for the respective apparatus under Group 4 distillation conditions.

NOTE 11—Because of the high melting point of hexadecane, Group 4 verification distillations will have to be carried out with condenser temperatures >20°C.

9.2 Automated Method:

9.2.1 Level Follower—For an automated distillation apparatus, the level follower/recording mechanism of the apparatus shall have a resolution of 0.1 mL or better with a maximum error of 0.3 mL between the 5 and 100 mL points. The calibration of the assembly shall be verified in accordance with manufacturer's instructions at intervals of not more than three months and after the system has been replaced or repaired.

NOTE 12—The typical calibration procedure involves verifying the output with the receiver containing 5 and 100 mL of material respectively.

9.2.2 Barometric Pressure—At intervals of not more than six months, and after the system has been replaced or repaired,

⁵ Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR: Do2-1580.

⁶ Reagent Chemicals, American Chemical Society Specifications, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmacopeial Convention, Inc. (USPC), Rockville, MD.

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TABLE 4 True and Min and Max D 86 50 % Recovered Boiling Points (°C)⁴

		Manual		Automated	
		Distillation conditions min D 86 50 % boiling point	Distillation conditions max D 86 50 % boiling point	Distillation conditions min D 86 50 % boiling point	Distillation conditions max D 86 50 % boiling point
Toluene	ASTM/IP true boiling point	Group 1, 2, and 3	Group 1, 2, and 3	Group 1, 2, and 3	Group 1, 2, and 3
	110.6	105.9	111.8	108.5	109.7
Hexadecane	ASTM/IP true boiling point	Group 4	Group 4	Group 4	Group 4
	287.0	272.2	283.1	277.0	280.0

⁴ The manual and automated temperatures show in this table are the values for the 95 % tolerance interval for the 99 % population coverage. The proposed tolerance is approximately 3 × sigma. Information on the values in this table can be found in RR:Do2-1580.

the barometric reading of the instrument shall be verified against a barometer, as described in 6.6.

10. Procedure

10.1 Record the prevailing barometric pressure.

10.2 Groups 1 and 2—Fit a low range thermometer provided with a snug-fitting cork or stopper of silicone rubber, or equivalent polymeric material, rightly into the neck of the sample container and bring the temperature of the sample to the temperature indicated in Table 3.

10.3 Groups 1, 2, 3, and 4—Check that the temperature of the sample is as shown in Table 3. Pour the specimen precisely to the 100-mL mark of the receiving cylinder, and transfer the contents of the receiving cylinder as completely as practical into the distillation flask, ensuring that none of the liquid flows into the vapor tube.

NOTE 13—It is important that the difference between the temperature of the specimen and the temperature of the bath around the receiving cylinder is as small as practically possible. A difference of 5°C can make a difference of 0.7 mL.

10.3.1 Groups 3 and 4—If the sample is not fluid at ambient temperature, it is to be heated to a temperature between 9 and 21°C above its pour point (Test Methods D97, D 5949, D 5950, or D 5985) prior to analysis. If the sample has partially or completely solidified in the intervening period, it shall be vigorously shaken after melting, and prior to sampling, to ensure homogeneity.

10.3.1.1 If the sample is not fluid at ambient temperatures, disregard the temperature range shown in Table 1 for the receiving cylinder and sample. Prior to analysis, heat the receiving cylinder to approximately the same temperature as the sample. Pour the heated specimen precisely to the 100-mL mark of the receiving cylinder, and transfer the contents of the receiving cylinder as completely as practical into the distillation flask, ensuring that none of the liquid flows into the vapor tube.

NOTE 14—Any material that evaporates during the transfer will contribute to the loss; any material that remains in the receiving cylinder will contribute to the observed recovery volume at the time of the IBP.

10.4 If the sample can be expected to demonstrate irregular boiling behavior, that is, bumping, add a few boiling chips to the specimen. The addition of a few boiling chips is acceptable for any distillation.

10.5 Fit the temperature sensor through a snug-fitting device, as described in 6.4, to mechanically center the sensor in the neck of the flask. In the case of a thermometer, the bulb is centered in the neck and the lower end of the capillary is level with the highest point on the bottom of the inner wall of the vapor tube (see Fig. 5). In the case of a thermocouple or resistance thermometer, follow the manufacturer's instructions as to placement (see Fig. 6).

NOTE 15—If vacuum grease is used on the mating surface of the centering device, use the minimum amount of grease that is practical.

10.6 Fit the flask vapor tube, provided with a snug-fitting cork or rubber stopper of silicone, or equivalent polymeric material, tightly into the condenser tube. Adjust the flask in a vertical position so that the vapor tube extends into the condenser tube for a distance from 25 to 50 mm. Raise and adjust the flask support board to fit it snugly against the bottom of the flask.

10.7 Place the receiving cylinder that was used to measure the specimen, without drying the inside of the cylinder, into its temperature-controlled bath under the lower end of the condenser tube. The end of the condenser tube shall be centered in the receiving cylinder and shall extend therein for a distance of at least 25 mm, but not below the 100-mL mark.

10.8 Initial Boiling Point:

10.8.1 *Manual Method*—To reduce evaporation loss of the distillate, cover the receiving cylinder with a piece of blotting paper, or similar material, that has been cut to fit the condenser tube snugly. If a receiver deflector is being used, start the distillation with the tip of the deflector just touching the wall of the receiving cylinder. If a receiver deflector is not used, keep the drip tip of the condenser away from the wall of the receiving cylinder. Note the start time. Observe and record the IBP to the nearest 0.5°C (1.0°F). If a receiver deflector is not being used, immediately move the receiving cylinder so that the tip of the condenser touches its inner wall.

10.8.2 *Automated Method*—To reduce evaporation loss of the distillate, use the device provided by the instrument manufacturer for this purpose. Apply heat to the distillation flask and contents with the tip of the receiver deflector just touching the wall of the receiving cylinder. Note the start time. Record the IBP to the nearest 0.1°C (0.2°F).

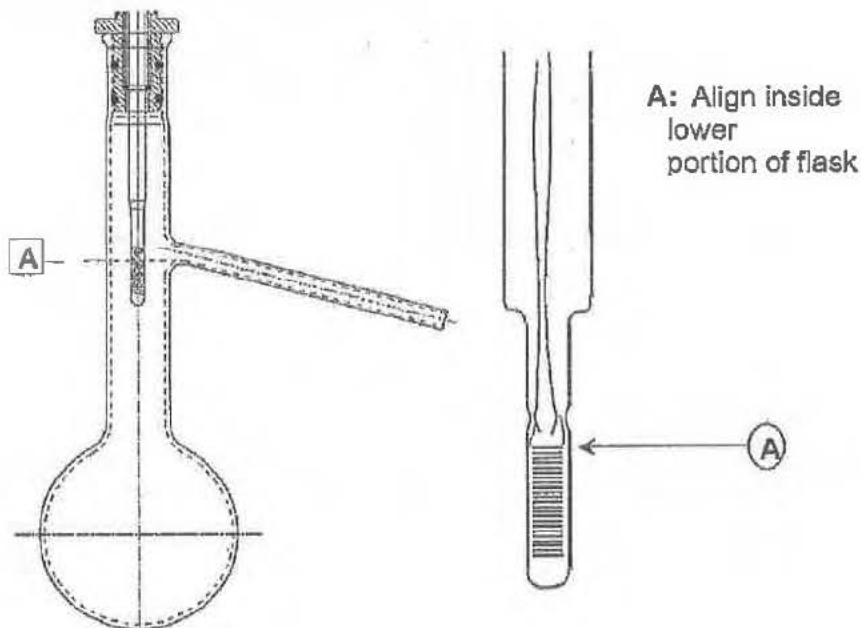


FIG. 6 Example of Recommended Placement of Pt-100 Probe Relative to Distillation Flask Sidearm for Automated D 86 Distillation Instrument

10.9 Regulate the heating so that the time interval between the first application of heat and the IBP is as specified in Table 5.

10.10 Regulate the heating so that the time from IBP to 5 or 10 % recovered is as indicated in Table 5.

10.11 Continue to regulate the heating so that the uniform average rate of condensation from 5 or 10 % recovered to 5 mL residue in the flask is 4 to 5 mL per min. (**Warning**—Due to the configuration of the boiling flask and the conditions of the test, the vapor and liquid around the temperature sensor are not in thermodynamic equilibrium. The distillation rate will consequently have an effect on the measured vapor temperature. The distillation rate shall, therefore, be kept as constant as possible throughout the test.)

NOTE 16—When testing gasoline samples, it is not uncommon to see the condensate suddenly form non-miscible liquid phases and bead up on the temperature measuring device and in the neck of the boiling flask at a vapor temperature of around 160°C. This may be accompanied by a sharp (about 3°C) dip in the vapor temperature and a drop in the recovery rate. The phenomenon, which may be due to the presence of trace water in the sample, may last for 10 to 30 s before the temperature recovers and the condensate starts flowing smoothly again. This point is sometimes colloquially referred to as the Hesitation Point.

10.12 Repeat any distillation that did not meet the requirements described in 10.9, 10.10, and 10.11.

10.13 If a decomposition point, as described in 3.1.3, is observed, discontinue the heating and proceed as directed in 10.17.

10.14 In the interval between the IBP and the end of the distillation, observe and record data necessary for the calculation and reporting of the results of the test as required by the specification involved, or as previously established for the sample under test. These observed data can include temperature readings at prescribed percentages recovered or percentages recovered at prescribed temperature readings, or both.

10.14.1 *Manual Method*—Record all volumes in the graduated cylinder to the nearest 0.5 mL, and all temperature readings to the nearest 0.5°C (1.0°F).

10.14.2 *Automated Method*—Record all volumes in the receiving cylinder to the nearest 0.1 mL, and all temperature readings to the nearest 0.1°C (0.2°F).

10.14.3 *Group 1, 2, 3, and 4*—In cases in which no specific data requirements have been indicated, record the IBP and the EP (FBP) or the dry point, or both, and temperature readings at 5, 15, 85, and 95 % recovered, and at each 10 % multiple of volume recovered from 10 to 90, inclusive.

10.14.3.1 *Group 4*—When a high range thermometer is used in testing aviation turbine fuels and similar products, pertinent thermometer readings can be obscured by the centering device. If these readings are required, perform a second distillation in accordance with Group 3. In such cases, reading from a low range thermometer can be reported in place of the obscured high range thermometer readings, and the test report shall so indicate. If, by agreement, the obscured readings are waived, the test report shall so indicate.

10.14.4 When it is required to report the temperature reading at a prescribed percent evaporated or recovered for a sample that has a rapidly changing slope of the distillation curve in the region of the prescribed percent evaporated or recovered reading, record temperature readings at every 1 % recovered. The slope is considered rapidly changing if the

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TABLE 5 Conditions During Test Procedure

		Group 1	Group 2	Group 3	Group 4
Temperature of cooling bath ⁴	°C	0-1	0-5	0-5	0-60
	°F	32-34	32-40	32-40	32-140
Temperature of bath around receiving cylinder	°C	13-18	13-18	13-18	±3
	°F	55-65	55-65	55-65	±5
					of charge temperature
Time from first application of heat to initial boiling point, min		5-10	5-10	5-10	5-15
Time from initial boiling point to 5 % recovered, s to 10 % recovered, min		60-100	60-100		
Uniform average rate of condensation from 5 % recovered to 5 mL in flask, mL/min		4-5	4-5	4-5	4-5
Time recorded from 5 mL residue to end point, min		5 max	5 max	5 max	5 max

⁴ the proper condenser bath temperature will depend upon the wax content of the sample and of its distillation fractions. The test is generally performed using one single condenser temperature. Wax formation in the condenser can be deduced from (a) the presence of wax particles in the distillate coming off the drip tip, (b) a higher distillation loss than what would be expected based on the initial boiling point of the specimen, (c) an erratic recovery rate and (d) the presence of wax particles during the removal of residual liquid by swabbing with a lint-free cloth (see: 8.3). The minimum temperature that permits satisfactory operation shall be used. In general, a bath temperature in the 0 to 4°C range is suitable for kerosine, Grade No. 1 fuel oil and Grade No. 1-D diesel fuel oil. In some cases involving Grade No. 2 fuel oil, Grade No. 2-D diesel fuel oil, gas oils and similar distillates, it may be necessary to hold the condenser bath temperature in the 38 to 60°C range.

change in slope (C) of the data points described in 10.14.2 in that particular area is greater than 0.6 (change of slope (F) is greater than 1.0) as calculated by Eq 1 (Eq 2).

$$\text{Change of Slope (C)} = (C_2 - C_1)/(V_2 - V_1) - (C_3 - C_2)/(V_3 - V_2) \quad (1)$$

$$\text{Change of Slope (F)} = (F_2 - F_1)/(V_2 - V_1) - (F_3 - F_2)/(V_3 - V_2) \quad (2)$$

where:

C₁ = temperature at the volume % recorded one reading prior to the volume % in question, °C,

C₂ = temperature at the volume % recorded in question, °C,

C₃ = temperature at the volume % recorded following the volume % in question, °C,

F₁ = temperature at the volume % recorded one reading prior to the volume % in question, °F,

F₂ = temperature at the volume % recorded in question, °F,

F₃ = temperature at the volume % recorded following the volume % in question, °F,

V₁ = volume % recorded one reading prior to the volume % in question,

V₂ = volume % recorded at the volume % in question, and

V₃ = volume % recorded following the volume % in question.

10.15 When the residual liquid in the flask is approximately 5 mL, make a final adjustment of the heat. The time from the 5 mL of liquid residue in the flask to the EP (FBP) shall be within the limits prescribed in Table 5. If this condition is not satisfied, repeat the test with appropriate modification of the final heat adjustment.

NOTE 17—Since it is difficult to determine when there is 5 mL of boiling liquid left in the flask, this time is determined by observing the amount of liquid recovered in the receiving cylinder. The dynamic holdup has been determined to be approximately 1.5 mL at this point. If there are no front end losses, the amount of 5 mL in the flask can be assumed to correspond with an amount of 93.5 mL in the receiving cylinder. This amount has to be adjusted for the estimated amount of front end loss.

10.15.1 If the actual front end loss differs more than 2 mL from the estimated value, the test shall be rerun.

10.16 Observe and record the EP (FBP) or the dry point, or both, as required, and discontinue the heating.

10.17 Allow the distillate to drain into the receiving cylinder, after heating has been discontinued.

10.17.1 *Manual Method*—While the condenser tube continues to drain into the graduated cylinder, observe and note the volume of condensate to the nearest 0.5 mL at 2 min intervals until two successive observations agree. Measure the volume in the receiving cylinder accurately, and record it to the nearest 0.5 mL.

10.17.2 *Automated Method*—The apparatus shall continually monitor the recovered volume until this volume changes by no more than 0.1 mL in 2 min. Record the volume in the receiving cylinder accurately to the nearest 0.1 mL.

10.18 Record the volume in the receiving cylinder as percent recovery. If the distillation was previously discontinued under the conditions of a decomposition point, deduct the percent recovered from 100, report this difference as the sum of percent residue and percent loss, and omit the procedure given in 10.19.

10.19 After the flask has cooled and no more vapor is observed, disconnect the flask from the condenser, pour its contents into a 5-mL graduated cylinder, and with the flask suspended over the cylinder, allow the flask to drain until no appreciable increase in the volume of liquid in the cylinder is observed. Measure the volume in the graduated cylinder to the nearest 0.1 mL, and record as percent residue.

10.19.1 If the 5-mL graduated cylinder does not have graduations below 1 mL and the volume of liquid is less than 1 mL, prefill the cylinder with 1 mL of a heavy oil to allow a better estimate of the volume of the material recovered.

10.19.1.1 If a residue greater than expected is obtained, and the distillation was not purposely terminated before the EP, check whether adequate heat was applied towards the end of the distillation and whether conditions during the test conformed to those specified in Table 5. If not, repeat test.

NOTE 18—The distillation residues of this test method for gasoline, kerosine, and distillate diesel are typically 0.9-1.3, 0.9-1.3, and 1.0-1.4 volume %, respectively.

NOTE 19—The test method is not designed for the analysis of distillate fuels containing appreciable quantities of residual material (see 1.2).

10.19.2 Groups 1, 2, 3, and 4—Record the volume in the 5-mL graduated cylinder, to the nearest 0.1 mL, as percent residue.

10.20 If the intent of the distillation is to determine the percent evaporated or percent recovered at a predetermined corrected temperature reading, modify the procedure to conform to the instructions described in Annex A4.

10.21 Examine the condenser tube and the side arm of the flask for waxy or solid deposits. If found, repeat the test after making adjustments described in Footnote A of Table 5.

11. Calculations

11.1 The percent total recovery is the sum of the percent recovery (see 10.18) and the percent residue (see 10.19). Deduct the percent total recovery from 100 to obtain the percent loss.

11.2 Do not correct the barometric pressure for meniscus depression, and do not adjust the pressure to what it would be at sea level.

NOTE 20—The observed barometric reading does not have to be corrected to a standard temperature and to standard gravity. Even without performing these corrections, the corrected temperature readings for the same sample between laboratories at two different locations in the world will, in general, differ less than 0.1°C at 100°C. Almost all data obtained earlier have been reported at barometric pressures that have not been corrected to standard temperature and to standard gravity.

11.3 Correct temperature readings to 101.3 kPa (760 mm Hg) pressure. Obtain the correction to be applied to each temperature reading by means of the Sydney Young equation as given in Eq 3, Eq 4, or Eq 5, as appropriate, or by the use of Table 6. For Celsius temperatures:

$$C_c = 0.0009 (101.3 - P_k) (273 + t_o) \quad (3)$$

$$C_c = 0.00012 (760 - P) (273 + t_o) \quad (4)$$

For Fahrenheit temperatures:

$$C_f = 0.00012 (760 - P) (460 + t_f) \quad (5)$$

where:

t_o = the observed temperature reading in °C,

t_f = the observed temperature reading in °F,

C_c and C_f = corrections to be added algebraically to the observed temperature readings,

P_k = barometric pressure, prevailing at the time and location of the test, kPa, and

P = barometric pressure, prevailing at the time and location of the test, mm Hg.

After applying the corrections and rounding each result to the nearest 0.5°C (1.0°F) or 0.1°C (0.2°F), as appropriate to the

TABLE 6 Approximate Thermometer Reading Correction

Temperature Range		Correction ^A per 1.3 kPa (10 mm Hg) Difference in Pressure	
°C	°F	°C	°F
10-30	50-86	0.35	0.63
30-50	86-122	0.38	0.68
50-70	122-158	0.40	0.72
70-90	158-194	0.42	0.76
90-110	194-230	0.45	0.81
110-130	230-266	0.47	0.85
130-150	266-302	0.50	0.89
150-170	302-338	0.52	0.94
170-190	338-374	0.54	0.98

^AValues to be added when barometric pressure is below 101.3 kPa (760 mm Hg) and to be subtracted when barometric pressure is above 101.3 kPa.

Temperature Range		Correction ^a per 1.3 kPa (10 mm Hg) Difference in Pressure	
°C	°F	°C	°F
190–210	374–410	0.57	1.02
210–230	410–446	0.59	1.07
230–250	446–482	0.62	1.11
250–270	482–518	0.64	1.15
270–290	518–554	0.66	1.20
290–310	554–590	0.69	1.24
310–330	590–626	0.71	1.28
330–350	626–662	0.74	1.33
350–370	662–698	0.76	1.37
370–390	698–734	0.78	1.41
390–410	734–770	0.81	1.46

^aValues to be added when barometric pressure is below 101.3 kPa (760 mm Hg) and to be subtracted when barometric pressure is above 101.3 kPa.

apparatus being used, use the corrected temperature readings in all further calculations and reporting.

NOTE 21—Temperature readings are not corrected to 101.3 kPa (760 mm Hg) when product definitions, specifications, or agreements between the parties involved indicate, specifically, that such correction is not required or that correction shall be made to some other base pressure.

11.4 Correct the actual loss to 101.3 kPa (760 mm Hg) pressure when temperature readings are corrected to 101.3 kPa pressure. The corrected loss, L_c , is calculated from Eq 6 or Eq 7, as appropriate, or can be read from the tables presented as Fig. X3.1 or Fig. X3.2.

$$L_c = 0.5 + (L - 0.5) / \{1 + (101.3 - P_k) / 8.00\} \quad (6)$$

$$L_c = 0.5 + (L - 0.5) / \{1 + (760 - P) / 60.0\} \quad (7)$$

where:

L = observed loss,

L_c = corrected loss,

P_k = pressure, kPa, and

P = pressure, mm Hg.

NOTE 22—Eq 6 and 7 above have been derived from the data in Table 7 and Eqs 5 and 6 in Test Method D 86 – 95 and earlier versions. It is probable that Eq 6 and 7 shown were the original empirical equations from which the table and equations in the Test Method D 86 – 95 and earlier versions were derived.

11.4.1 Calculate the corresponding corrected percent recovery in accordance with the following equation:

$$R_c = R + (L - L_c) \quad (8)$$

where:

L = percent loss or observed loss,

L_c = corrected loss,

R = percent recovery, and

R_c = corrected percent recovery.

TABLE 7 Data Points for Determining Slope, S_c or S_F

Slope at %	IBP	5	10	20	30	40	50	60	70	80	90	95	EP
T_L at %	0	0	0	10	20	30	40	50	60	70	80	90	95
T_U at %	5	10	20	30	40	50	60	70	80	90	90	95	V_{EP}
$V_U - V_L$	5	10	20	20	20	20	20	20	20	20	10	5	$V_{EP} - 95$

11.5 To obtain the percent evaporated at a prescribed temperature reading, add the percent loss to each of the observed percent recovered at the prescribed temperature readings, and report these results as the respective percent evaporated, that is:

$$P_e = P_r + L \quad (9)$$

where:

L = observed loss,

P_e = percent evaporated, and

P_r = percent recovered.

11.6 To obtain temperature readings at prescribed percent evaporated, and if no recorded temperature data is available within 0.1 volume % of the prescribed percent evaporated, use either of the two following procedures, and indicate on the report whether the arithmetical procedure or the graphical procedure has been used.

11.6.1 *Arithmetical Procedure*—Deduct the observed loss from each prescribed percent evaporated to obtain the corresponding percent recovered. Calculate each required temperature reading as follows:

$$T = T_L + (T_H - T_L)(R - R_L)/(R_H - R_L) \quad (10)$$

where:

R = percent recovered corresponding to the prescribed percent evaporated,

R_H = percent recovered adjacent to, and higher than R ,

R_L = percent recovered adjacent to, and lower than R ,

T = temperature reading at the prescribed percent evaporated,

T_H = temperature reading recorded at R_H , and

T_L = temperature reading recorded at R_L .

Values obtained by the arithmetical procedure are affected by the extent to which the distillation graphs are nonlinear. Intervals between successive data points can, at any stage of the test, be no wider than the intervals indicated in 10.18. In no case shall a calculation be made that involves extrapolation.

11.6.2 *Graphical Procedure*—Using graph paper with uniform subdivisions, plot each temperature reading corrected for barometric pressure, if required (see 11.3), against its corresponding percent recovered. Plot the IBP at 0 % recovered. Draw a smooth curve connecting the points. For each prescribed percent evaporated, deduct the distillation loss to obtain the corresponding percent recovered and take from the graph the temperature reading that this percent recovered indicates. Values obtained by graphical interpolation procedures are affected by the care with which the plot is made.

NOTE 23—See Appendix XI for numerical examples illustrating the arithmetical procedure.

11.6.3 In most automated instruments, temperature-volume data are collected at 0.1 volume % intervals or less and stored in memory. To report a temperature reading at a prescribed percent evaporated, neither of the procedures described in 11.6.1 and 11.6.2 have to be used. Obtain the desired temperature directly from the database as the temperature closest to and within 0.1 volume % of the prescribed percent evaporated.

12. Report

12.1 Report the following information (see Appendix X5 for examples of reports):

12.2 Report the barometric pressure to the nearest 0.1 kPa (1 mm Hg).

12.3 Report all volumetric readings in percentages.

12.3.1 *Manual Method*—Report volumetric readings to the nearest 0.5, and all temperature readings to the nearest 0.5°C (1.0°F).

12.3.2 *Automated Method*—Report volumetric readings to the nearest 0.1, and all temperature readings to the nearest 0.1 °C (0.2°F) or less.

12.4 After barometric corrections of the temperature readings have been made, the following data require no further calculation prior to reporting: IBP, dry point, EP (FBP), decomposition point, and all pairs of corresponding values involving percent recovered and temperature readings.

12.4.1 The report shall state if the temperature readings have not been corrected for barometric pressure.

12.5 When the temperature readings have not been corrected to 101.3 kPa (760 mm Hg) pressure, report the percent residue and percent loss as *observed* in accordance with 10.19 and 11.1, respectively.

12.6 Do not use the corrected loss in the calculation of percent evaporated.

12.7 It is advisable to base the report on relationships between temperature readings and percent evaporated when the sample is a gasoline, or any other product classified under Group 1, or in which the percent loss is greater than 2.0. Otherwise, the report can be based on relationships between temperature readings and percent evaporated or percent recovered. Every report must indicate clearly which basis has been used.

12.7.1 In the manual method, if results are given in percent evaporated versus temperature readings, report if the arithmetical or the graphical procedure was used (see 11.6).

12.8 Report if a drying agent, as described in 7.5.2 or 7.5.3, was used.

12.9 Fig. X1.1 is an example of a tabular report. It shows the percent recovered versus the corresponding temperature reading and versus the corrected temperature reading. It also shows the percent loss, the corrected loss, and the percent evaporated versus the corrected temperature reading.

Evaporated Point, %	Manual Repeatability ^A		Manual Reproducibility ^A		Automated Repeatability ^A		Automated Reproducibility ^A	
	°C	°F	°C	°F	°C	°F	°C	°F
IBP	3.3	6	5.6	10	3.9	7	7.2	13
5	1.9+0.86S _C	3.4+0.86S _F	3.1+1.74S _C	5.6+1.74S _F	2.1+0.67S _C	3.8+0.67S _F	4.4+2.0S _C	7.9+2.0S _F
10	1.2+0.86S _C	2.2+0.86S _F	2.0+1.74S _C	3.6+1.74S _F	1.7+0.67S _C	3.0+0.67S _F	3.3+2.0S _C	6.0+2.0S _F
20	1.2+0.86S _C	2.2+0.86S _F	2.0+1.74S _C	3.6+1.74S _F	1.1+0.67S _C	2.0+0.67S _F	3.3+2.0S _C	6.0+2.0S _F
30-70	1.2+0.86S _C	2.2+0.86S _F	2.0+1.74S _C	3.6+1.74S _F	1.1+0.67S _C	2.0+0.67S _F	2.6+2.0S _C	4.7+2.0S _F
80	1.2+0.86S _C	2.2+0.86S _F	2.0+1.74S _C	3.6+1.74S _F	1.1+0.67S _C	2.0+0.67S _F	1.7+2.0S _C	3.0+2.0S _F
90	1.2+0.86S _C	2.2+0.86S _F	0.8+1.74S _C	1.4+1.74S _F	1.1+0.67S _C	2.0+0.67S _F	0.7+2.0S _C	1.2+2.0S _F
95	1.2+0.86S _C	2.2+0.86S _F	1.1+1.74S _C	1.9+1.74S _F	2.5+0.67S _C	4.5+0.67S _F	2.6+2.0S _C	4.7+2.0S _F
FBP	3.9	7	7.2	13	4.4	8	8.9	16

^A S_C or S_F is the average slope (or rate of change) calculated in accordance with 13.2.

13. Precision and Bias

13.1 Precision:

13.1.1 The precision of this test method has been determined by the statistical examination of interlaboratory test results obtained by 26 laboratories on 14 gasolines, by 4 laboratories on 8 samples of kerosine by the manual procedure, 3 laboratories on 6 samples of kerosine by the automated procedure, and 5 laboratories on 10 samples of diesel fuel by both the manual and automated procedures. Table A1.1 lists which tables and figures are to be used for the different fuel groups, distillation methods, and temperature scales.

13.1.2 The following terms are used in this section: (1) *r* = repeatability and (2) *R* = reproducibility. The value of any of these terms will depend upon whether the calculations were carried out in °C or °F.

13.2 Slope or Rate of Change of Temperature:

13.2.1 To determine the precision of a result, it is generally necessary to determine the slope or rate of change of the temperature at that particular point. This variable, denoted as S_C or S_F, is equal to the change in temperature, either in °C or in °F, respectively, per percent recovered or evaporated.

13.2.2 For Group 1 in the manual method and for all groups in the automated method, the precision of the IBP and EP does not require any slope calculation.

13.2.3 With the exception stated in 13.2.2 and in 13.2.4, the slope at any point during the distillation is calculated from the following equations, using the values shown in Table 7:

$$S_C \text{ (or } S_F) = (T_U - T_L)/(V_U - V_L) \quad (11)$$

where:

S_C = is the slope, °C/volume %,

S_F = is the slope, °F/volume %,

T_U = is the upper temperature, °C (or °F),

T_L = is the lower temperature, °C (or °F),

V_U = is the volume % recovered or evaporated corresponding to T_U,

V_L = is the volume % recovered or evaporated corresponding to T_L and

V_{EP} = is the volume % recovered or evaporated corresponding to the end point.

13.2.4 In the event that the distillation end point occurs prior to the 95 % point, the slope at the end point is calculated as follows:

$$S_C \text{ (or } S_F) = (T_{EP} - T_{HR})/(V_{EP} - V_{HR}) \quad (12)$$

where:

T_{EP} or T_{HR} is the temperature, in °C or °F at the percent volume recovered indicated by the subscript,

V_{EP} or V_{HR} is the volume % recovered.

13.2.4.1 The subscripts in Eq 12 refer to:

EP = end point

HR = highest reading, either 80% of 90%, prior to the end point.

13.2.5 For points between 10 to 85 % recovered which are not shown in Table 7, the slope is calculated as follows:

$$S_C \text{ (or } S_F) = 0.05 (T_{(V+10)} - T_{(V-10)}) \quad (13)$$

13.2.6 For samples in Group 1, the precision data reported are based on slope values calculated from percent evaporated data.

13.2.7 For samples in Group 2, 3, and 4, the precision data reported (Table 8) are based on slope values calculated from percent recovered data.

13.2.8 When results are reported as volume % recovered, slope values for the calculation of precision are to be determined from percent recovered data; when results are reported as volume % evaporated slope values are to be determined from % evaporated data.

13.3 *Manual Method:*

13.3.1 *Repeatability:*

13.3.1.1 *GROUP 1*—The difference between successive results obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of this test method, exceed the values calculated from Table 9 in only one case in twenty.

13.3.1.2 *GROUPS 2, 3, and 4*—The difference between successive results obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of this test method, exceed the values calculated from the values in Table 9 in only one case in twenty.

13.3.2 *Reproducibility:*

TABLE 9 Repeatability and Reproducibility for Groups 2, 3 and 4 (Manual Method)

	Repeatability ^A		Reproducibility ^A	
	°C	°F	°C	°F
IBP	1.0+0.35S _C	1.9+0.35S _F	2.8+0.93S _C	5.0+0.93S _F
5–95%	1.0+0.41S _C	1.8+0.41S _F	1.8+1.33S _C	3.3+1.33S _F
FBP	0.7+0.36S _C	1.3+0.36S _F	3.1+0.42S _C	5.7+C.42S _F
% volume at temperature reading	0.7+0.92/S _C	0.7+1.66/S _F	1.5+1.78/S _C	1.53+3.20/S _F

^A Calculate S_C or S_F from 13.2.

13.3.2.1 *GROUP 1*—The difference between two single and independent results obtained by different operators working in different laboratories on identical Test material would, in the normal and correct operation of this method, exceed the values calculated from Table 9 in only one case in twenty.⁷

13.3.2.2 *GROUPS 2, 3, and 4*—The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the normal and correct operation of this test method, exceed the values calculated from the data in Table 9 in only one case in twenty.⁸

13.4 *Automated Method:*

13.4.1 *Repeatability:*

13.4.1.1 *GROUP 1*—The difference between successive results obtained by the same operator with die same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of this test method, exceed the values calculated from Table 8 in only one case in twenty.

13.4.1.2 *GROUPS 2, 3, and 4*—The difference between successive results obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of this test method, exceed the values calculated from Table 10 in only one case in twenty.

13.4.2 *Reproducibility:*

13.4.2.1 *GROUP 1*—The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the normal and correct operation of this test method, exceed the values calculated from Table 8 in only one case in twenty.⁷

13.4.2.2 *GROUPS 2, 3, and 4*—The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the normal and correct operation of this test method, exceed the values calculated from Table 10 in only one case in twenty.

13.5 *Bias:*

13.5.1 *Bias*—Due to the use of total immersion thermometers, or temperature sensing systems designed to emulate them, the distillation temperatures in this test method are somewhat lower than the true temperatures. The amount of bias depends on the product being distilled and the thermometer used.

13.5.2 *Relative Bias*—There exists a bias between the empirical results of distillation properties obtained by this test method and the true boiling point distillation curve obtained by Test Method D 2892. The magnitude of this bias, and how it relates to test precision, has not been rigorously studied.

13.5.3 *Relative Bias*—An interlaboratory study⁶ conducted in 2003 using manual and automated apparatus has concluded that there is no statistical evidence to suggest that there is a bias between manual and automated results.

14. Keywords

14.1 batch distillation; distillates; distillation; laboratory distillation; petroleum products

⁷ Precision data obtained from RR study on bath manual and automated D 86 units by North American and IP Laboratories.

⁸ Table 9 has been derived from the nomographs in Figs. 6 and 7 in ASTM D 86-97.

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TABLE 10 Repeatability and Reproducibility for Groups 2, 3 and 4 (Automated)

Collected, %	Repeatability ^A		Reproducibility ^A	
	°C	°F	°C	°F
IBP	3.5	6.3	8.5	15.3
2%	3.5	6.3	2.6 + 1.92S _C	4.7 + 1.92S _F
5%	1.1 + 1.08S _C	2.0 + 1.08S _F	2.0 + 2.53S _C	3.6 + 2.53S _F
10%	1.2 + 1.42S _C	2.2 + 1.42S _F	3.0 + 2.64S _C	5.4 + 2.64S _F
20-70 %	1.2 + 1.42S _C	2.2 + 1.42S _F	2.9 + 3.97S _C	5.2 + 3.97S _F
80%	1.2 + 1.42S _C	2.2 + 1.42S _F	3.0 + 2.64S _C	5.4 + 2.64S _F
90-95%	1.1 + 1.08S _C	2.0 + 1.08S _F	2.0 + 2.53S _C	3.6 + 2.53S _F
FBP	3.5	6.3	10.5	18.9

^A S_C or S_F is the average slope (or rate of change) calculated in accordance with 13.5.

**ANNEXES
(Mandatory Information)**

A1. REPEATABILITY AND REPRODUCIBILITY DEFINITION AIDS

A1.1 Table A1.1 is an aid for determining which repeatability and reproducibility table or section, is to be used.

TABLE A1.1 Summary of Aids for Definition of Repeatability and Reproducibility

Group	Method	Temperature Scale	Table or Section to Use	
			Reproducibility	Repeatability
1	Manual	°C	Table 8	Table 8
		°F	Table 8	Table 8
1	Automated	°C	Table 8	Table 8
		°F	Table 8	Table 8
2,3,4	Manual	°C	Table 9	Table 9
		°F	Table 9	Table 9
2,3,4	Automated	°C	Table 10	Table 10
		°F	Table 10	Table 10

A2. DETAILED DESCRIPTION OF APPARATUS

A2.1 *Distillation Flasks*—Flasks shall be of heat resistant glass, constructed to the dimensions and tolerances shown in Fig. A2.1 and shall otherwise comply with the requirements of Specification E 1405. Flask A (100 mL) may also be constructed with a ground glass joint, in which case the diameter of the neck shall be the same as the 125-mL flask.

NOTE A2.1—For tests specifying dry point, specially selected flasks with bottoms and walls of uniform thickness are desirable.

A2.2 *Condenser and Condenser Bath*—Typical types of condenser and condenser baths are illustrated in Figs. 1 and 2.

A2.2.1 The condenser shall be made of seamless noncorrosive metal tubing, 560 ± 5 mm in length, with an outside diameter of 14 mm and a wall thickness of 0.8 to 0.9 mm.

NOTE A2.2—Brass or stainless steel has been found to be a suitable material for this purpose.

A2.2.2 The condenser shall be set so that 393 ± 3 mm of the tube is in contact with the cooling medium, with 50 ± 3 mm outside the cooling bath at the upper end, and with 114 ± 3 mm outside at the lower end. The portion of the tube projecting at the upper end shall be set at an angle of 75 ± 3° with the vertical. The portion of the tube inside the condenser bath shall be either straight or bent in any suitable continuous smooth curve. The average gradient shall be 15 ± 1° with respect to the horizontal, with no 10-cm section having a gradient outside of the 15 ± 3° range. The projecting lower portion of the condenser tube shall be curved downward for a length of 76 mm and the lower end shall be cut off at an acute angle. Provisions shall be made to enable the flow of the distillate to run down the side of the receiving cylinder. This can be accomplished by using a drip-deflector, which is attached to the outlet of the tube. Alternatively, the lower portion of the condenser tube can be curved slightly backward to ensure

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contact with the wall of the receiving cylinder at a point 25 to 32 mm below the top of the receiving cylinder. Fig. A2.3 is a drawing of an acceptable configuration of the lower end of the condenser tube.

A2.2.3 The volume and the design of the bath will depend on the cooling medium employed. The cooling capacity of the bath shall be adequate to maintain the required temperature for the desired condenser performance. A single condenser bath may be used for several condenser tubes.

A2.3 *Metal Shield or Enclosure for Flask.* (Manual units only).

A2.3.1 *Shield for Gas Burner* (see Fig. 1)—The purpose of this shield is to provide protection for the operator and yet allow easy access to the burner and to the distillation flask during operation. A typical shield would be 480-mm high, 280-mm long and 200-mm wide, made of sheet metal of 0.8-mm thickness (22 gauge). The shield shall be provided with at least one window to observe the dry point at the end of the distillation.

A2.3.2 *Shield for Electric Heater* (see Fig. 2)—A typical shield would be 440-mm high, 200-mm long, and 200-mm wide, made of sheet metal of approximately 0.8-mm thickness (22 gauge) and with a window in the front side. The shield shall be provided with at least one window to observe the dry point at the end of the distillation.

A2.4 *Heat Source:*

A2.4.1 *Gas Burner* (see Fig. 1), capable of bringing over the first drop from a cold start within the time specified and of continuing the distillation at the specified rate. A sensitive manual control valve and gas pressure regulator to give complete control of heating shall be provided.

A2.4.2 *Electric Heater* (see Fig. 2), of low heat retention.

NOTE A2.3—Heaters, adjustable from 0 to 1000 W, have been found to be suitable for this purpose.

A2.5 *Flask Support:*

A2.5.1 *Type 1*—Use a Type 1 flask support with a gas burner (see Fig. 1). This support consists of either a ring support of the ordinary laboratory type, 100 mm or larger in diameter, supported on a stand inside the shield, or a platform adjustable from the outside of the shield. On this ring or platform is mounted a hard board made of ceramic or other heat-resistant material, 3 to 6 mm in thickness, with a central opening 76 to 100 mm in diameter, and outside line dimensions slightly smaller than the inside boundaries of the shield.

A2.5.2 *Type 2*—Use a Type 2 flask support assembly with electric heating (see Fig. 2 as one example). The assembly consists of an adjustable system onto which the electric heater is mounted with provision for placement of a flask support board (see A2.6) above the electric heater. The whole assembly is adjustable from the outside of the shield.

A2.6 *Flask Support Board*—The flask support board shall be constructed of ceramic or other heat-resistant material, 3 to 6 mm in thickness. Flask support boards are classified as A, B, or C, based on the size of the centrally located opening, the dimension of which is shown in Table 1. The flask support board shall be of sufficient dimension to ensure that thermal heat to the flask only comes from the central opening and that extraneous heat to the flask other than through the central opening is minimized. (**Warning**—Asbestos-containing materials shall not be used in the construction of the flask support board.)

A2.7 The flask support board can be moved slightly in different directions on the horizontal plane to position the distillation flask so that direct heat is applied to the flask only through the opening in this board. Usually, the position of the flask is set by adjusting the length of the side-arm inserted into the condenser.

A2.8 Provision shall be made for moving the flask support assembly vertically so that the flask support board is in direct contact with the bottom of the distillation flask during the distillation. The assembly is moved down to allow for easy mounting and removal of the distillation flask from the unit.

A2.9 *Receiving Cylinders*—The receiving cylinder shall have a capacity to measure and collect 100 mL. The shape of the base shall be such that the receiver does not topple when placed empty on a surface inclined at an angle of 13° from the horizontal.

A2.9.1 *Manual Method*—The cylinder shall be graduated at intervals of 1 mL and have a graduation at the 100-mL mark. Construction details and tolerances for the graduated cylinder are shown in Fig. A2.4.

A2.9.2 *Automated Method*—The cylinder shall conform to the physical specifications described in Fig. A2.4, except that graduations below the 100-mL mark are permitted, as long as they do not interfere with the operation of the level follower. Receiving cylinders for use in automated units may also have a metal base.

A2.9.3 If required, the receiving cylinder shall be immersed during the distillation to above the 100-mL graduation line in a cooling liquid contained in a cooling bath, such as a tall-form beaker of clear glass or transparent plastic. Alternatively, the receiving cylinder may be placed in a thermostated bath air circulation chamber.

A2.10 *Residue Cylinder*—The graduated cylinder shall have a capacity of 5 or 10 mL, with graduations into 0.1 mL subdivisions, beginning at 0.1 mL. The top of the cylinder may be flared, the other properties shall conform to Specification E 1272.

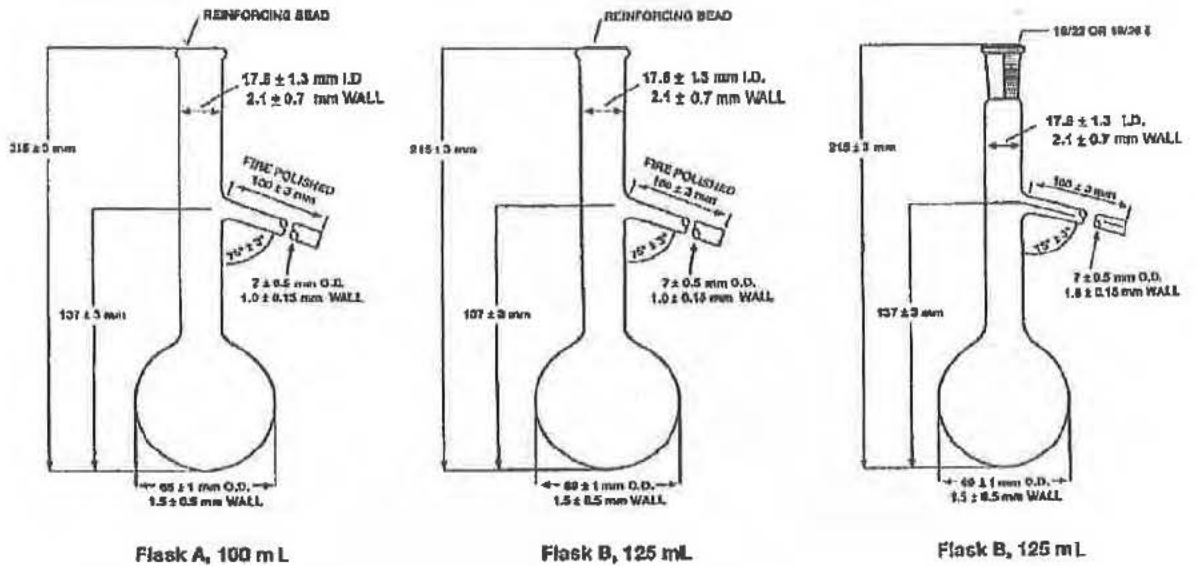


FIG. A2.1 Flask A, 100 mL, Flask B, 125 mL, and Flask B with Ground Glass Joint, 125 mL

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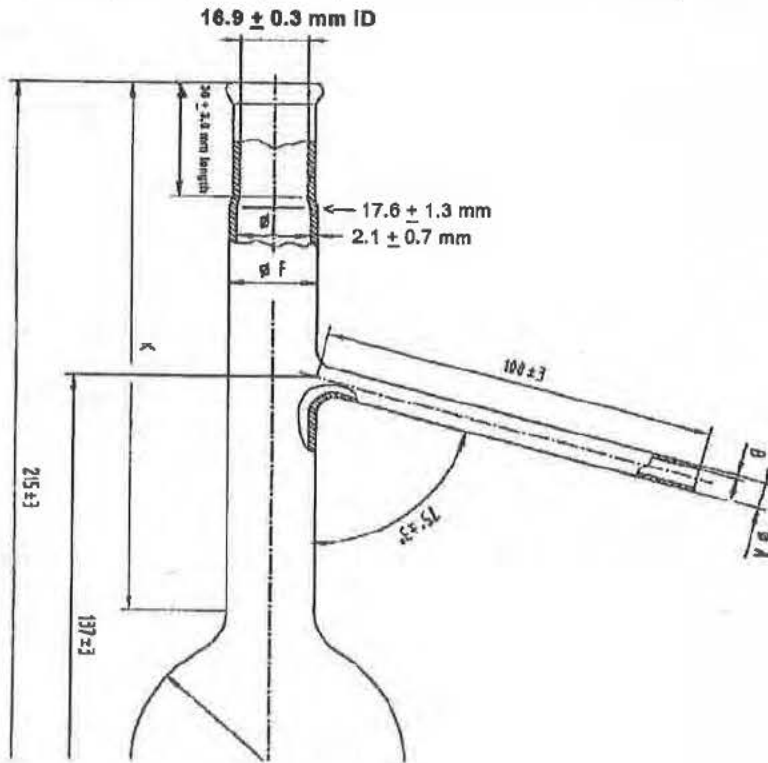


FIG. A2.2 Detail of Upper Neck Section

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X2.2.3 From the calculated value of R, determine the value of volume, as described in A4.8.4.

$$\begin{aligned}
 R \text{ volume } \% &= R/(S_c) \quad (X2.3) \\
 &= 5.5/1.1 \\
 &= 5.0 \\
 R \text{ volume } \% &= R/(S_F) \\
 &= 9.8/1.9 \\
 &= 5.1
 \end{aligned}$$

TABLE X2.1 Distillation Data from a Group 1 Sample Automated Distillation

Distillation Point Recovered, mL	Temperature °C	Temperature °F	Volume (mL) Recovered at 93.3°C (200°F)
			18.0
10	84	183	
20	94	202	
30	103	217	
40	112	233	
Distillation Point Evaporated, mL	Temperature °C	Temperature °F	Volume (mL) Evaporated at 93.3°C (200°F)
			18.4
10	83	182	
20	94	201	
30	103	217	
40	111	232	

X3. TABLES OF CORRECTED LOSS FROM MEASURED LOSS AND BAROMETRIC PRESSURE

X3.1 The table presented as Fig. X3.1 can be used to determine the corrected loss from the measured loss and the barometric pressure in kPa.

X3.2 The table presented as Fig. X3.2 can be used to determine the corrected loss from the measured loss and the barometric pressure in mm Hg.

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Barometric Pressure, kPa																									
from	76.1	80.9	84.5	87.9	89.6	91.5	93.1	94.1	95.5	96.4	97.2	97.9	98.4	98.9	99.5	100.0	100.4	100.8	101.2	101.5	102.0	102.4	102.8	103.2	
through	80.8	84.4	87.2	89.5	91.4	93.0	94.0	95.4	96.3	97.1	97.8	98.3	98.8	99.4	99.9	100.3	100.7	101.1	101.4	101.9	102.3	102.7	103.1	103.5	
Observed Loss	/--Corrected Loss---->																								
Units																									
0	0.37	0.35	0.33	0.31	0.29	0.27	0.25	0.23	0.20	0.18	0.16	0.14	0.13	0.11	0.09	0.06	0.04	0.02	-0.00	-0.02	-0.06	-0.09	-0.13	-0.17	
1	0.63	0.65	0.67	0.69	0.71	0.73	0.75	0.78	0.80	0.82	0.86	0.86	0.87	0.89	0.92	0.94	0.96	0.98	1.00	1.03	1.06	1.09	1.13	1.17	
2	0.89	0.95	1.01	1.08	1.14	1.20	1.26	1.33	1.40	1.46	1.52	1.67	1.62	1.68	1.75	1.81	1.87	1.94	2.00	2.08	2.17	2.27	2.38	2.51	
3	1.16	1.25	1.36	1.46	1.57	1.67	1.77	1.88	1.99	2.09	2.19	2.28	2.37	2.47	2.58	2.89	2.79	2.90	3.00	3.13	3.29	3.48	3.63	3.84	
4	1.41	1.66	1.70	1.84	1.99	2.14	2.28	2.43	2.59	2.73	2.87	3.00	3.12	3.26	3.41	3.56	3.70	3.85	4.00	4.18	4.40	4.63	4.89	5.18	
5	1.68	1.86	2.04	2.23	2.42	2.61	2.79	2.98	3.19	3.37	3.55	3.71	3.87	4.05	4.25	4.44	4.62	4.81	5.00	5.23	5.51	5.81	6.14	6.52	
6	1.94	2.16	2.39	2.61	2.84	3.08	3.30	3.53	3.78	4.01	4.23	4.42	4.62	4.84	5.08	5.31	5.53	5.77	6.00	6.28	6.63	6.99	7.40	7.86	
7	2.20	2.46	2.73	3.00	3.27	3.55	3.80	4.08	4.38	4.65	4.90	5.14	5.37	5.63	5.91	6.18	6.44	6.73	7.00	7.33	7.74	8.17	8.65	9.20	
8	2.49	2.76	3.07	3.38	3.70	4.02	4.31	4.63	4.98	5.28	5.58	5.85	6.12	6.41	6.74	7.06	7.36	7.69	8.00	8.38	8.86	9.35	9.90	10.53	
9	2.72	3.07	3.41	3.76	4.12	4.49	4.82	5.18	5.57	5.92	6.26	6.56	6.87	7.20	7.57	7.93	8.27	8.65	9.00	9.43	9.97	10.53	11.16	11.87	
10	2.98	3.37	3.76	4.15	4.55	4.96	5.33	5.73	6.17	6.56	6.94	7.28	7.52	7.99	8.41	8.81	9.19	9.60	10.00	10.48	11.08	11.71	12.41	13.21	
11	3.24	3.67	4.10	4.53	4.97	5.43	5.84	6.28	6.77	7.20	7.61	7.99	8.37	8.78	9.24	9.68	10.10	10.56	11.00	11.53	12.20	12.89	13.67	14.55	
12	3.50	3.97	4.44	4.92	5.40	5.90	6.35	6.83	7.36	7.84	8.29	8.71	9.12	9.57	10.07	10.56	11.02	11.52	12.00	12.59	13.31	14.07	14.92	15.89	
13	3.76	4.27	4.78	5.30	5.83	6.36	6.86	7.39	7.96	8.47	8.97	9.42	9.86	10.36	10.90	11.43	11.93	12.48	13.00	13.64	14.43	15.25	16.17	17.22	
14	4.03	4.58	5.13	5.69	6.25	6.83	7.38	7.94	8.56	9.11	9.64	10.13	10.61	11.15	11.74	12.31	12.85	13.44	14.00	14.69	15.54	16.43	17.43	18.56	
15	4.29	4.88	5.47	6.07	6.68	7.30	7.87	8.49	9.15	9.75	10.32	10.85	11.36	11.93	12.57	13.18	13.76	14.40	15.00	15.74	16.66	17.61	18.68	19.90	
16	4.55	5.18	5.81	6.45	7.10	7.77	8.38	9.04	9.75	10.39	11.00	11.58	12.11	12.72	13.40	14.06	14.68	15.36	16.00	16.79	17.77	18.79	19.94	21.24	
17	4.81	5.48	6.16	6.84	7.53	8.24	8.89	9.53	10.35	11.03	11.68	12.27	12.66	13.51	14.23	14.93	15.59	16.31	17.00	17.84	18.88	19.97	21.19	22.58	
18	5.07	5.78	6.50	7.22	7.96	8.71	9.40	10.14	10.94	11.65	12.35	12.99	13.61	14.30	15.07	15.80	16.50	17.27	18.00	18.89	20.00	21.15	22.44	23.91	
19	5.33	6.08	6.84	7.61	8.38	9.18	9.91	10.69	11.54	12.30	13.03	13.70	14.36	15.09	15.90	16.68	17.42	18.23	19.00	19.94	21.11	22.39	23.70	25.25	
20	5.59	6.39	7.18	7.99	8.81	9.65	10.41	11.24	12.14	12.94	13.71	14.41	15.11	15.88	16.73	17.55	18.33	19.19	20.00	20.99	22.23	23.51	24.95	26.59	
Tenths																									
0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.1	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.11	0.11	0.12	0.13	0.13

$$ASTM\ 7C\ T_{ehr} = T_t - 1.000162 \times (T_t - 20^\circ C)^2 \quad (X4.1)$$

X4.3 When a high range thermometer would have been used, no stem correction is to be applied below 35°C. Above this temperature the correction is calculated using the following formula:

$$ASTM\ 8C\ T_{ehr} = T_t - 0.000131 \times (T_t - 35^\circ C)^2 \quad (X4.2)$$

where:

T_{ehr} = emulated temperature in °C for low range thermometers,

T_{ehr} = emulated temperature in °C for high range thermometers, and

T_t = true temperature in °C.

X5. EXPLANATORY REPORT FORMS

X5.1 Fig. X5.1 and Fig. X5.2 show report forms.

"Percent Recovered" Report Form

Date:
 Time:
 Operator:

Ambient temperature (°C)
 Atmospheric pressure (kPa)
 Condenser temperature (°C)
 Temperature of the bath around receiving cylinder (°C)

Percent Recovered	Corrected Temperature Reading (°C)	Time or mL / min
IEP		
5		
10		
15		
20		
25		
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		
5 ml residue		
FBP		
95		

Percent Recovery	
Percent Residue	
Percent Total Recovery	
Percent Loss	
Corrected Percent Recovery	Corrected Loss
Corrected Total Recovery	

- Ambient temperature at the start of the test
- Ambient barometric pressure at the start of the test
- Volume of condensate observed in the receiving cylinder at any point in the distillation, expressed as a percentage of the charge volume, in connection with simultaneous temperature reading
- Temperature measuring device readings which are corrected to 101.3 kPa barometric pressure
- Group 1, 2 & 3: 5 to 10 minutes
Group 4: 5 to 15 minutes
- Group 1 & 2: 50 to 100 seconds
- 4 to 5 ml / min uniform average rate from 5% recovered to 5 ml in flask
- Volume of condensate observed in the receiving cylinder when the 5ml conditions are reached
- Volume of condensate observed in the receiving cylinder when the final boiling point is observed
- Maximum percent recovered
- Volume of residue in the flask expressed as a percentage of the charge volume
- Combined Percent Recovery and Percent Residue in the flask
- Time from 5 ml in flask to FBP = < 5 minutes
- 100 minus the Total Recovery
- Percent Recovery corrected for barometric pressure
- Percent Loss corrected for barometric pressure
- Combined Percent Recovery and Percent Residue in the flask corrected for barometric pressure

Comments:

FIG. X5.1 Percent Recovered Report Form

"Percent Evaporated" Report Form Laboratory: _____

Date: _____
 Time: _____
 Operator: _____

Ambient temperature (°C)				
Atmospheric pressure (kPa)				
Condenser temperature (°C)				
Temperature of the bath around receiving cylinder (°C)				

Percent Recovered	Corrected Temperature Reading (°C)	Time or mL / min	Percent Evaporated	Temperature Readings at prescribed percent evaporated (°C)
IBP			IBP	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
35			35	
40			40	
45			45	
50			50	
55			55	
60			60	
65			65	
70			70	
75			75	
80			80	
85			85	
90			90	
5 ml residue				
95			95	
FBP			FBP	

Percent Recovery _____
 Percent Residue _____
 Percent Total Recovery _____
 Percent Loss _____
 Corrected Percent Recovery _____

Corrected Loss _____
 Corrected Total Recovery _____

Comments: _____

FIG. X5.2 Percent Evaporated Report Form

SUMMARY OF CHANGES

Subcommittee D02.08 has identified the location of selected changes to this standard since the last issue (D 86-05) that may impact the use of this standard. (Approved Jan. 15, 2007.)

- (1) Deleted "natural gasolines" from 1.1.
- (2) Deleted "Group 0" from the entire standard.
- (3) Added Fig. 6.

Subcommittee D02.08 has identified the location of selected changes to this standard since the last issue, (D 86-04b), that may impact the use of this standard. (Approved July 1, 2005.)

- (1) Replaced Table 4 with new values.
- (2) Revised 9.1.2-9.1.2.2, 9.1.5, and Notes 9-11.

EXHIBIT 30

EXHIBIT 38
Ashley : : 2019
Date: 2/27/15
Witness: MALAMUD

From: Kickstarter
Sent: Fri 10/25/2013 12:16 PM (GMT -7)
To: carl@media.org
Cc:
Bcc:
Subject: Project Update #8: Public Safety Codes of the World: Stand Up For Safety! by Carl Malamud, Public.Resource.Org

Project Update #8: A Prayer for Our Democracy

Posted by Carl Malamud, Public.Resource.Org ♥ Like

ASCII to ASCII, disk to disk, data thou art and data thou shalt return.

Today, I published 130 more ASTM standards that have been rekeyed into HTML. We have posted a total of 328 ASTM files as scans from PDF and 256 are now available as open HTML. They are available for open access without restriction from our servers. These are a few of these laws with which we have chosen to govern ourselves:

- ASTM D86 (2007): Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure, as required by the EPA in 40 CFR 1065.710.
- ASTM D129 (1964): Standard Test Method for Sulfur in Petroleum Products (General Bomb Method) as required by the EPA in 40 CFR 60.106(j)(2).
- ASTM D257 (1991): Standard Test Method for DC Resistance of Conductance of Insulating Materials as required by the Rural Utilities Service, Department of Agriculture at 7 CFR 1755.860(e)(5).
- ASTM D323 (1958): Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method) as required by OSHA in 29 CFR 1910.106(a)(30).
- ASTM D412 (1968): Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension as required by the Food and Drug Administration in 21 CFR 801.410(d).
- ASTM D413 (1982): Standard Test Method for Rubber Property-- Adhesion to Flexible Substrate as required by the Coast Guard in 46 CFR 160.055-3.
- ASTM D445 (1972): Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids as required by the FDA in 21 CFR 177.1430(c)(2).
- ASTM D756 (1956): Standard Practice for Determination of Weight and Shape Changes of Plastics Under Accelerated Service

21/5/18
DUMAS

- CFR 571.209 S5.2(b).
- ASTM D781 (1971): Standard Test Methods for Puncture and Stiffness of Paperboard and Corrugated and Solid Fiberboard as required by the Department of Housing and Urban Development in 24 CFR 3280.304(b)(1).
 - ASTM D1056 (1973): Standard Specification for Flexible Cellular Materials Sponge or Expanded Rubber as required by the National Highway Safety Administration in 49 CFR 571.213.
 - ASTM D2156 (1965): Method of Tests for Smoke Density in Flue Gases from Distillate Fuels as required by the Department of Energy in 10 CFR 430 Subpart B.
 - ASTM D4268 (1993): Standard Test Method for Testing Fiber Ropes as required by the Coast Guard in 33 CFR 164.74(a)(3)(i).

The rule of law is the secular underpinning of our society. John Adams, in "A Dissertation on the Canon and the Feudal Law" said that for democracy to succeed, we must all know and speak the laws. He said:

"Let the public disputations become researches into the grounds and nature and ends of government, and the means of preserving the good and demolishing the evil. Let the dialogues, and all the exercises, become the instruments of impressing on the tender mind, and of spreading and distributing far and wide, the ideas of right and the sensations of freedom.

In a word, let every sluice of knowledge be opened and set a-flowing."

For our democracy to succeed, we must all be scanners. ASCII to ASCII, disk to disk. Data thou art and data thou shalt return.



When I started to publish federal law, I sent the ASTM and 9 other



I continue publishing the laws of our land. Let every sluice of knowledge be set a-flowing. Thanks for your support.

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EXHIBIT 31

EXHIBIT 59
Ashley Soevyn, ... 12019
Date 2/27/15
Witness: MALAMUD

From: Kickstarter
Sent: Fri 10/18/2013 10:55 AM (GMT -7)
To: carl@media.org
Cc:
Bcc:
Subject: Project Update #6: Public Safety Codes of the World: Stand Up For Safety! by Carl Malamud, Public.Resource.Org

Project Update #6: Meet the Code People

Posted by Carl Malamud, Public.Resource.Org [♥ Like](#)

I post legally-mandated public safety codes, like the National Electrical Code, on our web site for anybody to read. The National Electrical Code is required by law by the Federal government and by all 50 states. But, not everybody thinks that's a good idea. In fact, 3 of the big Standards Development Organizations (SDOs) filed suit against me in U.S. federal court, alleging "massive copyright infringement." Ouch!

The maker of the National Electrical Code is a wonderful organization called the National Fire Protection Association. There's lots of code makers out there, but the NFPA is among the best. They do great work. Their president is Jim Shannon, whom I've had the pleasure of meeting. He's a dedicated public servant. The former Attorney General of Massachusetts, he has personally led the drives to require cigarettes to be fire-safe and to put in home sprinkler systems. His work has saved many, many lives.

I'm going to let Jim tell you in his own words why he thinks there should be only one web site that has the National Electrical Code. This video is from the NFPA free access site and I'm embedding it from YouTube. When he's done, I want to make 4 points about what this all means.

<http://www.youtube.com/watch?v=tBFGjvYOBIM>

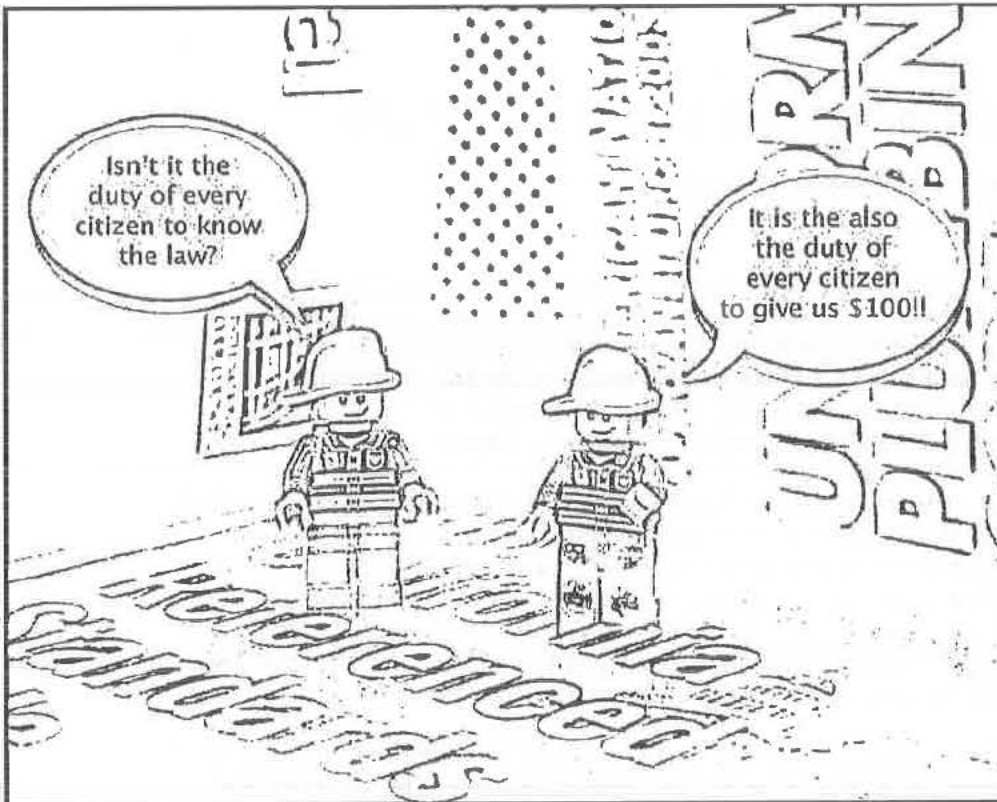
Point 1: The Code People Want These Documents To Become the Law

The first thing to realize is that the NFPA really, really wants their documents to be the law. This isn't some casual appropriation by Big Government, the entire point of their enterprise is that their documents become law. And, when that happens, they used to issue a proud press release. Here's a few examples:

- [Michigan Adopts NFPA 1 Fire Code!](#)

2/1/2018
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- West Virginia Adopts Updated Editions of NFPA 70 NFPA 1 and NFPA 101!
- States Move to Improve Fire and Life Safety With Statewide Code Adoptions!



Point 2: These Are Big Money Operations

My friend Jim says the NFPA needs the money. All of these code operations are nonprofits, so their tax returns are public. In fact, it's my organization that posts all 7,190,942 nonprofit tax returns on the Internet, so I have ready access to this information (just like you do!). Let's look at the money.

- The NFPA 2011 tax return shows revenue of \$80,721,664 and CEO compensation of \$1,044,035. They made \$10 million in membership dues, \$3 million from government grants, and \$9 million from training.
- The American Society for Testing and Materials 2011 tax return shows revenue of \$61,199,159 and CEO compensation of \$914,548. Their tax returns show millions of dollars in revenue in inspection

- The American National Standards Institute 2012 tax return shows revenue of \$36,516,523, including \$1,036,926 to Joe Bhatia, their CEO, who lists himself as working 35 hours a week so he has room in his schedule for work-life balance.



Point 3: The U.S.A. Gold Seal of Approval!

The code people complain that if everybody can read the law willy-nilly, this is a big burden they will bear. It seems to me that when the government of the United States of America delegates to you law-making power and designates you as the OFFICIAL CREATOR of something like the National Electrical Code, that's a marketing dream come true.

So what if everybody can read, speak, and know the law? What a huge privilege to say "We Are The Official Creators Of An Important Public Safety Law!" Think of all the ancillary products!

- The International Code Council brought in \$3.5 in certification

of a building code? (Think that's impressive? Underwriters Laboratories brought in \$834,579,721 in certification revenue!)

- Look at all the amazing value added products that NFPA up-sells on the National Electrical Code. You can buy redlines, handbooks, enhanced eBooks, certificates of educational achievement, special tabbed editions, and much more.

Let's be clear. The only thing that Public.Resource.Org wants to publish is the law. We don't care about standards that aren't the law. We don't care about value-added products. What we care about is that if an organization has law-making power, be they the Environmental Protection Agency or the National Fire Protection Association, we should all have the right to read, know, and speak the law!

(Let's also be clear on one more point. Standards are made by volunteers. They don't get paid, they do this because they believe in their profession. All that money is overhead. We need overhead, but let's not forget who makes the codes.)



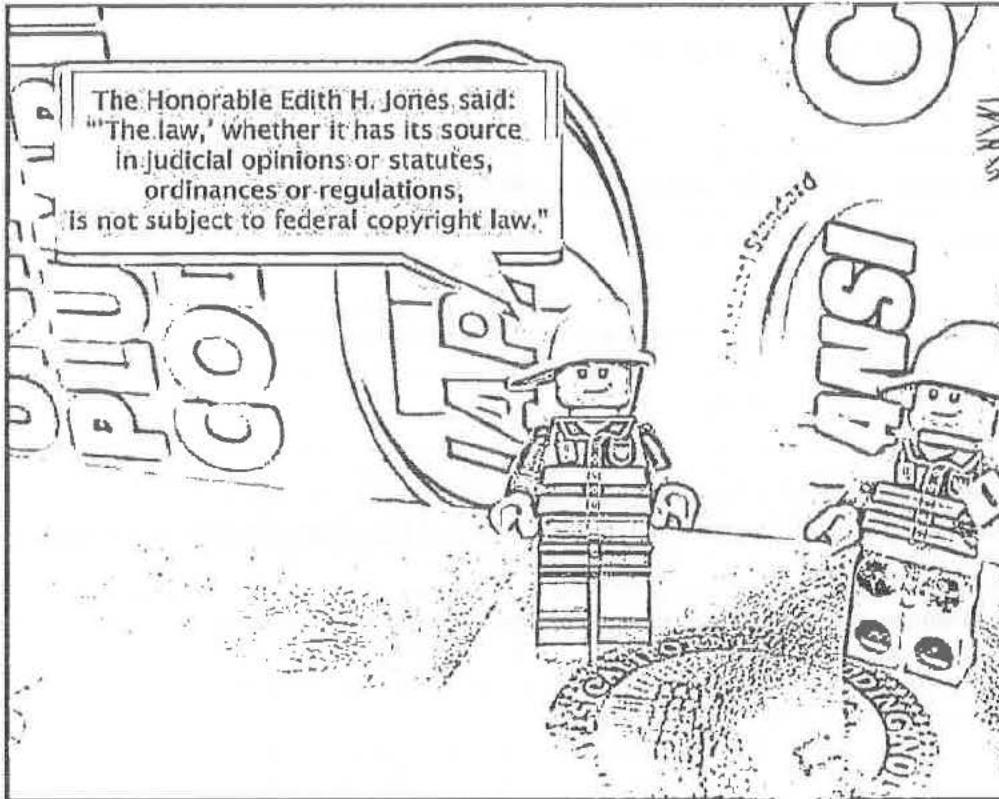
Point 4: Is Read-Only Good Enough?

When I got into the business of making the law available in 2007, there was no public access to public safety codes. You couldn't reading your building code without passing the cash register. You couldn't build a web site that compared OSHA-required safety standards. You couldn't read hazardous material safety specifications after the BP Oil Spill.

As a direct result of our efforts, the code people are grudgingly providing limited public access. NFPA, as always, is the best of the lot, but all the standards bodies have started to provide limited public access in order to make the case for their monopoly.

- In reaction to our efforts in 2012, the American National Standards Institute has created a "reading room" with many standards required by the federal government. They're really proud of this effort, but the dirty secret is that this site well not let you print, copy, or save the standard, you'll have to preregister and accept terms of use, and ANSI will be sending out reports to standards bodies about exactly what you read and when. (See page 5 of these IEC minutes if you don't believe me.) They even have Java software that purports to prevent you from making a screengrab.
- In addition to the ANSI effort, quite a few standards bodies have their one independent efforts. For example, the American Petroleum Institute, the NFPA, and the ASTM have all installed their own systems.

There's nothing wrong with ANSI or ASTM or NFPA putting together a web site. That's great. They should be applauded. But, just imagine if another law-making agency, such as OSHA, were to put a law on their web site and say nobody can make a copy of it without prior permission and you can't print the law the without paying money. Wouldn't you be totally outraged?

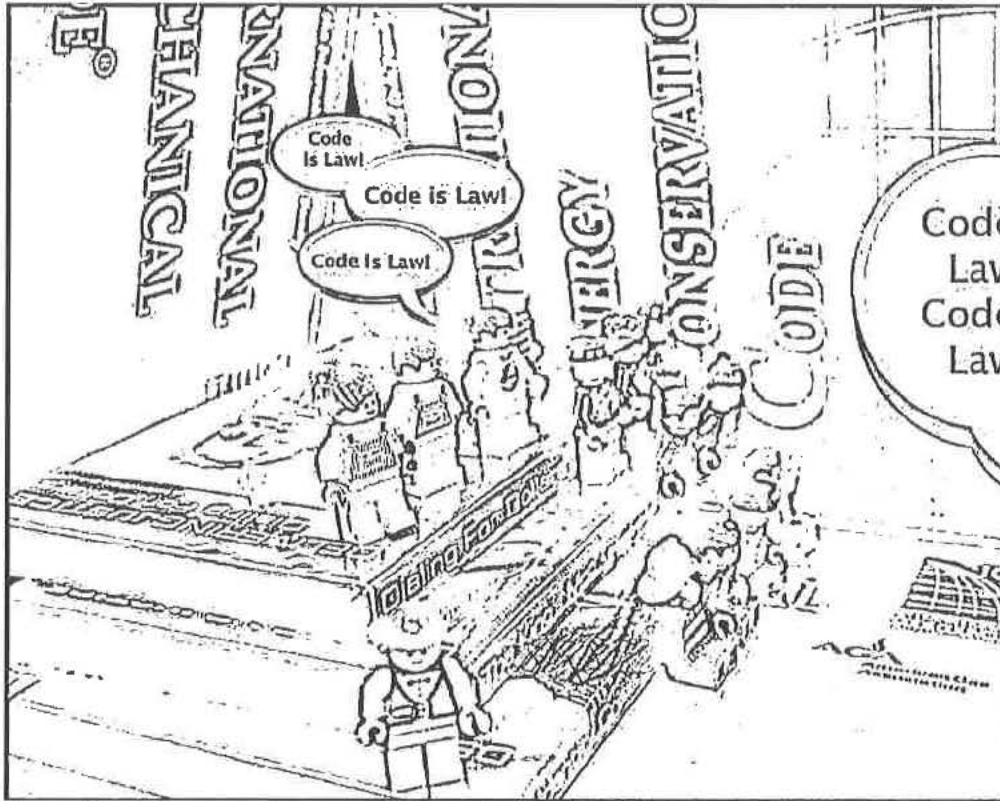


Making public safety codes isn't about money. The code people have lots of money. They're going to have to adjust their business models, but the Internet has forced all of us to do that.

Making public safety codes available is about the rule of law, it's about the freedom of speech. If the code people get their way and they're the only ones able to post the law on their read-only, no-print, no-save, no-copy web sites, we've made a mockery of constitutional principles of due process, equal protection, and the freedom of speech.

*If the code people get their way, our First Amendment would no longer be about the **Freedom of Speech**. If the code people get their way, our First Amendment becomes the **Freedom to Look But Don't Touch**.*

We can do better than that in our democracy. Please stand by me. Code is law!



These images were all prepared by me for my Ignite talk on "Welcome to Code City." Click to watch it.

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EXHIBIT 32

Twelve Tables of Codes

DIRECTORY OF TABLES	
Table 01	Table of Codes
Table 02	Table of Authorities
Table 03	Table of Revenue and Remuneration
Table 04	Table of Pricing Variances
Table 05	Table of Procurement
Table 06	Table of Production
Table 07	Table of Reverse Lookup
Table 08	Table of Works Consulted
Table 09	Table of Tweets
Table 10	Table of Transformative Use
Table 11	Table of Official Proceedings
Table 12	Table of Requests for Comment

§ 1. The Right To Know

The right to know the law, so as not to be ignorant, as ignorance of the law is no excuse.

The right to speak the law, so as to inform the citizenry.

The right to know and speak the law is the underpinning of government in ancient and modern times. The right to know and speak the law is the foundation of the doctrine of the Rule of Law, which provides:

- First, that the laws shall be public, that the arbitrary whims of individual men and women have no place in a society ruled by law. We declare ourselves to be nations of laws, not empires of men.
- Second, that the laws shall apply equally to all. There shall not be one minimum wage for people of color and another for white people. There shall not be one court for men and another for women. The vote shall not be reserved for the rich, disenfranchising the poor with poll taxes or other artificial barriers meant to come between a people and their government.
- Third, that there shall be due process under the law. Judgment shall only be applied after a fair and open proceeding; you shall know the

charges levied against you and shall be provided counsel, so that you may be heard.

When we fail to live up to the Rule of Law, we have failed as a society. Despots may make excuses about extraordinary times or states of emergency, but those reasons are given sheepishly and accepted grudgingly, as we all know that a government that fails to live by the Rule of Law is one that will eventually face the springtime of revolt.

§ 2. *The Rule of Law*

In the early days of the Roman Republic, the commoners rose against their aristocratic masters and demanded that the laws by which they would be judged should be made known. When the aristocrats resisted, preferring to impose the law arbitrarily, the people quit the city of Rome, leaving the city defenseless and without workers to keep it running.

The great secession led in 450 BCE to the promulgation of the Twelve Tables of Law, which were inscribed on bronze tablets and placed in the agoras for all to read. All citizens were expected to read and know the law, indeed when the Gauls burnt the city in 390 BCE and the tablets were destroyed, all the schoolchildren were able to recite them from memory and they were easily reconstructed.

That the laws shall be written down and promulgated for all to know was a universal value. In Greece, the laws of Solon were inscribed on wooden cylinders and placed in the markets. Aristotle stated in *Politics* that “the rule of law...is preferable to that of any individual...[H]e who bids the law rule may be deemed to bid God and Reason alone rule, but he who bids man rule adds an element of the beast; for desire is a wild beast, and passion perverts the minds of rulers, even when they are the best of men. The law is reason unaffected by desire.”

In India, Ashoka the Great ruled from 269 BCE to 231 BCE and inscribed the Code of the Dhamma on 50-foot pillars of stone throughout the land, declaring in Edict Number 4 “that there should be uniformity in law and uniformity in sentencing.” Ashoka appointed Dhamma Officers who went out into the provinces, reading the edicts aloud to the people and helping them to understand his laws.

That the law should be known to all was fundamental, but equally important was that the law should not be for sale. When the Barons of

England confronted King John in 1215 on the meadow of Runnymede, one of their chief complaints was that access to the courts had become matter of access to money and that judgments were for sale to those who chose to pay for them. This led to the most long-lasting provision of Magna Carta, one still in force in the United Kingdom and many other common law jurisdictions:

Article 40: “To no one will we sell—to no one will we deny or delay—access to right or justice.”

Likewise, in Japan, the 7th-century Prince Shokotu recognized that access to the law and justice should not be a matter of access to money. In the 17-Article Constitution, which is also still in effect, he instructed all Ministers and officials of state to observe the principles he set out:

Article 5: “Of complaints brought by the people there are a thousand in one day. If in one day there are so many, how many will there be in a series of years? If the man who is to decide suits at law makes gain his ordinary motive, and hears causes with a view to receiving bribes, then will the suits of the rich man be like a stone flung into water while the complaints of the poor will resemble water cast upon a stone. Under these circumstances the poor man will not know where to take their complaints.”

That all people should know their duties was expressed in China in the first printed book, *The Diamond Sutra*, which was dedicated to “universal free distribution.” In the Chinese Buddhist tradition, one gains merit by copying or printing. The writing of the laws began in China in 536 BCE, when Xing Shu inscribed the code of punishments on a bronze tripod for all to see. Then, 20 years later a neighboring state inscribed the laws on an iron tripod, then private citizens copied them onto bamboo. For the next millennium, the Chinese government balanced the Confucian precepts of rule-by-man with the codified principles of rule-by-law.

As new governments were formed to throw off colonial and dynastic yokes, equality under the law and government by Rule of Law became guiding principles. The U.S. Constitution enshrined equality and due process into the fabric of the newly United States. John Adams explained in his *Dissertation on the Canon and Feudal Law* that the key to making this experiment in democracy work would be the participation of an informed citizenry:

“Let us tenderly and kindly cherish, therefore, the means of knowledge. Let us dare to read, think, speak, and write. Let every order and degree among the people rouse their attention and animate their resolution. Let them all become attentive to the grounds and principles of government, ecclesiastical and civil. Let us study the law of nature; search into the spirit of the British constitution; read the histories of ancient ages; contemplate the great examples of Greece and Rome; set before us the conduct of our own British ancestors, who have defended for us the inherent rights of mankind against foreign and domestic tyrants and usurpers, against arbitrary kings and cruel priests, in short, against the gates of earth and hell.”

An informed citizenry requires the freedom to read and write the law. When the issue came before the U.S. Supreme Court, it ruled unanimously in *Wheaton v. Peters* (1834) that the law belonged to the people, not to the government and certainly not to private citizens, stating “no reporter has or can have any copyright in the written opinions delivered by this Court.”

The principle that the law belongs to the people was repeatedly affirmed. In *Banks v. Manchester* (1888), the Supreme Court rejected copyright claims over state court opinions. In *Veck v. Southern Bldg. Code Congress* (2002), the 5th Circuit of the Court of Appeals rejected copyright claims over model building codes that were incorporated into law in Texas, stating “[P]ublic ownership of the law means precisely that ‘the law’ is in the ‘public domain’ for whatever use the citizens choose to make of it.”

In the 20th Century, governments all over the world have repeatedly reaffirmed the importance of the Rule of Law and of fundamental human rights, which include the right to know what our governments require of us. This right has been particularly important in the formation of the European Union. Article 15 of the Treaty on the Functioning of the European Union emphasized the “right of access to documents of the Union's institutions,” the Charter of Fundamental Rights of the European Union guarantees a “right of access to documents,” and the Treaty of Amsterdam firmly reaffirmed the principle:

Article 1: “The Union is founded on the principles of liberty, democracy, respect for human rights and fundamental freedoms, and the rule of law, principles which are common to the Member States.”

The courts in Europe have repeatedly reaffirmed these principles. In the United Kingdom, for example, in *Blackpool v. Locker* (1948), the King's Bench refused to enforce regulations that were not available for the public to read. In *Fothergill v. Monarch Airlines* (1981), the House of Lords stated that “the need for legal certainty demands that the rules by which the citizen is bound should be ascertainable by him.” In *Sunday Times v. United Kingdom* (1979), the European Court of Human Rights stated that “[T]he law must be adequately accessible: the citizen must be able to have an indication that is adequate in the circumstances of the legal rules applicable to a given case.”

The Rule of Law is not a concept limited to western or northern countries, to developed countries, or any other lines drawn that divide our world into sectors. The Rule of Law unites our world around a basic truth, that all human beings have basic rights. The Universal Declaration of Human Rights (1948) states:

Article 19: “Everyone has the right to freedom of opinion and expression; this right includes ... to seek, receive and impart information and ideas through any media and regardless of frontiers.”

The rights of speech and expression are fundamental to any declaration of human rights. The right of access to justice is equally fundamental. There can be no human rights in any meaningful sense if we limit who is allowed to read the law and who is allowed to speak it. Human rights begin with all citizens knowing their duties and their rights under the law.

§ 3. *Code is Law*

Law has always been technical. Regulation of public safety and the promotion of standards for fair trade have always stood hand-in-hand with the regulation of the procedures of justice. When the Barons at Runnymede forced King John to agree to Magna Carta, the articles guaranteeing access to justice came right after the article proclaiming a system of uniform weights and measures:

Article 35: “Let there be throughout our kingdom a single measure for wine and a single measure for ale and a single measure for corn, namely ‘the London quarter,’ and a single width of cloth (whether dyed, russet or halberjet) namely two ells within the selvedges and let it be the same with weights and measures.”

England was not unique. In most of the ancient edicts of government, we see the regulation of technology for public safety and the promotion of trade sitting alongside the procedures of justice, the functioning of the divisions of government, and other constitutional issues. In Ashoka's Second Edict he made provisions for the availability of important medical roots and fruits; in other edicts he established systems of irrigation and safe roads. In early Irish law we see provisions of family law sit alongside standards for beekeeping and the proper functioning of watermills.

As our modern era began, the provision of the public safety became an increasingly important function of government. Railways helped open up the United States, but at a tremendous cost in lives from manual hand brakes and link-and-pin couplers for the cars. With the passage of the Railroad Safety Appliance in 1893, the number of accidents fell dramatically as air brakes and automatic couplers became required on all trains.

In American cities, children were dying because milk was being adulterated with fillers such as chalk and kept in grossly unsanitary conditions. With the passage of the Food Act of 1899, the Board of Agriculture was finally able to issue the 1901 Sale of Milk Regulations, establishing standards of purity and hygiene, followed soon after by the Federal Foods and Drugs Act of 1906 which established the Food and Drug Administration.

Perhaps the most significant of the public safety regulations at the turn of the century were the fire codes. The impetus was the horrific New York Triangle Shirtwaist Factory Fire of 1911, where the exit doors were locked shut and 146 garment workers died from fire and smoke, many of them leaping to their deaths from the 10th floor of the factory, a scene so horrific that an observer called it “the day it rained children.”

The fire led to the creation of a Committee on Public Safety led by Frances Perkins, and with the backing of Tammany Hall's Al Smith, to the promulgation of mandatory fire codes. Since then, groups such as the National Fire Protection Association have created the high quality building, fire, electrical, and other public safety codes required throughout the world. When those codes are ignored, we see tragedies such as the Bangladesh Tazreen Fashions fire of 2012, a fire that bore a striking and horrifying resemblance to the Triangle Shirtwaist fire 101 years earlier.

In our modern world, public safety regulations are a key function of government. Natural gas and oil, for example, power our modern cities, but those substances can cause grave harm. In the United States, we learned this repeatedly when the Texas City refinery explosion of 2005 killed 15 and injured 170, when the Deepwater Horizon oil spill of 2010 threw 4.9 billion gallons of oil into the Gulf, and when a 30-inch gas pipeline in San Bruno, California, exploded and sent a blast of fire 1,000 feet high.

Technical regulations encompass a huge swathe of our modern life, a natural outcome of our technical society. Building and other codes, food safety, hazardous materials, the environment, occupational safety in factories and farms, and the safety of products are all subject to these regulations. While some may argue there is too much regulation and others argue there is too little, before we can have that discussion the citizenry must be informed.

§ 4. *Indefensible Thunderbolts*

Ignorantia juris non excusat is the well-established doctrine that ignorance of the law is no excuse. That citizens must be notified of the laws that affect them was the genesis of the Federal Register, an official gazette of the United States, established after the Supreme Court ruled in the *Hot Oil Case* (1935) that regulations that the government failed to publish were not valid. Notification of the citizenry of their rights and responsibilities is a requirement of lawmaking.

In most of the world, including the United States, there has arisen a system for technical laws known as incorporation by reference. The standards governing topics such as building codes or hazardous material transport are developed by ostensibly private bodies. The government then publishes a notice in an Official Gazette incorporating these standards into the law, but the text of the standards must often be purchased from a private body.

The private bodies that develop these standards have been delegated law-making authority from their governments. In most cases, these private bodies are created by their governments. The British Standards Institution, for example, was created by a Royal Charter in 1929 and represents the United Kingdom in numerous international forums, including the International Organization for Standardization (which it helped create) and the European Union's European Committee for

Standardization (CEN). As the duly delegated agent for this form of European Union regulation, the British Standards Institution is required to adopt and publish EU standards without change, making the law available to citizens. The official United Kingdom repository of statutes lists hundreds of statutory instruments that mention British Standards Institution documents.

While technical standards have the force of law, the governmental bodies that promulgate these standards and a series of nonprofit organizations that have sprung up besides them all to often maintain that the laws are their private property and can only be accessed after paying a fee. More insidiously, these organizations maintain that they continue to own the documents even after you have paid the fee, exercising controls such as restricting the ability to print the document, or copy it, or even to quote excerpts without their case-by-case prior written approval.

These restrictions on use are implemented through a number of techniques. Many standards are only available in a shrink-wrap license, an agreement that claims that by opening the packaging the reader agrees that they don't own the document but only "license" it and agree not to redistribute or quote without permission. For online distribution, many standards come with Digital Rights Management (DRM) software that ties the document to a specific computer and restricts the ability to copy text from the standard or print it.

These restrictions on use are proclaimed loudly and prominently, with watermarks being put on every page of some documents purchased, strident terms of use, and publicity campaigns reminiscent of the "FBI Warnings" stamped on the beginning of many movies. But, there is a world of difference between a privately created movie and a legal document carrying out the edicts of government. To proclaim ownership of edicts of government is a false proclamation, what is known in the law as the *Doctrine of Brutum Fulmen*, the use of an indefensible thunderbolt to make others give up their rights under the law.

The law belongs to the people, and cannot become the private property of some governmental or non-governmental organization, no matter how seemingly well-deserved are the rents one could extract from winning a monopoly concession on a parcel of the law. While standards bodies need money to carry out their valuable work, and while it is clear that these standards bodies create high-quality documents that are essential to our public safety, one cannot cordon off the public domain simply because of an institutional desire for funds.

An examination of the financial status of standards organizations reveals a wide variation in composition and revenue streams. In India, for example, less than 4% of revenue at the Bureau of Indian Standards (BIS) comes from the sales of documents. BIS, like the British Standards Institution, Underwriters Laboratories, Standards New Zealand, and many other organizations throughout the world, have a thriving business in certification and testing.

Some standards bodies, such as the National Fire Protection Association and the International Organization for Standardization, depend more heavily on the sale of standards documents. However, even in these cases there are many other revenue streams and there are opportunities to adjust the business models to more properly reflect the importance of their work throughout society. And, in many cases, there is room for a fresh look at expenses, such as million-dollar CEO salaries, some of the highest salaries in the non-profit world.

Not all standards bodies have become addicted to these copious revenues that accompany these indefensible thunderbolts. In some countries, such as Thailand, Indonesia, and Ecuador, standards are freely available to citizens as a matter of public policy. Many standards bodies thrive on an open standards model, including key areas such as all the standards that govern the operation of the Internet created by the Internet Engineering Task Force and the World Wide Web Consortium, and the food safety standards promulgated in the Codex Alimentarius by the World Health Organization and the Food and Agriculture Organization of the United Nations.

One of the most insidious aspects of the current system is the wide variance of the price of standards. A basket of 11 public safety standards published by the International Organization for Standardization and also required by the European Union was assembled and priced by Public.Resource.Org in the retail outlets of 42 national standards bodies. Even within the European Union the prices varied wildly, from \$175 in the Former Yugoslav Republic of Macedonia to in Lithuania to \$2628 for the same standards in the United Kingdom. Because access to the standards (and the national forwards to the standards) is vital for economic activity across national borders, the opportunistic pricing by money-hungry standards bodies becomes a tall barrier to trade.

While extracting a tax on each reader of a standards document is an impediment to the Rule of Law, the restriction on reuse of the documents is even more serious. The law is the raw material of democracy, and

being able to work with these documents to create better ways to inform the citizenry is crucial to the proper workings of justice, governance, and politics.

In many cases, the standards promulgated by standards bodies are only available electronically on a web site that only works on a certain of browser, or as a PDF file with a plugin that only runs on certain operating systems. In many cases, the documents are so restricted in use that they won't work with software used by the visually impaired, or the searching capabilities are so restricted that lawyers, paralegals, policy analysts, legislative aides, and government officials are unable to find the passages they need.

One of the most important reasons the law has no restrictions on use is so that innovation may flourish in the marketplace, creating better solutions for citizens, lawyers, government workers, and public safety professionals. Restrictions on reuse have frozen the format of standards documents inside dozens of old web sites and outmoded formats maintained by standards organizations, many of whom run Internet sites that are littered with technical errors and broken software.

Perhaps the most troubling indefensible thunderbolts are when the law is kept secret and may not be consulted. In Estonia, one of the most advanced and democratic societies and generally an exemplar of open government practices, Eesti Standardikeskuse (EVS) received an order with payment via PayPal from Public.Resource.Org for €3,208.68 for the purchase of 166 technical standards required under Estonian law. The next day, the order was cancelled, the money returned, and a notice dispatched indicating that the service was being refused. When we inquired as to why, the answer was a curt 1-line response:

“We would keep the circumstances to ourselves and we recommend to order the standards from another country.”

Even in the case of European Union regulations, which must be adopted by all European Union nations without change, there is a national foreword. Other standards are developed specifically for Estonia and are only available from EVS. Public.Resource.Org wrote to the Honorable Thomas Hendrik Ilves, the President of Estonia and a leader in open government and asked him for help. When he didn't answer, we wrote to the President's aide, and then to the President's son, neither of whom answered. In a society governed by the Rule of Law, should one have to know the President's son to be able to purchase the law? In a modern

democracy, should the government be able to pick and choose who shall know the rules?

§ 5. *This Law is Your Law*

The U.S. Copyright Office, in the *Compendium of Copyright Office Practices*, states:

“Edicts of government, such as judicial opinions, administrative rulings, legislative enactments, public ordinances, and similar official legal documents are not copyrightable for reasons of public policy.”

In order to promote public education and public safety, equal justice for all, a better informed citizenry, the rule of law, world trade and world peace, Public.Resource.Org has undertaken to make technical edicts of government available on a noncommercial basis, as it is the right of all humans to know and speak the laws that govern them.

The focus in this release is on mandatory public safety standards. In many nations, public safety standards are expressly mandatory. In other countries, elaborate dances are undertaken to protect an illusion that the standards are somehow voluntary, but in each of the documents published there is a compelling public interest and the documents have been promulgated under the direction of government and play a key role in society.

A number of the documents released come directly from the standard bodies, because they make the documents available in draft or in final form. In other cases, such as China, the documents were submitted to the World Trade Organization, which maintains a portal with thousands of standards. These standards are made available to the public as part of the WTO's mandate to promote world trade by requiring full disclosure of the rules and standards governing trade with a country.

Many of the documented released were purchased directly from standards organizations after careful research. Most of the standards were ordered in paper format. For PDF files, such as those that were obtained from the World Trade Organization, the documents were fixed by properly embedding fonts and fixing technical errors.

One of the most important reasons for making standards available is to allow for transformative uses, providing better access and utility for citizens. Of the standards being published, several hundred have so far been rekeyed and reset by Public.Resource.Org into valid HTML files. Many of the graphics have been redrawn into the open Scalable Vector Graphics (SVG) format so that the graphics can be resized and manipulated. Likewise, mathematical formulas are being reset into the Math Markup Language (MML), providing better access for the visually impaired and better functionality for those wishing to cut and paste formulas.

A number of other transformative uses become possible when the documents have been rekeyed into valid HTML. Proper metadata is added to the document headers, making them accessible and discoverable by search engines. Access protocols such as FTP and rsync allow bulk access and resynchronization to large collections of standards documents. Digital signatures allow users to verify that the documents have not been modified by comparing them to a known good version of the document.

All over the world, for centuries, nations have embraced the concept of the Rule of Law—the principle that prescribed law, rather than the whims and desires of any individual, should govern society. The Rule of Law is enshrined in ancient texts and in modern legislation, treaties, and judicial decisions. It is a central protection against tyranny and against a society where justice is arbitrary and some gain unfair advantage over others.

Only if the law is truly free and available can we expect people and enterprises to obey the law, to know their rights under the law, and to evaluate and participate in the work of improving the law. Only if the law is accessible to all, can we truly say that a society is governed by the Rule of Law.

By making technical standards governing building safety, transportation safety, energy safety, food and water safety, and other important areas readily available to all without restriction, we make society better. First responders and government officials can do more to protect citizens. Small enterprises can more easily and affordably comply with the law and build new businesses. Students, educators, scientists, engineers, policy advocates, journalists, and government workers can more easily read the standards and learn about technology, commerce, and government. They can work to improve the standards themselves, and they can improve upon the accessibility and usefulness of the standards by making searchable databases or better navigational tools.

Innovation and education will benefit by opening up this world, but at the root are basic issues of democracy and justice. We cannot tell citizens to obey laws that are only available for the rich to read. The current system acts as a poll tax on access to justice, a deliberate rationing and restriction of information critical to our public safety and economic progress.

The law must be easily available to all people, access to the legal system and the texts that make up the law should not be bought, or sold, or rationed. People must have the right—an unfettered right—to read the law.

People must also have the right to communicate the provisions of law to others—to speak the law. When Justice Stephen Breyer said, “if a law isn't public, it isn't a law,” he was expressing the long-standing doctrine of the Rule of Law, one that has become ever more important in our information age.

Nobody can deny you the right to read and know the law. Nobody can tell you that justice is for sale. Read the law and make it better. Make your society better and make it safer.

You own your government. The Rule of Law is the rule of the people.

The law is yours to read, yours to know, and yours to speak. This law is your law.

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EXHIBIT 33

From: Carl Malamud
Sent: Wed 8/24/2011 10:52 AM (GMT -7)
To: Josh Greenberg
Cc:
Bcc:
Subject: Re: Federal Register/Code of Federal Regulations
Attachments: org.sloan.201108016_to.pdf

Here you go ... I'm not in top form today (been sick, dentist this morning, etc, etc) so hopefully I didn't screw this up and it is semi-coherent.

My biggest worry on these things is over-promising ... I try stay conservative on what I'm promising to deliver and what that will mean to the world. Maybe not the best sales strategy, and certainly one not practiced by some of my nonprofit colleagues. :)

I also want to be very careful that this is framed as an activity meant to help the code producers and building officials make their work better. We're not out to disenfranchise them, this is their job not ours. I don't want to piss them off and have them see this as a threat and I definitely don't want this in court.

Carl

EXHIBIT 77
Ashley Soewyn, CSR No 12019
Date 2/27/15
Witness: MALAMUD



PUBLIC.RESOURCE.ORG ~ *A Nonprofit Corporation*

Public Works for a Better Government

Recoding the Public Safety Codes of California

Proposal to the Sloan Foundation

August 19, 2011

1. Background

This is a proposal to make Title 24 of the California Code of Regulations significantly more usable than it is today. Title 24 contains 5,562 pages of the public safety codes of California—building, electrical, mechanical, plumbing, energy, and fire—the laws that most closely touch our daily lives.

Across the United States, states and municipalities Incorporate by Reference model public safety codes created by groups such as the International Code Council and the National Fire Protection Association. While these model codes have copyright, once incorporated by reference and duly enacted as law by a jurisdiction, the material becomes public domain, a principle most recently articulated in the case of *Veck v. Southern Building Code Congress* (293 F.3d 791).

In 2008, when we began our work in this area, none of the public safety codes of the U.S. were on the Internet. Even state web sites such as the California Building Standards Commission directed citizens to sites for purchase of paper copies or electronic products with tight usage restrictions built into the terms of use. The cost for a paper copy of California's 2010 Triennial Edition of Title 24 is \$1,177.

In 2008, relying on the *Veck* decision, Public.Resource.Org systematically purchased model codes, scanned them, found the relevant regulations or statutes that

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incorporated specific model codes, and published the results on-line. This collection—bulk.resource.org/codes.gov—contains 278 public safety codes for 45 states.

Every one of those codes contained strong copyright assertions by the model code creators and in many cases by the state or municipality. Despite these strong copyright assertions, and despite extensive national publicity, not a single letter of protest or legal action was received by Public.Resource.Org.

After about two years, we began to notice most of the code creation bodies in states and municipalities were now beginning to provide some form of public access to these laws, usually in a “crippleware” system with no printing, bookmarking, or saving.

Making public safety codes broadly available is more than just an abstract notion of transparency. These extremely detailed and technical rules are crucial to how we lead our lives:

- Apprentices wishing to become electricians, plumbers, or carpenters must be intimately familiar with the codes in their field and in related fields. Firefighters, including volunteer firefighters, should be able to easily read the provisions of the fire codes.
- Homeowners should be able to quickly check to see if their home is up to code or if a recent repair is up to code. The web sites provided by the code developers and the 5,000 page documents published by the state are aimed at high-end professionals, and there is a strong barrier (which we hope to reduce) to building new kinds of web sites that are aimed at other kinds of users.
- Building supervisors for commercial properties, architectural firms, engineering firms, and property developers need to incorporate the code into their plans and procedures and internal computing systems. With today’s complex

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computer systems for CAD and engineering, this means having the codes in a format that is computable. That capability is available today in very high-end CAD systems, but developers wishing to incorporate such capability into web-based systems or open source software do not have the raw materials they need.

- Students of architecture and engineering are required to be familiar with the codes and (one would hope) professors of architecture and engineering would be some of the most astute critics of gaps in the codes or malformed specifications. Because of the high cost and inappropriate formatting of today's public safety codes, educational uses of the public safety codes do not exist and we are not seeing graduate students and professors tackling the codes to help improve them.
- Building officials, legislators, realtors, and developers all need to know how the code varies across jurisdictions. Today, there is no place to look in California to see how these codes vary. Variance across jurisdictions is just one of a class of applications not possible when distribution of the laws we must obey is sandwiched into a single government-endorsed web site and a \$1200 document.

Today, our public safety codes are locked, available only in specific formats and in specific places. Training materials are not widely available, the one-size-fits-all web sites are aimed at a specific class of existing users, new uses can not be implemented or even imagined because the raw materials of our public safety codes are hidden behind walls. By making these codes more widely available and in better formats, we hope to promote no less than increased awareness of the law, increased observance of the law, and better public safety in our daily lives.

2. California's Title 24

In 2010, we began working more extensively with the 2010 Triennial edition of California's Title 24 to see if we could set a concrete example of how much better an open code based on open standards can be. The Triennial edition took effect January 1, 2011 and stays in effect for 3 years. To date, we have produced the following transformations:

- We began by "double-keying" the entire code base into XHTML, including all the tables. Double-keying is a process of converting scanned documents by typing them twice and then comparing the results to catch errors. Double-keying achieves accuracies of approximately 99.51%. The HTML markup we produced is quite extensive, including coding of lists, change markers from previous version and to the model code, tables of contents, indices, and other finding aids.
- This code base was then checked into Google Code, a source code maintenance system along with corollary materials such as documentation. This allows multiple developers to work in a distributed fashion and makes it a truly open source project.
- This summer, working with the Rural Design Collective, a mentoring program for students under our fiscal sponsorship, students have been begun recoding all the mathematical formulas into MathML (which will make the public safety codes accessible for the first time) and transformed further into SVG (which makes the mathematical markup work across a range of browsers, including those that don't support MathML).
- Also working with the Rural Design Collective, we have begun recoding all the graphics into vector graphic files and SVG. This includes providing editable vector art for icons, and other graphic elements used in the public safety codes.

3. Proposed 2012 Work

This proposal, which covers 12 months of work in 2012, will bring Title 24 to a new level, making the public safety codes far more useful. Our aim is to make Title 24 so much more useful than the version provided by the state that California, model code creators, and jurisdictions across the United States all see very clearly the benefits of creating accessible laws on open standards with much better navigation and production values.

We'd like to make this code so good, it can't be ignored, so that politicians clearly see how much better it is, so citizens clammer to see this happen in their own jurisdictions. Our 2012 work is focused on 8 key tracks.

Track 1: Coding. The first track is on getting the underlying code truly converted. Our work with the Rural Design Collective student mentoring program will be expanded to finish all the coding into MathML, proper geographic coding (e.g., KML) for geographic maps, better icon sets, and much better overall graphics. We will also complete the process of making sure every section number has a unique marker and all tables of indices, cross-citations, and tables of contents point to the correct location.

- Deliverables for Q1: Indices and section numbering coding complete.
- Deliverables for Q2 and Q3: Delivery and incorporation into the main corpus of complete math, geographic, and graphic coding.
- Deliverable for Q4: Quality assurance and cross-browser audit of rendering.

Track 2: User Interface. The second track is on user interface elements and transformation into other formats. User interface elements such as better navigation in the HTML can be vastly improved. In addition, using a CSS-based transformation, we

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are able to turn the HTML back into PDF, including keeping all pagination and change control markers. This PDF transformation is a technique we've already tested extensively with Title 24. In addition, we are investigating epub and other e-book formats, an area we've worked extensively on in the past.

- Deliverables for Q1: PDF transformation. Design work for UI complete.
- Deliverables for Q2: Better UI in alpha. Investigation of Epub and other formats complete.
- Deliverables for Q3: Better UI in beta.

Track 3: Table of Variances. The third track is to produce a state-wide table of variances. California's Title 24 is the governing law, but individual municipalities will provide local amendments. In addition, there is an ongoing process of notices and errata to the codes. This track will produce a systematic on-going survey of all municipal and county references to Title 24, allowing us to provide a variety of navigation and reference tables. For example, local building contractors will be able to access a table showing how the building code varies in different towns across a county.

- Deliverables for Q1: Tracking of errata and identification of municipal code sections complete.
- Deliverables for Q3: Table of variances published in alpha.

Track 4: Standards Incorporated by Reference. The fourth track addresses standards incorporated by reference into Title 24. The 5,562 pages of Title 24 are only the beginning of the laws that a citizen, contractors, building official, or firefighter must be aware of. Just as the State of California incorporates by reference a model code, the model codes incorporate by reference a large number of technical standards.

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A few examples of such technical standards are already published on our Title 24 site and each part of Title 24 contains a listing of all standards incorporated by reference. Public.Resource.Org has already published a substantial number of these secondary standards, and will continue to expand that collection.

The Veeck decision is unclear if the holding is recursive. As such, we don't feel it would be wise to simply publish all secondary standards wholesale. Rather, our strategy is to assemble a group of well-qualified engineering professionals and ask them to read the public safety code and then read the standard that is incorporated by reference and render an opinion on how critical the secondary standard is to understanding the law.

Our hope is to have a well-considered body of technical opinion that identifies which are the most important secondary standards, the ones without which it is impossible to understand the law. A simple example is when certain types of fire sprinkler standards are mandated in a fire or electrical code, and the definition of those fire sprinkler standards is contained in a secondary document.

- Deliverables for Q1: Identify venue and participants for study. Identify which standards to make available to group.
- Deliverables for Q2 and Q3: Work with group to complete evaluation of standards.
- Deliverables for Q4: Present results in report, present the report to SDOs, state officials, county officials.

Track 5: Outreach to Users. Outreach is a two-way cycle: we help educate people who will use the codes, but also learn from them what would make the code more useful. We will convene two kinds of meetings in 2012. First, at least 4 workshops will

be delivered on "How to Use the Code," aimed at librarians, active homeowners, and other non-professionals. We will also convene at least 4 workshops with contractors, architects, and other professionals to walk them through what we have done with Title 24 and solicit their suggestions and feedback. Our commitment in Track is to "hit the street" and make sure that we've talked with (and listened to) code consumers throughout the state.

- Deliverables for Q2 and Q3: Conduct at least 8 workshops throughout the state.

Track 6: Outreach to Government and SDOs. A key audience for this effort are Standards Development Organizations (SDOs) such as the National Fire Protection Association and governmental bodies that adopt and implement code, such as county building inspectors and the state Building Standards Commission and Office of the Fire Marshall. There is also a national audience for this work with organization such as the Administrative Conference of the United States, which is studying the Incorporation by Reference issues as applied to the Code of Federal Regulations.

Our hope is to raise the bar on all organizations that incorporate by reference public safety codes, persuading them to invest in open interfaces and much better coding. As a member of the Administrative Conference, Carl Malamud has participated extensively in this national dialogue. At the state level and local level, and with the SDOs, we hope to demonstrate that making codes more accessible and more usable is not only good for their business, it is inevitable and they should join the effort instead of fighting it.

- Deliverables for Q2 and Q3: Secure invitations to address or meet with officials of at least 2 professional groups (SDOs or professional associations) and at least 5 governmental bodies (state officials, county or municipal public safety officials or administrators).

Track 7: Outreach to Developers. We will make our effort a vibrant open source effort using techniques such as a contest for application developers, appearing at appropriate forums such as the Open Source Convention (OSCON), and at gathering of legal/technical groups such as the ABA Tech show or the annual Center for Computer-Assisted Legal Instruction (CALI).

By turning the codes into well-formed XHTML with standardized markup of tables and standardized formatting of graphics, maps, and formulas, developers will be able to break the code into components and easily repurpose them. For example, a legal information site that serves the California Code of Regulations and the opinions of the California courts will find numerous references in those documents to public safety code provisions. Because the code will be easily parsable, developers could easily build a popup function that allows a user to see the text of a specific provision in the building code referenced in a regulation or court opinion.

In addition to linking into the broader corpus, there are a number of stand-alone applications that a "computable" version of the public safety codes enable. The table of variances will identify modifications to the state safety codes at the local level. However, those variances are typically in reference to the existing code ("Section A.2 of the Building Code is amended with the following provisions"). Developers should be able to integrate the local provisions into the underlying base code to provide a single version with all the provisions.

A third possible set of new applications consist of sub-setting the codes for specific uses, something hard to do with a monolithic PDF file or a hard-coded web site. The codes cover a broad set of uses, but specific provisions are particularly important for classes of use, such as certain types of industrial applications (e.g., a juice factory), for residential construction, or for schools. Being able to pull out the specific provisions

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applicable to, e.g., juice factories, and then coupling the public safety with other relevant provisions (such as the FDA's HACCP requirements for food handling) is an application that is not possible today but would be with better public safety codes.

- Deliverables for Q1: Talk to O'Reilly Media, Google, CALI, ABA and secure their participation. Talk to Clay Johnson and others familiar with apps contests and determine if that is feasible.
- Deliverables for Q2 and Q3: Appear in at least 2 developer-rich venues with an in-depth introduction to the codes (e.g., long talks, a workshop, a tutorial) and find several other venues for reaching developers (e.g., a Google tech talk, an O'Reilly video, a series of Ignite talks).

Track 8: Scaling Up and Marketing. The process we've gone through with Title 24 is one that could be repeated in other jurisdictions. More importantly, the process can be quantified based on our experience with operations such as double-keying. As more of the codes get converted, there is also an opportunity for reuse of key elements. For example, turning the national icon sets into vector art only needs to be done once. Likewise, many jurisdictions incorporate with no changes or few changes the same model codes.

In track 8, we will pick at least 10 specific jurisdictions, including the cities of Chicago and New York, and quantify how much it would cost to turn those codes into the same kind of work we are doing on Title 24. By quantifying the cost for converting those codes, and then posting our analysis, we believe we will be in a position to attract other funders to the effort, particularly those with specific geographic focuses. The Knight Foundation, for example, has a particular focus on 26 "Knight Communities." Likewise, the Lilly Endowment is receptive to proposals that help Indianapolis.

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- Deliverables for Q1 and Q2: Quantify the cost of doing at least 10 jurisdictions. Establish a partnership with Code for America so that the "package" includes not only digitization but implementation of the codes into the relevant jurisdictions.
- Deliverables for Q3 and Q4: Pitch those 10 jurisdictions to appropriate funding bodies, including foundations and governments.

4. Metrics

Making Title 24 better has two purposes. First, making a better code should lead to more usage and better uses. Second, making one code better should lead to making all codes better.

- The first metric is the number of users. Our version of Title 24 should have more users than those that purchase the books and DVDs or use the state or SDO-provided web site. We'd like to be number one in the marketplace by the end of the year.
- The second metric is repurposing of our code. We'd like to see Title 24 moved into corporate computing environments, such as universities or architectural firms. While high-end CAD environments already allow high-end professionals to do things like automatically verify compliance of the code in a building plan, such functionality is not available in schools, open source software, or for small contractors or building professionals. Likewise, we'd like to see the legal information vendors integrating the codes into their broader offerings, such as linking code sections into court opinions and the broader California Code of Regulations.
- The third metric is value-added uses: we'd like to see people conducting workshops for apprentices, students, homeowners, or officials using our version of Title 24. Today, training is all conducted on the official materials, and those

materials are limited and expensive. That means there are no training classes, e.g., for homeowners wishing to learn enough about building and fire codes to be able to evaluate the work done by their contractors. By making alternative versions of the codes available, we hope to see a flowering of workshops aimed at previously under-served classes of users and specialized software such as self-study tests for apprentices studying for licenses.

- The fourth metric is institutional change: we'd like to see the SDOs start copying what we did on Title 24 in their own on-line presences and see state and county officials start asking hard questions as to why their codes aren't more open. The true metric of change, one unlikely to happen in 2012, is for the state to require that any codes incorporated by reference be readily available to the public in an open format.

4. Project Budget

We are requesting a grant of \$200,000 for 2012 to conduct this project. The project budget is allocated as follows:

Track 1: Core coding, including mentoring program for 5 students over the summer and additional student work in the spring and fall.	30,000
Track 2: UI, styling, and transformations. This track continues for all 12 months of the year at \$3,000/month.	30,000
Track 3: Table of Variances. We aim to work with a student group such as at Berkeley's School of Information and with either a graduate student or a contractor to do core research.	35,000
Track 4: Standards Incorporated by Reference. Approximately \$10,000 of this track is for purchase of standards, the rest of the budget is based on estimate of a group of 20 participants with meeting expense, and either a graduate student or a contractor to help us run the group and draft the report.	40,000

Track 5: Outreach to Users. We will work with a contractor for development of core materials. The primary expenses are for at least 10 workshops to be held throughout the state.	\$30,000
Track 6: Outreach to Government and SDOs.	\$10,000
Track 7: Outreach to Developers. The main cost is an apps contest cost of \$10,000 and \$5,000 for travel, meeting expense, and tchotchkes such as custom USB drives with copies of the code base installed.	\$15,000
Track 8: Scaling up and Marketing.	\$10,000
Total	\$200,000

6. Governance and Program Management

Public.Resource.Org is a 501(c)(3) corporation incorporated in 2007 in California. We strongly support best current practices of corporate governance including strong financial controls, conflict of interest policies, and standards of conduct. Information about the company, including board members and major donors, can be found on our about page and on Guidestar.

- IRS Determination
- Audited Financials: 2007, 2008, 2009, 2010
- Articles of Incorporation and Bylaws

Public.Resource.Org has been instrumental in making legal materials in the United States more readily available and we have worked with all 3 branches of the federal government. In 2011, our major projects have included working with Speaker John Boehner and Chairman Darrell Issa to make available an archive of approximately 5,000 congressional hearings and working with a number of partners to digitize and officially certify as federal electronic reference copies 3.3 million pages of briefs submitted to the 9th Circuit of the U.S. Court of Appeals.

Carl Malamud is the principal investigator on this proposal and the President of Public.Resource.Org. The author of 8 books, Malamud was previously founder of the Internet Multicasting Service and the Chief Technology Officer at the Center for American Progress. He is credited with creating the first radio station on the Internet and was responsible for placing the SEC EDGAR database online. He is the winner of the Berkman Award from Harvard "for his extraordinary contributions to the Internet's impact on society," the Pioneer Award from the EFF, and the Bill Farr Award from the First Amendment Coalition.

7. Background Links

- Noam Cohen, Who Owns the Law? Arguments May Ensnue, New York Times, September 28, 2008
- Nathan Halverson, He's giving you access, one document at a time, Santa Rosa Press Democrat, September 3, 2008.
- Carl Malamud, Welcome to Code City!, Ignite Sebastopol, Hopmonk Tavern, October 20, 2010
- Matthew B. Stannard, Sebastopol man puts code manuals online, San Francisco Chronicle, September 27, 2008

EXHIBIT 34

EXHIBIT 65
Ashley Seewyn, CSR No. 12019
Date 2/27/15
Witness: MALAMUD

From: Carl Malamud
Sent: Fri 8/09/2013 4:58 PM (GMT -7)
To: REDACTED
Cc:
Bcc:
Subject: Re: sult

In case you're interested about the documents at issue, here's a good look:

<https://www.google.com/search?q=nfpa+site%3Alaw.resource.org>
<https://www.google.com/search?q=astm+site%3Alaw.resource.org>
<https://www.google.com/search?q=ashrae+site%3Alaw.resource.org>

I screwed up some of the pdf's and some of the SEO stuff, but for the most part it came out pretty nicely. I've got 11,000 standards, plus the state and city codes and court opinions, and we're coming up pretty well in searches.

EXHIBIT 38

EXHIBIT 43
 Ashley Soevyn, CSR No 12019
 Date 2/26/15
 Witness: MALAMUD

downloads	identifier	title
	27 gov.law.astm.d1246.1995	ASTM D1246: Bromide - Titrimetric
	57 gov.law.astm.b224.1980	ASTM B224: Standard Classification of Coppers
	93 gov.law.astm.a483.1964	ASTM A483: Standard Specification for Silicomanganese
133	gov.law.astm.a502.1976	ASTM A502: Steel Structural Rivets
	87 gov.law.astm.a100.1969	ASTM A100: Standard Specification for Ferrosilicon
	39 gov.law.astm.d3559.2003	ASTM D3559: Standard Test Methods for Lead in Water
	37 gov.law.astm.f1014.1992	ASTM F1014: Standard Specification for Flashlights on Vessels
	45 gov.law.astm.c5.1979	ASTM C5: Standard Specification for Quicklime for Structural Purposes
	33 gov.law.astm.e29.2002	ASTM E29: Standard Specification for Diesel Fuel Oils
	37 gov.law.astm.c56.1971	ASTM C56: Standard Specification for Structural Clay Nonloadbearing Tile
	29 gov.law.astm.f1323.1998	ASTM F1323: Standard Specification for Shipboard Incinerators
	49 gov.law.astm.a496.1978	ASTM A496: Deformed Steel Wire for Concrete Reinforcement
	46 gov.law.astm.c150.2007	ASTM C150: Standard Specification for Portland Cement
	74 gov.law.astm.d1835.1997	ASTM D1835: Standard Specification for Liquefied Petroleum (LP) Gases
	38 gov.law.astm.f1273.1991	ASTM F1273: Standard Specification for Tank Vent Flame Arresters
	77 gov.law.astm.d396.2002	ASTM D396: Standard Specification for Fuel Oils
	78 gov.law.astm.f1123.1987	ASTM F1123: Standard Specification for Non-Metallic Expansion Joints
	32 gov.law.astm.d3697.1992	ASTM D3697: Standard Test Method for Antimony in Water
	62 gov.law.astm.f2413.2005	ASTM F2413: Performance Requirements for Protective Footware
	71 gov.law.astm.d1081.1960	ASTM D1081: Test for Evaluating Rubber Property--Sealing Pressure
	36 gov.law.astm.f1003.1986	ASTM F1003: Standard Specification for Searchlights on Motor Lifeboats
	57 gov.law.astm.f1139.1988	ASTM F1139: Standard Specification for Steam Traps and Drains
	31 gov.law.astm.b227.1970	ASTM B227: Hard-Drawn Copper-Clad Steel Wire
159	gov.law.astm.d975.2007	ASTM D975: Standard Specification for Diesel Fuel Oils
	47 gov.law.astm.e260.1996	ASTM E260: Standard Practice for Packed Column Gas Chromatography
	48 gov.law.astm.f1122.1987	ASTM F1122: Standard Specification for Quick Disconnect Couplings
	83 gov.law.astm.c549.1981	ASTM C549: Standard Specification for Perlite Loose Fill Insulation
101	gov.law.astm.c32.1973	ASTM C32: Standard Specification for Sewer and Manhole Brick
262	gov.law.astm.c150.1917	ASTM C150: Standard Specification for Portland Cement
	59 gov.law.astm.f1196.1994	ASTM F1196: Standard Specification for Sliding Watertight Door Assemblies

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downloads	identifier	title
	70 gov.law.astm.e163.1963	ASTM E163: Methods for Fire Tests of Window Assemblies
	62 gov.law.astm.d1126.2002	ASTM D1126: Standard Test Method for Hardness in Water
	78 gov.law.astm.c52.1954	ASTM C52: Specification for Gypsum Partition Tile or Block
	173 gov.law.astm.d1068.2003	ASTM D1068: Standard Test Methods for Iron in Water
	83 gov.law.astm.a82.1979	ASTM A82: Cold-Drawn Steel Wire for Concrete Reinforcement
	41 gov.law.astm.c720.1989	ASTM C720: Spray Applied Fibrous Insulation for Elevated Temperature
	101 gov.law.astm.c150.1999	ASTM C150: Standard Specification for Portland Cement
	113 gov.law.astm.d1535.1968	ASTM D1535: Specifying Color by the Munsell System
	50 gov.law.astm.a449.1978	ASTM A449: Quenched and Tempered Steel Bolts and Studs
	84 gov.law.astm.a611.1972	ASTM A611: Steel, Cold-rolled Sheet, Carbon, Structural
	120 gov.law.astm.b85.1984	ASTM B85: Standard Specification for Aluminum-Alloy Die Castings
	208 gov.law.astm.a391.1965	ASTM A391: Standard Specification for Alloy Steel Chain
	92 gov.law.astm.e774.1997	ASTM E774: Standard Specifications for Sealed Insulating Glass Units
	89 gov.law.astm.d975.1998	ASTM D975: Standard Specification for Diesel Fuel Oils
	96 gov.law.astm.d4268.1993	ASTM D4268: Standard Test Method for Testing Fiber Ropes
	120 gov.law.astm.a36.1997	ASTM A36: Standard Specification for Carbon Structural Steel
	311 gov.law.astm.d1193.1977	ASTM D1193: Standard Specification for Reagent Water
	179 gov.law.astm.a185.1979	ASTM A185: Steel Wire Fabric for Concrete Reinforcement
	32 gov.law.astm.d2036.1998	ASTM D2036: Standard Test Method for Cyanides in Water
	187 gov.law.astm.a36.1977	ASTM A36: Standard Specification for Carbon Structural Steel
	144 gov.law.astm.d388.1998	ASTM D388: Standard Classification of Coals by Rank
	179 gov.law.astm.d2515.1966	ASTM D2515: Standard Specification for Kinematic Glass Viscosity
	324 gov.law.astm.c476.1971	ASTM C476: Standard Specification for Grout for Masonry
	497 gov.law.astm.d88.1956	ASTM D88: Standard Test Method for Saybolt Viscosity
	226 gov.law.astm.a47.1968	ASTM A47: Standard Specification for Malleable Iron Castings
	248 gov.law.astm.e298.1968	ASTM E298: Standard Methods for Assay of Organic Peroxides
	64 gov.law.astm.f2412.2005	ASTM F2412: Standard Test Methods for Foot Protection
	41 gov.law.astm.d1688.1995	ASTM D1688: Standard Test Method for Copper in Water
	31 gov.law.astm.f1006.1986	ASTM F1006: Standard Specification for Entrainment Separators for Use in Marine Piping Applications

JA976

downloads	identifier	title
		ASTM A285: Standard Specification for Pressure Vessel Plates, Carbon Steel, Low- and Intermediate-Tensile Strength
47	gov.law.astm.a285.1978	
20	gov.law.astm.d3371.1995	ASTM D3371: Standard Test Method for Nitriles in Aqueous Solution by Gas-Liquid Chromatography
43	gov.law.astm.e773.1997	ASTM E773: Standard Test Method for Seal Durability of Sealed Insulating Glass Units
44	gov.law.astm.f1197.1989	ASTM F1197: Standard Specification for Sliding Watertight Door Control Systems
42	gov.law.astm.c564.1970	ASTM C564: Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings
41	gov.law.astm.d1552.1995	ASTM D1552: Standard Test Method for Sulfur in Petroleum Products (High-Temperature Method)
44	gov.law.astm.d4444.1992	ASTM D4444: Standard Test Method for Use and Calibration of Hand-Held Moisture Meters
39	gov.law.astm.d1415.1988	ASTM D1415: Standard Practice for Rubber and Rubber Latices--Nomenclature
45	gov.law.astm.e168.1967	ASTM E168: Standard Practices for General Techniques of Infrared Quantitative Analysis
71	gov.law.astm.b21.1983	ASTM B21: Standard Specification for Naval Brass Rod, Bar, and Shapes
43	gov.law.astm.e168.1988	ASTM E168: Standard Practices for General Techniques of Infrared Quantitative Analysis
75	gov.law.astm.d86.2007	ASTM D86: Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure
79	gov.law.astm.d3173.1987	ASTM D3173: Standard Test Method for Moisture in the Analysis Sample of Coal and Coke
34	gov.law.astm.d1266.1998	ASTM D1266: Standard Test Method for Sulfur in Petroleum Products (Lamp Method)
		ASTM F1548: Performance of Fittings for Use with Gasketed Mechanical Couplings Used in Piping Applications
45	gov.law.astm.f1548.1994	
29	gov.law.astm.e1590.2001	ASTM E1590: Standard Test Method for Fire Testing of Mattresses
61	gov.law.astm.d6503.1999	ASTM D6503: Standard Test Method for Enterococci in Water Using Enterolert
87	gov.law.astm.d512.1999	ASTM D512: Standard Test Methods for Chloride Ion In Water
74	gov.law.astm.d3176.1989	ASTM D3176: Standard Practice for Ultimate Analysis of Coal and Coke
63	gov.law.astm.d2234.1998	ASTM D2234: Standard Practice for Collection of a Gross Sample of Coal
31	gov.law.astm.d660.1944	ASTM D660: Evaluating Degree of Resistant to Checking of Exterior Paints
65	gov.law.astm.a242.1979	ASTM A242: Standard Specification for High-Strength Low-Alloy Structural Steel
42	gov.law.astm.d1200.1970	ASTM D1200: Viscosity of Paints, Varnishes and Lacquers by Ford Viscosity Cup
38	gov.law.astm.f1172.1988	ASTM F1172: Fuel Oil Meters of the Volumetric Positive Displacement Type
54	gov.law.astm.f715.1981	ASTM F715: Standard Test Methods for Coated Fabrics Used for Oil Spill Control and Storage
		ASTM D3168: Standard Recommended Practices for Qualitative Identification of Polymers in Emulsion Paints
42	gov.law.astm.d3168.1973	
43	gov.law.astm.f1121.1987	ASTM F1121: Standard Specification for International Shore Connections for Marine Fire Applications

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downloads	identifier	title
	36 gov.law.astm.f631.1980	ASTM F631: Standard Guide for Collecting Skimmer Performance Data in Controlled Environments
	37 gov.law.astm.d4763.1988	ASTM D4763: Standard Practice for Identification of Chemicals in Water by Fluorescence Spectroscopy
	60 gov.law.astm.f631.1993	ASTM F631: Standard Guide for Collecting Skimmer Performance Data in Controlled Environments
	57 gov.law.astm.e84.2001	ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials
	17 gov.law.astm.d1943.1996	ASTM D1943: Standard Test Method for Alpha Particle Radioactivity of Water
	34 gov.law.astm.d1946.1990	ASTM D1946: Standard Method for Analysis of Reformed Gas by Gas Chromatography
	61 gov.law.astm.e169.1987	ASTM E169: Standard Practices for General Techniques of Ultraviolet-Visible Quantitative Analysis
	28 gov.law.astm.d129.1995	ASTM D129: Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)
	28 gov.law.astm.d5257.1997	ASTM D5257: Standard Test Method for Dissolved Hexavalent Chromium in Water by Ion Chromatography
	109 gov.law.astm.d2857.1970	ASTM D2857: Standard Method of Test for Dilute Solution Viscosity of Polymers
	64 gov.law.astm.d1253.1986	ASTM D1253: Standard Test Method for Residual Chlorine in Water
	53 gov.law.astm.f478.1992	ASTM F478: Standard Specification for In-Service Care of Insulating Line Hose and Covers
	71 gov.law.astm.c1045.2001	ASTM C1045: Standard Practice for Calculating Thermal Transmission Properties from Steady-State Heat Flux Measurements
	66 gov.law.astm.d56.1970	ASTM D56: Standard Test Method for Flash Point by Tag Closed Cup Tester
	62 gov.law.astm.a514.1977	ASTM A514: High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding
	40 gov.law.astm.f1020.1986	ASTM F1020: Standard Specification for Line-Blind Valves for Marine Applications
	51 gov.law.astm.a617.1979	ASTM A617: Axle-Steel Deformed and Plain Bars for Concrete Reinforcement
	87 gov.law.astm.a490.1979	ASTM A490: Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints
	225 gov.law.astm.f1155.1998	ASTM F1155: Standard Practice for Selection and Application of Piping System Materials
	141 gov.law.astm.e72.1980	ASTM E72: Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
	85 gov.law.astm.b557.1984	ASTM B557: Tension Testing Wrought and Cast Aluminum and Magnesium-Alloy Products
	99 gov.law.astm.e681.1985	ASTM E681: Standard Test Method for Concentration Limits of Flammability of Chemicals
	157 gov.law.astm.c330.1999	ASTM C330: Standard Specification for Lightweight Aggregates for Structural Concrete
	57 gov.law.astm.e776.1987	ASTM E776: Standard Test Method for Forms of Chlorine in Refuse-Derived Fuel
	92 gov.law.astm.d1415.1968	ASTM D1415: Tentative Method of Test for International Hardness of Vulcanized Natural and Synthetic Rubbers
		ASTM D785: Standard Method of Test for Rockwell Hardness of Plastics and Electrical Insulating

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downloads	identifier	title
	130 gov.law.astm.b193.1987	ASTM B193: Standard Test Method for Resistivity of Electrical Conductor Materials
	33 gov.law.astm.f808.1983	ASTM F808: Guide for Collecting Skimmer Performance Data in Uncontrolled Environments
	87 gov.law.astm.a307.1978	ASTM A307: Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
	189 gov.law.astm.d257.1991	ASTM D257: Standard Test Method for DC Resistance of Conductance of Insulating Materials
	101 gov.law.astm.d3236.1988	ASTM D3236: Standard Test Method for Apparent Viscosity of Hot Metal Adhesives and Coating Materials
	64 gov.law.astm.d976.1991	ASTM D976: Standard Test Method for Calculated Cetane Index of Distillate Fuels
	68 gov.law.astm.c516.1980	ASTM C516: Standard Specification for Vermiculite Loose Fill Thermal Insulation
	48 gov.law.astm.f1201.1988	ASTM F1201: Standard Specification for Fluid Conditioner Fittings in Piping Applications Above Zero Degrees F
	40 gov.law.astm.a203.1997	ASTM A203: Standard Specification for Pressure Vessel Plates, Alloy Steel, Nickel
	54 gov.law.astm.f722.1982	ASTM F722: Standard Specification for Welded Joints for Shipboard Piping Systems
	82 gov.law.astm.a500.1978	ASTM A500: Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
	59 gov.law.astm.a633.1979	ASTM A633: Standard Specification for Normalized High-Strength Low Alloy Structural Steel
	67 gov.law.astm.a416.1974	ASTM A416: Uncoated Seven-Wire Stress-Relieved Strand for Prestressed Concrete
	161 gov.law.astm.g21.1990	ASTM G21: Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
	62 gov.law.astm.c4.1962	ASTM C4: Standard Specification for Clay Drain Tile and Perforated Clay Drain Tile
	25 gov.law.astm.a184.1979	ASTM A184: Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement
	64 gov.law.astm.a501.1976	ASTM A501: Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
	47 gov.law.astm.d4420.1994	ASTM D4420: Standard Test Method for Determination of Aromatics in Finished Gasoline by Gas Chromatography
	152 gov.law.astm.d1692.1968	ASTM D1692: Test for Flammability of Plastic Sheeting and Cellular Plastics
	81 gov.law.astm.d1072.1990	ASTM D1072: Standard Test Method for Total Sulfur in Fuel Gases
	129 gov.law.astm.d2156.1965	ASTM D2156: Method of Tests for Smoke Density in Flue Gases from Distillate Fuels
	37 gov.law.astm.e23.1993	ASTM E23: Standard Test Method for Notched Bar Impact Testing of Metallic Materials
	118 gov.law.astm.e408.1971	ASTM E408: Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques
	104 gov.law.astm.d1945.1996	ASTM D1945: Standard Test Method for Analysis of Natural Gas By Gas Chromatography

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downloads	identifier	title
	70 gov.law.astm.c1224.2003	ASTM C1224: Standard Specification for Reflective Insulation for Building Applications
		ASTM D2247: Standard Practice for Testing Water Resistance of Coatings in 100 Percent Relative Humidity
100	gov.law.astm.d2247.1968	
	56 gov.law.astm.e1719.1997	ASTM E1719: Standard Test Method for Vapor Pressure of Liquids by Ebulliometry
	74 gov.law.astm.d1475.1960	ASTM D1475: Standard Test Method for Density of Paint, Varnish, Lacquer, and Related Products
	79 gov.law.astm.d750.1968	ASTM D750: Recommended Practice for Rubber Deterioration in Carbon-Arc or Weathering Apparatus
369	gov.law.astm.e606.1980	ASTM E606: Standard Recommended Practice for Constant-Amplitude Low-Cycle Fatigue Testing
231	gov.law.astm.e258.1967	ASTM E258: Standard Test Method for Total Nitrogen Inorganic Material by Modified Kjeldahl Method
159	gov.law.astm.d1335.1967	ASTM D1335: Standard Test Method for Tuft Bind of Pile Floor Coverings
104	gov.law.astm.d4177.1995	ASTM D4177: Standard Practice for Automatic Sampling of Petroleum and Petroleum Products
126	gov.law.astm.d86.2001	ASTM D86: Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure
		ASTM C139: Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes
	84 gov.law.astm.c139.1973	
	83 gov.law.astm.e11.1970	ASTM E11: Standard Specification for Wire Cloth and Sieves for Testing Purposes
138	gov.law.astm.b580.1979	ASTM B580: Standard Specification for Anodized Oxide Coatings on Aluminum
130	gov.law.astm.a497.1979	ASTM A497: Welded Deformed Steel Wire, Fabric for Concrete Reinforcement
	75 gov.law.astm.a570.1979	ASTM A570: Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality
	49 gov.law.astm.a441.1979	ASTM A441: High-Strength Low-Alloy Structural Manganese Vanadium Steel
	62 gov.law.astm.d413.1982	ASTM D413: Standard Test Method for Rubber Property--Adhesion to Flexible Substrate
	47 gov.law.astm.d129.2000	ASTM D129: Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)
197	gov.law.astm.b209.1996	ASTM B209: Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate
188	gov.law.astm.e145.1994	ASTM E145: Standard Specification for Gravity-Convection and Forced-Ventilation Ovens
154	gov.law.astm.d93.2002	ASTM D93: Standard Test Method for Flash Point by Pensky-Martens Closed Cup Tester
	82 gov.law.astm.e11.1995	ASTM E11: Standard Specification for Wire Cloth and Sieves for Testing Purposes
168	gov.law.astm.e96.1995	ASTM E96: Standard Test Methods for Water Vapor Transmission of Materials
	46 gov.law.astm.a618.1974	ASTM A618: Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural Tubing
232	gov.law.astm.c90.1970	ASTM C90: Standard Specification for Hollow Load-Bearing Concrete Masonry Units
102	gov.law.astm.a615.1979	ASTM A615: Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
131	gov.law.astm.c34.1962	ASTM C34: Standard Specification for Structural Clay Load-Bearing Wall Tile

JA980

downloads	identifier	title
	93 gov.law.astm.e424.1971	ASTM E424: Test for Solar Energy Transmittance and Reflectance (Terrestrial) of Sheet Materials
	35 gov.law.astm.d2460.1997	ASTM D2460: Standard Test Method for Alpha-Particle-Emitting Isotopes of Radium in Water
	50 gov.law.astm.a572.1979	ASTM A572: High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality
	155 gov.law.astm.d2724.1987	ASTM D2724: Standard Test Method for Bonded, Fused, and Laminated Apparel Fabrics
	37 gov.law.astm.c1149.2002	ASTM C1149: Standard Specification for Self-Supported Spray Applied Cellulosic Thermal Insulation
	987 gov.law.astm.d412.1968	ASTM D412: Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension
	53 gov.law.astm.c509.1984	ASTM C509: Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material
	114 gov.law.astm.d1564.1971	ASTM D1564: Standard Method of Testing Flexible Cellular Materials--Slab Urethane Foam
	103 gov.law.astm.d1056.1973	ASTM D1056: Standard Specification for Flexible Cellular Materials Sponge or Expanded Rubber
	869 gov.law.astm.a370.1977	ASTM A370: Standard Test Method and Definitions for Mechanical Testing of Steel Products
	168 gov.law.astm.d1067.2002	ASTM D1067: Standard Test Method for Acidity or Alkalinity of Water
	303 gov.law.astm.d5865.1998	ASTM D5865: Standard Test Method for Gross Calorific Value of Coal and Coke
	411 gov.law.astm.e23.1982	ASTM E23: Standard Test Methods for Notched Bar Impact Testing of Metallic Materials
	154 gov.law.astm.f476.1984	ASTM F476: Standard Test Method for Security of Swinging Door Assemblies
		ASTM F1120: Standard Specification for Circular Metallic Bellows Type Expansion Joints for Piping Applications
	36 gov.law.astm.f1120.1987	
	134 gov.law.astm.d2013.1986	ASTM D2013: Standard Method of Preparing Coal Samples for Analysis
	43 gov.law.astm.f1957.1999	ASTM F1957 (1999): Standard Test Method for Composite Foam Hardness Durometer Hardness
		ASTM F1193 (2004): Standard Practice for Quality, Manufacture, and Construction of Amusement Rides and Devices
	31 gov.law.astm.f1193.2004	
	28 gov.law.astm.f853.2004	ASTM F853 (2004): Standard Practice for Maintenance Procedures for Amusement Rides and Devices
	104 gov.law.astm.f2291.2004	ASTM F2291 (2004): Standard Practice for Design of Amusement Rides and Devices
		ASTM F2374 (2000): Standard Practice for Design, Manufacture, Operation, and Maintenance of Inflatable Amusement Devices
	29 gov.law.astm.f2374.2000	
	37 gov.law.astm.f770.2006	ASTM F770 (2006): Standard Practice for Ownership and Operation of Amusement Rides and Devices
	34 gov.law.astm.f747.2006	ASTM F747 (2006): Standard Terminology Relating to Amusement Rides and Devices
	31 gov.law.astm.f846.1992	ASTM F846 (1992): Standard Guide for Testing Performance of Amusement Rides and Devices

JA981

downloads	identifier	title
22	gov.law.astm.f853.2005	ASTM F853 (2005): Standard Practice for Maintenance Procedures for Amusement Rides and Devices
55	gov.law.astm.f893.2005	ASTM F893 (2005): Standard Guide for Inspection of Amusement Rides and Devices
32	gov.law.astm.f2137.2001	ASTM F2137 (2001): Standard Practice for Measuring the Dynamic Characteristics of Amusement Rides and Devices
37	gov.law.astm.f2291.2006	ASTM F2291 (2006): Standard Practice for Design of Amusement Rides and Devices
140	gov.law.astm.e2187.2004	ASTM E2187 (2004): Standard Test Method for Measuring the Ignition Strength of Cigarettes
30	gov.law.astm.d1480.1993	ASTM D1480: Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Bingham Pycnometer
89	gov.law.astm.d2267.1968	ASTM D2267: Standard Test Method for Aromatics in Light Naphthas and Aviation Gasoline by Gas Chromatography
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Case 1:13-cv-01215-TSC Document 118-14 Filed 11/19/15 Page 22 of 98

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		ASTM D3120: Standard Test Method for Trace Quantities of Sulfur in Light Liquid Petroleum Hydrocarbons by Oxidative Microcoulometry
22	gov.law.astm.d3120.1996	ASTM D287: Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method)
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229	gov.law.astm.g151.1997	ASTM G151: Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources
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33	gov.law.astm.d3178.1989	ASTM D3178: Standard Test Method for Carbon and Hydrogen in the Analysis Sample of Coal and Coke
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	230 gov.law.astm.g23.1969	ASTM G23: Standard Practice for Operating Light Exposure Apparatus (Carbon Arc Type) With and Without Water for Exposure of Nonmetallic Materials
	137 gov.law.astm.c518.2004	ASTM C518: Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
	73 gov.law.astm.f1321.1992	ASTM F1321: Standard Guide for Conducting a Stability Test (Lightweight Survey and Inclining Experiment) to Determine Light Ship Displacement and Centers of Gravity of a Vessel
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	157 gov.law.astm.e1333.1996	ASTM E1333: Standard Test Method for Determining Formaldehyde Levels from Wood Products Under Defined Test Conditions Using a Large Chamber
	86 gov.law.astm.f1159.2003	ASTM F1159 (2003): Standard Practice for Design and Manufacture of Patron Directed, Artificial Climbing Walls, Dry Slide, Coin Operated and Purposeful Water Immersion Amusement
	121 gov.law.astm.d6522.2000	ASTM D6522: Standard Test Method for Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas-Fired Reciprocating Engines, Combustion Turbines, Boilers, and Process Heaters Using Portable Analyzers

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NFPA 11: Standard for Foam - National Fire Protection Association
 BY ORDER OF THE EXECUTIVE DIRECTOROffice of the Federal RegisterWashington, D.C.By Authority of the Code of Federal Regulations: 29 CFR 1915Name of Legally Binding Document: **NFPA 11: Standard for Foam**Name of Standards Organization: National Fire Protection Association**LEGALLY BINDING DOCUMENT**This document has been duly **INCORPORATED BY REFERENCE** into federal regulations and shall be considered legally binding upon all citizens and residents of the United States of America...
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NFPA 99: Standard for Health Care Facilities - National Fire Protection Association

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Federal Register Washington, D.C. By Authority of the Code of Federal Regulations: 6 CFR 27.204(a)(2) Name of Legally Binding Document: NFPA 704: Standard System for the Identification of the Hazards of Materials for Emergency Response Name of Standards Organization: National Fire Protection Association LEGALLY BINDING DOCUMENT This document has been duly INCORPORATED BY REFERENCE into federal regulations and shall be considered legally binding upon all ...

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Massachusetts electrical code (Volume 1972) - Massachusetts. Dept. of Public Safety. Board of Fire Prevention Regulations

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Massachusetts electrical code (Volume 1970) - Massachusetts. Dept. of Public Safety. Board of Fire Prevention Regulations

... "purpose of the code is the practical safeguarding of persons and of buildings and their contents from hazards arising from the use of electricity for light, heat, power, radio, signalling and for other purposes."; the electrical code also appears in the CODE OF MASSACHUSETTS REGULATIONS (527 CMR 12.00) and is kept up-to-date by the MASSACHUSETTS REGISTER; the 1970 edition is virtually identical to the 1968 edition of the NATIONAL ELECTRICAL CODE (NFPA no...

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Massachusetts electrical code (Volume 1965) - Massachusetts. Dept. of Public Safety. Board of Fire Prevention Regulations

... "purpose of the code is the practical safeguarding of persons and of buildings and their contents from hazards arising from the use of electricity for light, heat, power, radio, signalling and for other purposes."; the electrical code also appears in the CODE OF MASSACHUSETTS REGULATIONS (527 CMR 12.00) and is kept up-to-date by the MASSACHUSETTS REGISTER; the 1970 edition is virtually identical to the 1968 edition of the NATIONAL ELECTRICAL CODE (NFPA no...

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2014 National Electrical Code - National Fire Protection Association

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EXHIBIT 44

EXHIBIT 70
Ashley Soevyn, CSR No 12019
Date 2/27/15
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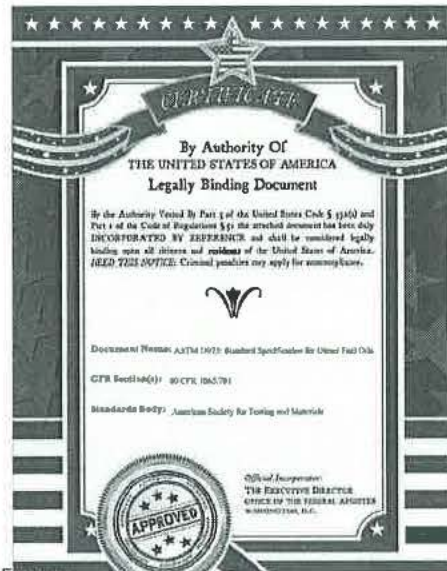
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ASTM D975: Standard Specification for Diesel Fuel Oils (2007)



ASTM D975: Standard Specification for Diesel Fuel Oils

[fullscreen](#)

Author: [American Society for Testing and Materials](#)
Subject: [federalregister.gov](#); [public.resource.org](#)
Language: [English](#)
Collection: [publicsafetycode](#); [USGovernmentDocuments](#); [additional_collections](#)

Description

BY ORDER OF THE EXECUTIVE DIRECTOR
Office of the Federal Register
Washington, D.C.

By Authority of the Code of Federal Regulations: 40 CFR 1065.701

Name of Legally Binding Document: ASTM D975: Standard Specification for Diesel Fuel Oils
Name of Standards Organization: American Society for Testing and Materials

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JA999-JA1067

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA**

AMERICAN SOCIETY FOR TESTING AND
MATERIALS d/b/a ASTM INTERNATIONAL;

NATIONAL FIRE PROTECTION
ASSOCIATION, INC.; and

AMERICAN SOCIETY OF HEATING,
REFRIGERATING, AND AIR CONDITIONING
ENGINEERS,

Plaintiffs-Counterdefendants,

v.

PUBLIC.RESOURCE.ORG, INC.,

Defendant-Counterclaimant.

Case No. 1:13-cv-01215-TSC-DAR

**MEMORANDUM OF POINTS &
AUTHORITIES IN SUPPORT OF
DEFENDANT-COUNTERCLAIMANT
PUBLIC.RESOURCE.ORG'S MOTION
FOR SUMMARY JUDGMENT AND
OPPOSITION TO PLAINTIFFS'
MOTION FOR SUMMARY
JUDGMENT AND PERMANENT
INJUNCTION**

Action Filed: August 6, 2014

FILED UNDER SEAL

retyped versions of the proposal forms, and it does not prohibit people from using any existing standard form in place of the form that NFPA designated for the particular standard. (*Id.*)

d. The majority of the work was performed by employees who weren't authorized to assign anything.

Most if not all of the contributions to the incorporated standards at issue were authored either by federal government employees or by employees of third party companies or organizations who were acting within the scope of their employment by those third parties. There is no evidence that those employees were authorized to assign any rights of their employers in those contributions.

By ASTM's calculation in 2012, for example, "[o]ver 1,400 individuals from federal agencies [were] actively engaged in 90 percent of [ASTM] standards writing technical committees." (SMF ¶ 166.) Their contributions are not copyrightable. 17 U.S.C. § 105. Other contributors were individuals who are employed by third parties in industry, research, or state and local government. Those people also participated in standards development in their capacity as employees, typically doing the work while on the clock with their employer, with expenses paid by their employer. (SMF ¶ 167.) As a result, their contributions were works made for hire owned by their the employers, 17 U.S.C. § 201(b); *Community for Creative Non-Violence, et al. v. Reid*, 490 U.S. 730, 750–52 (1989); *see also Warren v. Fox Family Worldwide, Inc.*, 328 F.3d 1136, 1142-43 (9th Cir. 2003) (creator of a work made for hire does not have a legal or beneficial interest in the copyright). Plaintiffs had no procedures in place to ensure government and industry contributors had authority to transfer their employers' rights to Plaintiffs. (SMF ¶ 168.) Nor do Plaintiffs request copyright assignments from the employers. (*Id.*)

These are not mere formal defects in a transfer, susceptible to cure. The undisputed facts show that no valid transfer occurred at all. Therefore Plaintiffs cannot meet their burden of

Index of Exhibits as **Exhibit 1** is a true and correct copy of Public Resource's Articles of Incorporation from our website at <https://public.resource.org/public.resource.articles.html>.

5. That mission grows out of my longtime professional commitment to improving public access to essential documents that shape our fundamental activities. In 1991, I convinced the Secretary-General of the International Telecommunication Union that the Blue Book, the specification for how telephone networks operate, should be freely available on the Internet. Working with Dr. Michael Schwartz, I transformed and posted the Blue Book into formats compatible with modern publication technologies and made it available on the Internet. The service was extremely popular, and the ITU today makes all of its standards documents freely available on the Internet. I wrote a book about this experience called "Exploring the Internet" (Prentice Hall, 1993). That book can be viewed and read at http://museum.media.org/eti/Exploring_the_Internet.pdf.

6. I was privileged to be able to participate in the Internet Engineering Task Force, the standards body that has developed most of the standards that specify the functioning of the Internet, during the early 1990s, a period of very rapid development, both in the functionality of the Internet and its scope.

7. In 1993, when the Internet was beginning to grow explosively, I created the first radio station on the Internet, operating as a nonprofit corporation called the Internet Multicasting Service. In addition to transmitting audio and video programming, the service also provided the first high-speed Internet link into the White House, using a temporary infrared connection from our studios in the National Press Building. The radio service, which I dubbed "Internet Talk Radio," became a member of the Public Radio Satellite System, received accreditation from the U.S. House and Senate Senate Radio & Television Correspondents Galleries, sent out live audio

from the floors of the House and Senate, streamed all National Press Club luncheons, and transmitted original programming. Many of those programs can still be listened to at

<http://museum.media.org/radio/>.

8. At the Internet Multicasting Service, I also put a number of important government databases online, including the Securities and Exchange Commission EDGAR database and the U.S. Patent database. When the SEC took the EDGAR service over from me, I loaned it computers and donated all of our source code so they could be up and running quickly. The SEC ran the system on our software for several years. On October 10, 1995, the Hon. Arthur Levitt, Chairman of the SEC, wrote to me thanking us for our efforts and calling the project an “extraordinary achievement.”

9. After I started Public Resource in 2007, one of our first efforts was to place online the historical opinions of the U.S. Courts of Appeals, material that was not previously available on the Internet. Public Resource also converted all of the opinions in the first 40 volumes of the Federal Reporter as well as the Federal Cases into Hypertext Markup Language (HTML) and placed those online. These materials are now used by numerous websites that provide access to legal materials.

10. Public Resource maintains an archive of laws and other government authored materials on several domains under the public.resource.org website.

11. Public Resource has helped increase access to many other court documents. We scanned approximately 3 million pages of briefs submitted to the U.S. Court of Appeals for the Ninth Circuit dating back to the creation of that court and have placed those materials online.

The materials may be downloaded from <https://law.resource.org/pub/us/case/ca9/>.

12. Public Resource has conducted a number of other projects that have resulted in more government information being placed online. Using volunteers in Washington D.C. with the cooperation of the Archivist of the United States, we put approximately 6,000 government videos on YouTube and the Internet Archive for people to use with no restriction, a service we call FedFlix. It has had over 60 million views. The videos may be viewed at <https://www.youtube.com/user/PublicResourceOrg> and <https://archive.org/details/FedFlix>.

13. Public Resource also placed over eight million Form 990 exempt non-profit organization returns obtained from the IRS on the Internet. As part of that posting, we conducted an intensive privacy audit which led to fundamental changes in how the IRS deals with privacy violations. Through a Freedom of Information Act request and litigation, we obtained release of high-quality versions of Form 990 filings, which the IRS had refused to make available. The court decision in that case (*Public.Resource.org v. United States Internal Revenue Service*, No. 3:13-cv-02789-WHO, ECF No. 62 (N.D. Cal. January 29, 2015)) led to a recent announcement by the IRS that all e-file returns will be made available in bulk in 2016. I am pleased to be working with the IRS as a member of the test group for this service.

14. In 2007, I wrote a report addressed to Speaker of the House Nancy Pelosi suggesting that video from Congressional hearings should be more broadly available on the Internet. On January 5, 2011, Speaker John Boehner and Representative Darrell Issa wrote to me asking me to assist them in carrying out that task. In a little over a year, Public Resource was able to put over 14,000 hours of video from hearings on the Internet, to assist the House Committee on Oversight and Government Reform in posting a full archive of their committee video and, for the first time ever for congressional hearings, to provide closed-captioning of

those videos based on the official transcripts. The letter from Speaker Boehner may be found at <https://law.resource.org/rfcs/gov.house.20110105.pdf>.

15. Also in 2008, I examined the issue of availability of state-mandated safety codes, such as building, electric, plumbing, and fire codes. At the time, none of those documents were available freely on the Internet. I made a detailed survey of state regulations and statutes, looking for direct and specific incorporation of particular model codes. Over the next few years, Public Resource posted many of the incorporated state safety codes for U.S. states.

16. Public Resource's process of posting these codes has been deliberate and careful and has grown in sophistication over time. First, we purchased paper copies of codes that are incorporated into law. Then, we scanned the documents, applied metadata and optical character recognition (OCR) to the PDF files, and placed a cover sheet on each document explaining that this was a posting of the law of a specific jurisdiction.

17. Over time, we also began converting some of these standards into modern HTML format, including setting the tables, converting formulas to Mathematics Markup Language (MathML), and converting graphics to the Scalable Vector Graphics (SVG) format. Coding formulas in MathML makes them significantly more accessible to people who are visually impaired. Converting the graphics to SVG means they can be resized smoothly, and can be incorporated into graphic editing programs and word processing programs. Converting the documents into standard HTML means the documents can be more readily used on different platforms, such as tablets and smartphones.

18. In late 2008, I was asked by the Obama-Biden Transition Project to consult on the subject of how the Official Journals of Government could be made more readily available. Many of my recommendations were adopted, including removing the subscription fee from bulk access

to the Federal Register. That led to a dramatic transformation of the Federal Register, which is now based on open source software that was developed by three volunteers in California and then adopted by the government. That system can be viewed at <https://federalregister.gov/>. A copy of my memorandum to the Obama Transition Project may be viewed at <https://public.resource.org/change.gov/reboot.register.pdf>.

19. In 2011, I began to look seriously at the federal use of standards incorporated by reference into the Code of Federal Regulations. I was participating at the time as an appointed member of the Administrative Conference of the United States, and I carefully read materials such as the legislative history of the mechanism of incorporation by reference, the Code of Federal Regulations provisions for incorporation by reference, and cases such as the *Veeck* decision.

20. In 2012, I began a new initiative to make standards incorporated by reference into federal law available on the Internet. I examined the Code of Federal Regulations carefully and selected 73 standards that spanned a variety of agencies. I purchased physical copies of each of these standards. I created 25 paper replicas of each of these standards, and placed a cover sheet on each one indicating which section of the CFR incorporated the document.

21. To accompany the 73 standards, I also created a detailed cover memo, titled “Notice of Incorporation,” which included letters addressed to seven senior government officials. The memo included a request for comments from each of the ten standards development organizations (SDOs) named in the document by May 1, 2012. I packaged the 73 standards, the Notice of Incorporation, two posters, and other materials in 29-pound boxes and sent the boxes to the seven government officials and the ten SDOs. The standards bodies included ASTM, NFPA, and ANSI. I sent the boxes by Federal Express on March 15, 2012. A copy of the Notice

of Incorporation memo may be found at

https://law.resource.org/pub/us/cfr/notice.sdo.20120315_to.pdf.

22. After sending the standards, I received acknowledgements from several government addressees, including personal notes from the Chairman of the Federal Trade Commission, the Archivist of the United States, and the Chairman of the House Committee on Oversight and Government Reform. I did not receive any response from the SDOs.

23. On May 1, 2012, I posted the 73 documents on the Public Resource web site. I also began a process of examining the Code of Federal Regulations, the National Institute of Standards and Technology (NIST) database of Standards Incorporated by Reference (SIBR), and the Office of the Federal Register's incorporation by reference listings to put together a list of documents that are incorporated into the CFR. I then began the process of trying to procure these documents, many of which are unavailable for purchase from the SDOs and which I had to obtain on the used book market.

24. Every standard that I have posted on my website has been incorporated into law by a governmental authority. Public Resource does not impose any restrictions on the use of the standards. Public Resource has never charged for access to the standards or other legal materials, and has never asserted any intellectual property rights in them. We do not require people to log in or register before accessing content from Public Resource.

25. Public Resource has posted PDF versions of each incorporated standard at issue available on its website. The PDF version accurately appeared as a scan of a physical version of the incorporated standard. Most PDF versions also includes embedded text generated by OCR, which enables software-based searching of the document. The embedded text does not change the appearance of the document.

26. Public Resource has continued to develop techniques for making the documents that we post more usable, including double-keying and adding markup to HTML and SVG versions of the documents. Double-keying means having two separate typists copy the text of the incorporated standard; the results are then compared in order to eliminate any errors. We have also developed new markup techniques that increase the accessibility of the documents to people with visual impairments and print disabilities. We have also made significant advances in adding metadata to the documents, so each section, table, figure, and formula can be bookmarked and linked to, making internal navigation within the documents significantly friendlier for the user.

27. We have applied these markup techniques to a number of standards incorporated by reference. Public Resource's goal is to have the entire CFR, including all documents incorporated by reference, available in this new format so that users can seamlessly and transparently navigate the entire CFR. I believe this will be useful for employees of affected business enterprises, researchers and journalists covering public policy issues, government workers at the federal, state, and local levels who must interact with the code as part of their daily activities, and for interested citizens.

28. We have made several examples of our new approach available on the net and submitted them as examples of how the law can be made better in formal comments to Notices of Proposed Rulemaking that propose to incorporate standards by reference. For example, as part of a submission to the Consumer Product Safety Commission on a proposed incorporation of an ASTM standard on infant bathtubs, I submitted example standards such as ASTM F963, the toy safety specification which was mandated by Congress in 15 USC 2056b. That standard may be found at <https://law.resource.org/pub/us/cfr/ibr/003/astm.f963.2011.html> and our comment to

CPSC may be found at

<https://law.resource.org/pub/us/cfr/regulations.gov.docket.14/cpsc.gov.20151028.html>.

29. Public Resource displays links to standards incorporated by reference into the Code of Federal Regulations in a table that identifies the standards by their alphanumeric code, its year, the developing organization, the title of the standard, and the C.F.R. section that incorporated the standard by reference. Attached to Public Resource's Consolidated Index of Exhibits as **Exhibit 2** is a true and correct copy of the table of standards on public.resource.org, which is maintained at <https://law.resource.org/pub/us/cfr/manifest.us.html>.

30. Public Resource has one employee, myself, and three contractors who assist me in systems administration, conversion of graphics and formulas, and legal advice. Our core operating costs are under \$500,000 per year, and we are funded entirely by donations, contributions and grants. Rather than adding staff, I have prioritized capital expenses, such as the purchase of the U.S. Court of Appeals backfile for \$600,000 and the scanning of 3 million pages of Ninth Circuit briefs. Public Resource does not accept donations that are tied to the posting of specific standards or groups of standards. Public Resource's operating income is not based on the amount of traffic its websites receive. Public Resource does practice search engine optimization to improve the accuracy of how information on its websites is described. Though we are a small organization, we observe all current best practices of corporate governance and transparency. I am proud that we have been awarded the GuideStar Gold Seal for nonprofit transparency. A full repository of our financials and other disclosures is maintained at

<https://public.resource.org/about/>.

31. Public Resource voluntarily applies notices to the HTML versions of standards on its website. Attached to Public Resource's Consolidated Index of Exhibits as **Exhibit 3** is a true

and correct copy of the most recent version of the notice, which is appended to ASTM F963 (2011) and is maintained at <https://law.resource.org/pub/us/cfr/ibr/003/astm.f963.2011.html>.

32. There are errors in NFPA and ASHRAE documents for which they periodically issue errata. Public Resource carefully tracks those errata and works to incorporate them into the documents on our web site. ASTM does not provide errata, so it is difficult to determine where their technical committees have identified errors.

33. Errors can also be introduced in the process of transformation into HTML.

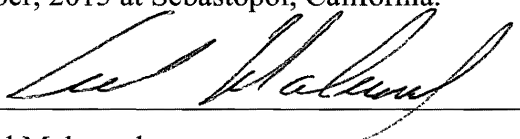
34. I pay a great deal of attention to quality control, including verifying the validity of the HTML, SVG, and MathML that I post. I respond immediately to any reports of errors from the public. For example, during my deposition in this case, ASTM pointed out some errors in a document on the Public Resource website. Immediately after the deposition, I did a careful scan of the document and fixed the errors they had pointed out and some additional ones that I discovered.

35. On behalf of Public Resource, I purchased a physical copy of the 2011 National Electrical Code. The copy spanned 886 pages. The copy that I purchased did not include the requirement that high-voltage cables be shielded. Public Resource posted electronic versions of the physical copy that I purchased on its website in PDF and HTML formats.

36. My work at Public Resource, including the posting of standards incorporated by reference into federal and state law and my efforts to post briefs, opinions, regulations, statutes, and other materials that are edicts of government, are based on a long-held belief that the primary legal materials of our country must be available to all, especially those who lack the means to access the law in the status quo, because an informed citizenry is the key to the functioning of our democracy.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Executed this 21 day of December, 2015 at Sebastopol, California.



Carl Malamud

EXHIBIT 2

Public Safety Standards

United States (Federal Government)

In order to promote public education and public safety, equal justice for all, a better informed citizenry, the rule of law, world trade and world peace, this legal document is hereby made available on a noncommercial basis, as it is the right of all humans to know and speak the laws that govern them. (See also [State and Local](#) codes.)

STANDARD ▼	YEAR ▼	ORGANIZATION ▼	TITLE ▼	CFR AUTHORITY ▼
3M 0222	1995	3M Corporation	Organochlorine Pesticides and PCBs in Wastewater Using Empore Disk	40 CFR 136.3(a) Table ID
AA CONSTRUCT	1971	Aluminum Association	Aluminum Construction Manual	24 CFR 200, Subpart S
AA	1967	Aluminum Association	Aluminum Construction Manual	24 CFR 200, Subpart S
AA DATA	1982	Aluminum Association	Aluminum Standards and Data, Seventh Edition	49 CFR 178.65(b)(2)
AAMA 101-IS2	1997	American Architectural Manufacturers Association	Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors	10 CFR 434.402.2.2.4
AAMA 605	1998	American Architectural Manufacturers Association	Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels	40 CFR 59.401
AAMA 1002.10	1993	American Architectural Manufacturers Association	Aluminum Insulating Products for Windows and Sliding Glass Doors	24 CFR 200.938
AAMA 1102.7	1989	American Architectural Manufacturers Association	Voluntary Specifications for Aluminum Storm Doors	10 CFR 440 Appendix A
AAMA 1503.1	1988	American Architectural Manufacturers Association	Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections	24 CFR 3280.508(e)
AAMA 1702.2	1995	American Architectural Manufacturers Association	Swinging Exterior Passage Doors Voluntary Standard for Utilization in Manufactured-Housing	24 CFR 3280.405(e)(2)
AAMA 1704	1985	American Architectural Manufacturers Association	Voluntary Standard Egress Window Systems for Utilization in Manufactured-Housing	24 CFR 3280.404(b)
AAMD	1973	American Association on Mental Deficiency	Classification in Mental Retardation	42 CFR 483.102(b)(3)(i)
AAMVA CDLIS.2.0	1998	American Association of Motor Vehicle Administrators	Commercial Driver License Information System (CDLIS) State Procedures	49 CFR 384.231(d)
AASHTO	1973	American Association of State Highway and Transportation Officials	Standard Specifications for Highway Bridges	24 CFR 200, Subpart S
AASHTO	2001	American Association	A Policy on Geometric Design of	23 CFR 625.4

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USCA Case #17-7035	Document #17-15850	of State Highway and Transportation Officials	Highways and Streets	Filed: 01/31/2018 Page 273 of 460
AASHTO	2005	American Association of State Highway and Transportation Officials	A Guide for Accommodating Utilities Within Highway Right-of-Way	23 CFR 645.211
AATCC 118	1997	American Association of Textile Chemists and Colorists	Oil Repellency: Hydrocarbon Resistance Test	10 CFR 430 Subpart B, App. J1, 2.6.4.5.1
AATCC 124	1996	American Association of Textile Chemists and Colorists	Appearance of Durable Press Fabrics After Repeated Home Laundering	16 CFR 1615.32(a)(1)
ABYC A-01	1993	American Boat and Yacht Council	Marine Liquefied Petroleum Gas Systems	46 CFR 184.240(a)
ABYC A-07	1973	American Boat and Yacht Council	Boat Heating Systems	46 CFR 184.200
ABYC A-16	1997	American Boat and Yacht Council	Electric Navigation Lights	46 CFR 25.10-3(a)(2)
ABYC A-22	1993	American Boat and Yacht Council	Marine Compressed Natural Gas Systems	46 CFR 184.240(b)
ABYC E-01	1973	American Boat and Yacht Council	Bonding of Direct Current Systems	46 CFR 28.345(b)
ABYC E-09	1990	American Boat and Yacht Council	Direct Current (DC) Electrical Systems on Boats	46 CFR 183.340(b)(4)
ABYC H-02	1989	American Boat and Yacht Council	Ventilation of Boats Using Gasoline	46 CFR 28.340(c)
ABYC H-22	1986	American Boat and Yacht Council	DC Electric Bilge Pumps Operating Under 50 Volts	46 CFR 182.500(b)
ABYC H-24	1993	American Boat and Yacht Council	Gasoline Fuel Systems	46 CFR 182.455(c)
ABYC H-25	1994	American Boat and Yacht Council	Portable Gasoline Fuel Systems for Flammable Liquids	46 CFR 182.130
ABYC H-32	1987	American Boat and Yacht Council	Ventilation of Boats Using Diesel Fuel	46 CFR 182.470(c)
ABYC H-33	1989	American Boat and Yacht Council	Diesel Fuel Systems	46 CFR 182.130
ABYC P-01	1993	American Boat and Yacht Council	Safe Installation of Exhaust Systems for Propulsion and Auxiliary Engines	46 CFR 182.130
ABYC P-04	1989	American Boat and Yacht Council	Marine Inboard Engines	46 CFR 182.420(b)
ACGIH	1987	American Conference of Governmental Industrial Hygienists	Guidelines for the Selection of Chemical Protective Clothing, Third Edition	46 CFR 153.933(a)
ACGIH	1998	American Conference of Governmental Industrial Hygienists	Industrial Ventilation Manual	40 CFR 63.2984(e)
ACI 318	1995	American Concrete Institute	Building Code Requirements for Reinforced Concrete	30 CFR 250.901(d)(1)
ACI	1980	American Concrete Institute	Manual of Concrete Practice, Part 1	24 CFR 200, Subpart S

ACRI 210/210	2003	Air Conditioning and Refrigeration Institute	Unitary Air-Conditioning and Air Source Heat Pump Equipment	10 CFR 431.96
ACRI 310/380	2004	Air-Conditioning, Heating and Refrigeration Institute	Packaged Terminal Air-Conditioners and Heat Pumps	10 CFR 431.96, Table 1
ACRI 320	1998	Air-Conditioning, Heating, and Refrigeration Institute	Water Source Heat Pumps	10 CFR 434.403
ACRI 325	1998	Air-Conditioning, Heating, and Refrigeration Institute	Ground Water-Source Heat Pumps	10 CFR 434.403
ACRI 330	1998	Air-Conditioning, Heating, and Refrigeration Institute	Ground-Source Closed-Loop Heat Pumps	10 CFR 434.403
ACRI 340-360	2004	Air Conditioning and Refrigeration Institute	Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment	10 CFR 434.403
ACRI 365	1994	Air Conditioning and Refrigeration Institute	Commercial and Industrial Unitary Air-Conditioning Condensing Units	10 CFR 434.403
ACRI 1200	2006	Air Conditioning and Refrigeration Institute	Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets	10 CFR 431.66(a)(3)
AERA	1999	American Educational Research Association	Standard for Educational and Psychological Testing	34 CFR 668.148(a)(2)(iv)
AFPA	2001	American Forest and Paper Association	National Design Specification for Wood Construction With Supplemental Design Values for Wood Construction	24 CFR 3280.304(b)(1)
AGA 3.1	1990	American Gas Association	Orifice Metering of Natural Gas and Other Related Hydrocarbon Fluids: Part 1	40 CFR 75, Appendix D
AGA	2001	American Gas Association	Purging Principles and Practices	49 CFR 193.2615
AHA A135.4	1995	American Hardboard Association	Basic Hardboard	24 CFR 3280.304(b)(1)
AHA A135.5	1995	American Hardboard Association	Prefinished Hardboard Paneling	24 CFR 3280.304(b)(1)
AHA A135.6	1998	American Hardboard Association	Hardboard Siding	24 CFR 3280.304(b)(1)
AHAM DW-1	1992	Association of Home Appliance Manufacturers	Household Electric Dishwashers	10 CFR 430 Subpart B
AHAM HLD-1	1974	Association of Home Appliance Manufacturers	Performance Evaluation Procedure for Household Tumble Type Clothes Dryers	10 CFR 430 Subpart B
AHAM HRF-1	1979	Association of Home Appliance Manufacturers	Household Refrigerators, Combination Refrigerator-Freezers, and Household Freezers	10 CFR 430 Subpart B
AHPA	1992	American Herbal Products Association	Herbs of Commerce	21 CFR 101.4(h)
AI MSI-1	1970	Asphalt Institute	Thickness Design--Full Depth	24 CFR 200, Subpart S

JA1084

AIHA	1994	American Industrial Hygiene Association	Laboratory Ventilation Workbook	42 CFR 52b.12(c)(10)
AIMM MS41	1996	Association for Information and Image Management	Dimensions of Unitized Microfilm Carriers and Apertures (Aperture, Camera, Copy and Image Cards)	36 CFR 1238.10(a)(1)
AIMM IT2.18	1996	Association for Information and Image Management	Photography--Density Measurements--Part 3: Spectral Conditions	36 CFR 1238.14(d)(2)
AIMM/PIMA IT9.2	1998	Association for Information and Image Management	Photographic Processed Films, Plates, and Papers--Filing Enclosures and Storage Containers	36 CFR 1238.10(a)(1)
AIMM/PIMA IT9.11	1998	Association for Information and Image Management	Imaging Materials--Processed Safety Photographic Film--Storage	36 CFR 1234.14(b)(1)
AIMM IT9.23	1996	Association for Information and Image Management	Imaging Materials--Polyester Based Magnetic Tape--Storage	36 CFR 1234.14(b)(2)
AIMM/PIMA IT9.25	1998	Association for Information and Image Management	Imaging Materials--Optical Disc Media--Storage	36 CFR 1234.14(b)(3)
AIMM MS1	1996	Association for Information and Image Management	Recommended Practice for Alphanumeric Computer-Output Microforms--Operational Practices for Inspection and Quality Control	36 CFR 1238.14(c)
AIMM MS5	1992	Association for Information and Image Management	Microfiche	36 CFR 1238.10(b)
AIMM MS14	1996	Association for Information and Image Management	Specifications for 16mm and 35mm Roll Microfilm	36 CFR 1238.10(a)(1)
AIMM MS19	1993	Association for Information and Image Management	Standard Recommended Practice--Identification of Microforms	36 CFR 1238.12(c)
AIMM MS23	1998	Association for Information and Image Management	Standard Recommended Practice--Production, Inspection, and Quality Assurance of First-Generation, Silver Microforms of Documents	36 CFR 1238.14(d)(2)
AIMM MS32	1996	Association for Information and Image Management	Microrecording of Engineering Source Documents on 35 mm Microfilm	36 CFR 1238.10(a)(1)
AIMM MS43	1998	Association for Information and Image Management	Standard Recommended Practice--Operational Procedures--Inspection and Quality Control of Microfilms and Documents	36 CFR 1238.14(d)(1)(i)
AIMM MS45	1990	Association for Information and Image Management	Recommended Practice for Inspection of Stored Silver-Gelatin Microforms for Evidence of Deterioration	36 CFR 1238.22(d)(1)
AIMM TR34	1996	Association for Information and Image	Sampling Procedures for Inspection by Attributes of Images in Electronic	36 CFR 1237.28(d)(2)

ALCIDE 980342EA	1995	Alcide Corporation	Determination of Sodium Chlorite: 50 ppm to 1500 ppm concentration	21 CFR 173.325(g)
AMCA 210	1999	Air Movement and Control Association	Laboratory Methods of Testing Fans for Ratings	10 CFR 430 Subpart B, App. M
J-STD-102	2011	Alliance for Telecommunications Industry Solutions	Joint ATIS/TIA CMAS Federal Alert Gateway to CMSP Gateway Interface Text Specification	Warning, Alert and Response Network (WARN) Act of 2006
TELCO FAQ	1891	American Telephone and Telegraph	Practical Information for Telephonists	
ANSI A10.3	1970	American National Standards Institute	Safety Requirements for Powder Actuated Fastening Systems	29 CFR 1926
ANSI A10.4 (pdf) ANSI A10.4 (html)	1963	American National Standards Institute	Safety Requirements for Workmens Hoists	29 CFR 1926
ANSI A10.5 (pdf) ANSI A10.5 (html)	1969	American National Standards Institute	Safety Requirements for Material Joists	29 CFR 1926
ANSI A14.1 (pdf) ANSI A14.1 (html) ANSI A14.1 (svg)	1990	American National Standards Institute	Ladders--Wood--Safety Requirements	29 CFR 1917
ANSI A14.2 (pdf) ANSI A14.2 (html) ANSI A14.2 (svg)	1990	American National Standards Institute	Ladders--Portable Metal--Safety	29 CFR 1917
ANSI A92.2 (pdf) ANSI A92.2 (html)	1969	American National Standards Institute	Vehicle Mounted Elevating and Rotating Work Platforms	29 CFR 453
ANSI B7.1 (pdf) ANSI B7.1 (html)	1970	American National Standards Institute	Safety Code for the Use, Care, and Protection of Abrasive Wheels	29 CFR 1926
ANSI B20.1 (pdf) ANSI B20.1 (html) ANSI B20.1 (svg)	1957	American National Standards Institute	Safety Code for Conveyors, Cableways, and Related Equipment	29 CFR 1926
ANSI B30.6 (pdf) ANSI B30.6 (html) ANSI B30.6 (svg)	1969	American National Standards Institute	Safety Code for Derricks	29 CFR 1926
ANSI B36.19	1979	American National Standards Institute	Welded and Seamless Wrought Steel Pipe	24 CFR 3280.705(b)(1)
ANSI B56.1 (pdf) ANSI B56.1 (html) ANSI B56.1 (svg)	1969	American National Standards Institute	Safety Standard for Powered Industrial Trucks	29 CFR 1926
ANSI N14.1	2001	American National Standards Institute	Packaging of Uranium Hexafluoride for Transport	49 CFR 173.420(a)(1)
ANSI O1.1 (pdf) ANSI O1.1 (html)	1961	American National Standards Institute	Safety Code for Woodworking Machinery	29 CFR 1926
ANSI S1.4	1983	American National Standards Institute	Specifications for Sound Level Meters	7 CFR 1755.522(s)(3)(v)
ANSI S1.11	2004	American National Standards Institute	Specification for Octave, Half- Octave, and Third Octave Band Filter Sets	49 CFR 227
ANSI S1.25	1991	American National Standards Institute	Specification for Personal Noise Dosimeters	49 CFR 227.103(c)(2)(iii)
ANSI S1.40	1984	American National	Specification for Acoustical	49 CFR 229, Appendix I

ANSI S1.43	1997	American National Standards Institute	Specifications for Integrating-Averaging Sound Level Meters	49 CFR 227.103(c)(2)(ii)
ANSI S3.22 (pdf) ANSI S3.22 (html)	2003	American National Standards Institute	Specification of Hearing Aid Characteristics	21 CFR 801
ANSI Z35.1 (pdf) ANSI Z35.1 (html) ANSI Z35.1 (svg)	1968	American National Standards Institute	Specifications for Accident Prevention Signs	29 CFR 1926
ANSI Z35.2 (pdf) ANSI Z35.2 (html) ANSI Z35.2 (svg)	1968	American National Standards Institute	Specifications for Accident Prevention Tags	29 CFR 1926
ANSI Z49.1 (pdf) ANSI Z49.1 (html)	1967	American National Standards Institute	Safety in Welding and Cutting	29 CFR 1926
ANSI Z87.1 (pdf) ANSI Z87.1 (html) ANSI Z87.1 (svg)	2003	American National Standards Institute	Practice for Occupational and Educational Eye and Face Protection	29 CFR 1910
ANSI Z88.2 (pdf) ANSI Z88.2 (html) ANSI Z88.2 (svg)	1992	American National Standards Institute	American National Standard for Respiratory Protection	30 CFR 250
ANSI Z89.1 (pdf) ANSI Z89.1 (html)	1969	American National Standards Institute	Safety Requirements for Industrial Head Protection	29 CFR 1926
ANSI Z89.2 (pdf) ANSI Z89.2 (html)	1971	American National Standards Institute	Industrial Protective Helmets for Electrical Workers	29 CFR 1926
ANSI Z90.4 (pdf) ANSI Z90.4 (html)	1984	American National Standards Institute	Protective Headgear for Bicyclists	16 CFR 1203
ANSI Z245.1 (pdf) ANSI Z245.1 (html) ANSI Z245.1 (svg)	1992	American National Standards Institute	Mobile Refuse Collection and Compaction--Safety Requirements	40 CFR 243
ANSI Z245.2 (pdf) ANSI Z245.2 (html)	1997	American National Standards Institute	Stationary Compactors--Safety Requirements	40 CFR 243
AOAC	1990	AOAC International	Official Methods of Analysis (Volume 1)	9 CFR 318.19(b)
AOAC	1980	AOAC International	Official Methods of Analysis, 1980	21 CFR 131.150(c)
APA 87-1	2001	American Pyrotechnics Association	Standard for Construction and Approval for Transportation of Fireworks and Novelties	49 CFR 173.56(j)(1)
APHA Method 2120 (pdf) APHA Method 2120 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 2130 (pdf) APHA Method 2130 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 2320 (pdf) APHA Method 2320 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)

APHA Method 2510 (pdf) APHA Method 2510 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 2550 (pdf) APHA Method 2550 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 2580	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 3111 (pdf) APHA Method 3111 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3112 (pdf) APHA Method 3112 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3113 (pdf) APHA Method 3113 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3114	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3120	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3500-AS	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3500-CA (pdf) APHA Method 3500-CA (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 3500-CD (pdf) APHA Method 3500-CD (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3500-CR	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 63.404(a)
APHA Method 3500-CU	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 3500-MG (pdf) APHA Method 3500-MG (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
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APHA Method 4110 (pdf) APHA Method 4110 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-CIO2 (pdf) APHA Method 4500-CIO2 (html)	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	21 CFR 165.110(b)(4)(iii) (l)(7)(ii)
APHA Method 4500-CL	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	21 CFR 165.110(b)(4)
APHA Method 4500-CN	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-F	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-H	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 444.12
APHA Method 4500-NO2	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-NO3	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-O3	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-P	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-S2	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 4500-SI	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
APHA Method 4500-SO42	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 136.3(a)
APHA Method 5540	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.121
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APHA Method 9215	1992	American Public Health Association	Standard Methods for the Examination of Water and Wastewater	40 CFR 141.120
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API 2INT-MET	2007	American Petroleum Institute	Interim Guidance on Hurricane Conditions in the Gulf of Mexico	30 CFR 250.901(a)(6)
API 5L	2004	American Petroleum Institute	Specification for Line Pipe	49 CFR 192.113
API 5L1	2002	American Petroleum Institute	Recommended Practice for Railroad Transportation of Line Pipe	49 CFR 192.65(a)
API 6A	2004	American Petroleum Institute	Specification for Wellhead and Christmas Tree Equipment	30 CFR 250.806(a)(3)
API 6D	2008	American Petroleum Institute	Specification for Pipeline Valves	49 CFR 195.116(d)
API 12F	1994	American Petroleum Institute	Specification for Shop Welded Tanks for Storage of Production Liquids	49 CFR 195.264(b)(1)
API RP 14C	2001	American Petroleum Institute	Recommended Practice for Analysis, Design, Installation, and Testing of Basic Surface Safety Systems for Offshore Production Platforms	30 CFR 250.1628(c)
API RP 14F	2008	American Petroleum Institute	Recommended Practice for Design and Installation of Electrical Systems for Offshore Production Platforms	30 CFR 250.114(c)
API 17J	2008	American Petroleum Institute	Specification for Unbonded Flexible Pipe	30 CFR 250.1002(b)(4)
API 80	2000	American Petroleum Institute	Guidelines for the Definition of Onshore Gas Gathering Lines	49 CFR 192.8(a)
API 510	2006	American Petroleum Institute	Pressure Vessel Inspection Code	30 CFR 250.803(b)(1)
API 620	2002	American Petroleum Institute	Design and Construction of Large Welded Low Pressure Storage Tanks	49 CFR 195.264(e)(3)
API 650	2007	American Petroleum Institute	Welded Steel Tanks for Oil Storage	195.132(b)(3)
API 651	1997	American Petroleum Institute	Cathodic Protection of Aboveground Petroleum Storage Tanks	49 CFR 195.565
API 652	1997	American Petroleum Institute	Lining of Aboveground Petroleum Storage Tank Bottoms	49 CFR 195.579(d)
API 653	2003	American Petroleum Institute	Tank Inspection, Repair, Alteration, and Reconstruction	49 CFR 195.432(b)

API 1104	1999	American Petroleum Institute	Standard for Welding Pipelines and Related Facilities	49 CFR 195.214(a)
API 1130	2002	American Petroleum Institute	Computational Pipeline Monitoring	49 CFR 195.444
API 1162	2003	American Petroleum Institute	Public Awareness Programs for Pipeline Operators	49 CFR 192.616(a)
API 2000	1998	American Petroleum Institute	Venting Atmospheric and Low-Pressure Storage Tanks	49 CFR 195.264(e)(2)
API 2003	1998	American Petroleum Institute	Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents	49 CFR 195.405(a)
API 2350	2005	American Petroleum Institute	Overfill Protection for Storage Tanks in Petroleum Facilities	49 CFR 195.428(c)
API 2510	2001	American Petroleum Institute	Design and Construction of LPG Installations	49 CFR 195.205(b)(3)
API RP 14G	2007	American Petroleum Institute	Recommended Practice for Fire Prevention and Control on Open Type Offshore Production Platforms	30 CFR 250.803(b)(9)(v)
APLIC	1996	Avian Power Line Interaction Committee	Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996	7 CFR 1724.52(a)(1)(i)
APSP 16	2011	Association of Pool and Spa Professionals	Standard Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs	16 CFR 1450.3
ARMA	1984	Asphalt Roofing Manufacturers Association	Residential Asphalt Roofing Manual	24 CFR 200, Subpart S
ASHRAE 15	1994	American Society of Heating, Refrigerating and Air Conditioning Engineers	Safety Code for Mechanical Refrigeration	49 CFR 173.306(e)(1)(i)
ASHRAE	1993	American Society of Heating, Refrigerating and Air Conditioning Engineers	Fundamentals	10 CFR 434.402.2.2.5(a)
ASME B16.9	2003	American Society of Mechanical Engineers	Factory Made Wrought Steel Butt Welding Fittings	49 CFR 195.118(a)
ASME B30.2 (pdf) ASME B30.2 (html) ASME B30.2 (svg)	2005	American Society of Mechanical Engineers	Safety Requirements for Overhead and Gantry Cranes	29 CFR 1926
ASME B30.5 (pdf) ASME B30.5 (html)	2004	American Society of Mechanical Engineers	Safety Requirements for Mobile and Locomotive Cranes	29 CFR 1926
ASME B30.7 (pdf) ASME B30.7 (html)	2001	American Society of Mechanical Engineers	Safety Requirements for Base-Mounted Drum Hoists	29 CFR 1926
ASME B30.14 (pdf) ASME B30.14 (html)	2004	American Society of Mechanical Engineers	Safety Requirements for Side Boom Tractors	29 CFR 1926

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ASME B31.4	2002	American Society of Mechanical Engineers	Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids	49 CFR 195.110(a)
ASME B31.8	2003	American Society of Mechanical Engineers	Gas Transmission and Distribution Piping Systems	49 CFR 192.619(a)(1)(i)
ASME B318S	2004	American Society of Mechanical Engineers	Managing System Integrity of Gas Pipelines	49 CFR 192.903(c)
ASME B31G	1991	American Society of Mechanical Engineers	Manual for Determining the Remaining Strength of Corroded Pipelines	49 CFR 192.485(c)
ASME UPV	1943	American Society of Mechanical Engineers	Code for Unfired Pressure Vessels	49 CFR 173.32(c)(4)
ASQC Q9001	1994	American Society for Quality Control	Quality Assurance in Design, Development, Production, Installation, and Servicing	33 CFR 96.430(a)(2)(ii)
ASQC Q9002	1994	American Society for Quality Control	Quality Systems -- Model for Quality Assurance in Production, Installation, and Servicing	24 CFR 200.935(d)(4)(ii)(A)(3)
ASQC Q9003	1994	American Society for Quality Control	Quality Systems - Model for Quality Assurance in Final Inspection and Test	24 CFR 200.935(d)(4)(ii)(A)(4)
ASQC Q9004-1	1994	American Society for Quality Control	Quality Management and Quality Systems Elements-Guidelines	24 CFR 200.935(d)(4)(ii)(A)(5)
ASSE 1001	1990	American Society of Sanitary Engineering	Performance Requirements for Pipe Applied Atmospheric Type Vacuum Breakers	24 CFR 3280.604(b)(2)
ASSE 1006 (pdf) ASSE 1006 (html)	1986	American Society of Sanitary Engineering	Plumbing Requirements for Residential Use (Household) Dishwashers	24 CFR 3280.604(b)(2)
ASSE 1007 (pdf) ASSE 1007 (html)	1986	American Society of Sanitary Engineering	Performance Requirements for Home Laundry Equipment	24 CFR 3280.604(b)(2)
ASSE 1008 (pdf) ASSE 1008 (html)	1986	American Society of Sanitary Engineering	Performance Requirements for Household Food Waste Disposer Units	24 CFR 3280.604(b)(2)
ASSE 1016	1988	American Society of Sanitary Engineering	Performance Requirements for Individual Thermostatic Pressure Balancing and Combination Control for Bathing Facilities	24 CFR 3280.604(b)(2)
ASSE 1023 (pdf) ASSE 1023 (html)	1979	American Society of Sanitary Engineering	Hot Water Dispensers, Household Storage Type, Electrical	24 CFR 3280.604(b)(2)
ASSE 1025	1978	American Society of Sanitary Engineering	Diverters for Plumbing Faucets with Hose Spray, Anti-Siphon Type, Residential Applications	24 CFR 3280.604(b)(2)
ASSE 1037 (pdf) ASSE 1037 (html)	1990	American Society of Sanitary Engineering	Performance Requirements for Pressurized Flushing Devices (Flushometers) for Plumbing Fixtures	24 CFR 3280.604(b)(2)
ASCE 7	2002	American Society of Civil Engineers	Minimum Design Loads for Buildings and Other Structures	49 CFR 193.2013

ASTM A36	1977	American Society for Testing and Materials	Standard Specification for Carbon Structural Steel	24 CFR Part 200
ASTM A36	1997	American Society for Testing and Materials	Standard Specification for Carbon Structural Steel	46 CFR 160.035-3(b)(2)
ASTM A47	1968	American Society for Testing and Materials	Standard Specification for Malleable Iron Castings	29 CFR 1910.111(b)(7)(vi)
ASTM A82	1979	American Society for Testing and Materials	Cold-Drawn Steel Wire for Concrete Reinforcement	24 CFR 200, Subpart S
ASTM A100	1969	American Society for Testing and Materials	Standard Specification for Ferrosilicon	40 CFR 60.261(s)
ASTM A106	2004	American Society for Testing and Materials	Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service	49 CFR 192.113
ASTM A134	1996	American Society for Testing and Materials	Standard Specification for Pipe, Steel, Electric Fusion (Arc)-Welded (Sizes NPS 16 and Over)	46 CFR 56.60-1(b)
ASTM A179	1990	American Society for Testing and Materials	Standard Specification for Seamless Cold-Drawn Low-Carbon Steel Heat-Exchanger and Condenser Tubes	46 CFR 56.60-1(b)
ASTM A184	1979	American Society for Testing and Materials	Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement	24 CFR 200, Subpart S
ASTM A185	1979	American Society for Testing and Materials	Steel Wire Fabric for Concrete Reinforcement	24 CFR 200, Subpart S
ASTM A203	1997	American Society for Testing and Materials	Standard Specification for Pressure Vessel Plates, Alloy Steel, Nickel	46 CFR 54.05-20(b)
ASTM A214	1996	American Society for Testing and Materials	Standard Specification for Electric-Resistance-Welded Carbon Steel Heat-Exchanger and Condenser Tubes	46 CFR 56.60-1(b)
ASTM A242	1979	American Society for Testing and Materials	Standard Specification for High-Strength Low-Alloy Structural Steel	24 CFR 200, Subpart S
ASTM A285	1978	American Society for Testing and Materials	Standard Specification for Pressure Vessel Plates, Carbon Steel, Low- and Intermediate-Tensile Strength	49 CFR 179.300-7(a)
ASTM A307	1978	American Society for Testing and Materials	Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength	46 CFR 56.25-20(b)
ASTM A325	1979	American Society for Testing and Materials	High-Strength Bolts for Structural Steel Joists	24 CFR 200, Subpart S
ASTM A333	1994	American Society for Testing and Materials	Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service	46 CFR 56.50-105
ASTM A369	1992	American Society for Testing and Materials	Standard Specification for Carbon and Ferritic Alloy Steel Forged and Bored Pipe for High-Temperature Service	46 CFR 56.60-1(b)
ASTM A370	1977	American Society for Testing and Materials	Standard Test Method and Definitions for Mechanical Testing of Steel Products	49 CFR 179.102-1(a)(1)
ASTM A381	1996	American Society for	Standard Specification for Metal-Arc-	49 CFR 192.113

ASTM A391	1965	American Society for Testing and Materials	Standard Specification for Alloy Steel Chain	29 CFR 1910.184(e)(4)
ASTM A416	1974	American Society for Testing and Materials	Uncoated Seven-Wire Stress-Relieved Strand for Prestressed Concrete	24 CFR 200, Subpart S
ASTM A441	1979	American Society for Testing and Materials	High-Strength Low-Alloy Structural Manganese Vanadium Steel	24 CFR 200, Subpart S
ASTM A449	1978	American Society for Testing and Materials	Quenched and Tempered Steel Bolts and Studs	24 CFR 200, Subpart S
ASTM A475	1978	American Society for Testing and Materials	Standard Specification for Zinc-Coated Steel Wire Strand	7 CFR 1755.370(b)
ASTM A483	1964	American Society for Testing and Materials	Standard Specification for Silicomanganese	40 CFR 60.261(o)
ASTM A490	1979	American Society for Testing and Materials	Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints	24 CFR 200, Subpart S
ASTM A496	1978	American Society for Testing and Materials	Deformed Steel Wire for Concrete Reinforcement	24 CFR 200, Subpart S
ASTM A497	1979	American Society for Testing and Materials	Welded Deformed Steel Wire, Fabric for Concrete Reinforcement	24 CFR 200, Subpart S
ASTM A500	1978	American Society for Testing and Materials	Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes	24 CFR 200, Subpart S
ASTM A501	1976	American Society for Testing and Materials	Hot-Formed Welded and Seamless Carbon Steel Structural Tubing	24 CFR 200, Subpart S
ASTM A502	1976	American Society for Testing and Materials	Steel Structural Rivets	24 CFR 200, Subpart S
ASTM A514	1977	American Society for Testing and Materials	High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding	24 CFR 200, Subpart S
ASTM A516	1990	American Society for Testing and Materials	Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate and Lower-Temperature Service	49 CFR 178.337-2(b)(2)(i)
ASTM A522	1995	American Society for Testing and Materials	Forged or Rolled 8 and 9% Nickel Alloy Steel Flanges, Fittings, Valves, and Parts for Low-Temperature Service	46 CFR 56.50-105
ASTM A529	1972	American Society for Testing and Materials	Structural Steel with 42,000PSI (290 Mpa) Minimum Yield Point (1/2 in (12.7 mm) Maximum Thickness	24 CFR 200, Subpart S
ASTM A529	1975	American Society for Testing and Materials	Structural Steel with 42,000PSI (290 Mpa) Minimum Yield Point (1/2 in (12.7 mm) Maximum Thickness	24 CFR 200, Subpart S
ASTM A539	1990	American Society for Testing and Materials	Standard Specification for Electric-Resistance-Welded Coiled Steel Tubing for Gas and Fuel Oil Lines	24 CFR 3280.705(b)(4)
ASTM A570	1979	American Society for	Hot-Rolled Carbon Steel Sheet and	24 CFR 200, Subpart S

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ASTM A572	1979	American Society for Testing and Materials	High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality		24 CFR 200, Subpart S
ASTM A588	1979	American Society for Testing and Materials	High-Strength Low-Alloy Structural Steel with 50 ksi Minimum Yield Point to 4 inches Thick		24 CFR 200, Subpart S
ASTM A611	1972	American Society for Testing and Materials	Steel, Cold-rolled Sheet, Carbon, Structural		24 CFR 200, Subpart S
ASTM A615	1979	American Society for Testing and Materials	Deformed and Plain Billet-Steel Bars for Concrete Reinforcement		24 CFR 200, Subpart S
ASTM A616	1979	American Society for Testing and Materials	Rail-Steel Deformed and Plain Bars for Concrete Reinforcement		24 CFR 200, Subpart S
ASTM A617	1979	American Society for Testing and Materials	Axle-Steel Deformed and Plain Bars for Concrete Reinforcement		24 CFR 200, Subpart S
ASTM A618	1974	American Society for Testing and Materials	Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural Tubing		24 CFR 200, Subpart S
ASTM A633	1979	American Society for Testing and Materials	Standard Specification for Normalized High-Strength Low Alloy Structural Steel		49 CFR 178.338-2(a)
ASTM A671	2004	American Society for Testing and Materials	Standard Specification for Electric-Fusion-Welded Steel Pipe for Atmospheric and Lower Temperatures		49 CFR 192.113
ASTM A672	1996	American Society for Testing and Materials	Standard Specification for Electric-Fusion-Welded Steel Pipe for High-Pressure Service at Moderate Temperatures		49 CFR 192.113
ASTM A691	1998	American Society for Testing and Materials	Standard Specification for Carbon and Alloy Steel Pipe, Electric-Fusion-Welded for High-Pressure Service at High Temperature		49 CFR 192.113
ASTM B16	1985	American Society for Testing and Materials	Standard Specification for Free-Cutting Brass Rod, Bar, and Shapes for Use in Screw Machines		46 CFR 56.60-2
ASTM B16	1992	American Society for Testing and Materials	Standard Specification for Free-Cutting Brass Rod, Bar, and Shapes for Use in Screw Machines		46 CFR 56.60-2
ASTM B21	1983	American Society for Testing and Materials	Standard Specification for Naval Brass Rod, Bar, and Shapes		46 CFR 56.60-2
ASTM B21	1996	American Society for Testing and Materials	Standard Specification for Naval Brass Rod, Bar, and Shapes		46 CFR 56.60-2
ASTM B42	1996	American Society for Testing and Materials	Standard Specification for Seamless Copper Pipe, Standard Sizes		46 CFR 56.60-1(b)
ASTM B68	1995	American Society for Testing and Materials	Standard Specification for Seamless Copper Tube, Bright Annealed		46 CFR 56.60-1(b)
ASTM B75	1997	American Society for Testing and Materials	Standard Specification for Seamless Copper Tube		46 CFR 56.60-1(b)
ASTM B85	1984	American Society for Testing and Materials	Standard Specification for Aluminum-Alloy Die Castings		46 CFR 56.60-2

ASTM B88	1996	American Society for Testing and Materials	Standard Specification for Seamless Copper Water Tube	46 CFR 56.60-1(b)
ASTM B96	1993	American Society for Testing and Materials	Standard Specification for Copper-Silicon Alloy Plate, Sheet, Strip, and Bolled Bar for General Purposes and Pressure Vessels	46 CFR 119.440
ASTM B111	1995	American Society for Testing and Materials	Copper and Copper-Alloy Seamless Condenser Tubes and Ferrule Stock	46 CFR 56.60-1(b)
ASTM B117	1973	American Society for Testing and Materials	Standard Practice for Operating Salt Spray (Fog) Apparatus	49 CFR 571.209 S5.2(a)
ASTM B122	1995	American Society for Testing and Materials	Standard Specification for Copper-Nickel-Tin Alloy, Copper-Nickel-Zinc Alloy (Nickel Silver), and Copper-Nickel Alloy Plate, Sheet, Strip and Rolled Bar	46 CFR 119.440
ASTM B124	1996	American Society for Testing and Materials	Standard Specification for Copper and Copper-Alloy Forging Rod, Bar, and Shapes	46 CFR 56.60-2
ASTM B152	1997	American Society for Testing and Materials	Standard Specification for Copper, Sheet, Strip, Plate, and Rolled Bar	46 CFR 58.50-5(a)(4)
ASTM B193	1987	American Society for Testing and Materials	Standard Test Method for Resistivity of Electrical Conductor Materials	7 CFR 1755.390(i)(5)(v)(A)
ASTM B209	1996	American Society for Testing and Materials	Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate	46 CFR 58.50-5, Table 58.50-5(a)
ASTM B224	1980	American Society for Testing and Materials	Standard Classification of Coppers	7 CFR 1755.890(i)(5)(vi)
ASTM B227	1970	American Society for Testing and Materials	Hard-Drawn Copper-Clad Steel Wire	24 CFR 200, Subpart S
ASTM B280	1997	American Society for Testing and Materials	Seamless Copper Tube for Air Conditioning and Refrigeration Field Service	46 CFR 56.60-1(b)
ASTM B283	1996	American Society for Testing and Materials	Standard Specification for Copper and Copper-Alloy Die Forgings (Hot-Pressed)	46 CFR 56.60-2
ASTM B315	1993	American Society for Testing and Materials	Seamless Copper Alloy Pipe Tube	46 CFR 56.60-1(b)
ASTM B557	1984	American Society for Testing and Materials	Tension Testing Wrought and Cast Aluminum and Magnesium-Alloy Products	49 CFR 178.46(i)(3)(i)
ASTM B580	1979	American Society for Testing and Materials	Standard Specification for Anodized Oxide Coatings on Aluminum	49 CFR 171.7
ASTM B694	1986	American Society for Testing and Materials	Standard Specification for Copper, Copper Alloy, and Copper-Clad Stainless Steel Sheet and Strip for Electrical Cable Shielding	7 CFR 1755.390(i)(5)(v)
ASTM B858	1995	American Society for Testing and Materials	Standard Test Method for Determination of Susceptibility to Stress Corrosion Cracking in Copper Alloys Using Ammonia Vapor Test	46 CFR 56.60-2

ASTM C4	1962	American Society for Testing and Materials	Standard Specification for Clay Drain Tile and Perforated Clay Drain Tile	24 CFR 200, Subpart S
ASTM C5	1979	American Society for Testing and Materials	Standard Specification for Quicklime for Structural Purposes	24 CFR 200, Subpart S
ASTM C32	1973	American Society for Testing and Materials	Standard Specification for Sewer and Manhole Brick	24 CFR 200, Subpart S
ASTM C34	1962	American Society for Testing and Materials	Standard Specification for Structural Clay Load-Bearing Wall Tile	24 CFR 200, Subpart S
ASTM C52	1954	American Society for Testing and Materials	Specification for Gypsum Partition Tile or Block	24 CFR 200, Subpart S
ASTM C56	1971	American Society for Testing and Materials	Standard Specification for Structural Clay Nonloadbearing Tile	24 CFR 200, Subpart S
ASTM C64	1972	American Society for Testing and Materials	Specification for Fireclay Brick Refractories for Heavy Duty Stationary Boiler Service	24 CFR 200, Subpart S
ASTM C90	1970	American Society for Testing and Materials	Standard Specification for Hollow Load-Bearing Concrete Masonry Units	49 CFR 223 Appendix A (b)(10)(ii)
ASTM C126	1971	American Society for Testing and Materials	Standard Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units	24 CFR 200, Subpart S
ASTM C139	1973	American Society for Testing and Materials	Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes	24 CFR 200, Subpart S
ASTM C150	1917	American Society for Testing and Materials	Standard Specification for Portland Cement	49 CFR 571.108
ASTM C150	1999	American Society for Testing and Materials	Standard Specification for Portland Cement	30 CFR 250.198
ASTM C150	2007	American Society for Testing and Materials	Standard Specification for Portland Cement	30 CFR 250.901(d)(9)
ASTM C177	1997	American Society for Testing and Materials	Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot-Plate Apparatus	10 CFR 431.102
ASTM C177 (pdf) ASTM C177 (html)	2004	American Society for Testing and Materials	Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot-Plate Apparatus	16 CFR 460.5(a)
ASTM C236	1989	American Society for Testing and Materials	Standard Test Method for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box	10 CFR 434.402.1.2.1(a)
ASTM C330	1999	American Society for Testing and Materials	Standard Specification for Lightweight Aggregates for Structural Concrete	30 CFR 250.901(a)(18)
ASTM C476	1971	American Society for Testing and Materials	Standard Specification for Grout for Masonry	24 CFR 200, Subpart S

ASTM C509	1984	American Society for Testing and Materials	Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material	24 CFR 200, Subpart S
ASTM C516	1980	American Society for Testing and Materials	Standard Specification for Vermiculite Loose Fill Thermal Insulation	24 CFR 200, Subpart S
ASTM C518	1991	American Society for Testing and Materials	Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus	46 CFR 160.174-17(f)
ASTM C518	2004	American Society for Testing and Materials	Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus	16 CFR 460.5(a)
ASTM C549	1981	American Society for Testing and Materials	Standard Specification for Perlite Loose Fill Insulation	10 CFR 440 Appendix A
ASTM C564	1970	American Society for Testing and Materials	Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings	24 CFR 3280.611(d)(5)(iv)
ASTM C720	1989	American Society for Testing and Materials	Spray Applied Fibrous Insulation for Elevated Temperature	10 CFR 440 Appendix A
ASTM C1045	2001	American Society for Testing and Materials	Standard Practice for Calculating Thermal Transmission Properties from Steady-State Heat Flux Measurements	16 CFR 460.5(a)
ASTM C1114	2000	American Society for Testing and Materials	Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Thin-Heater Apparatus	16 CFR 460.5(a)
ASTM C1149	2002	American Society for Testing and Materials	Standard Specification for Self-Supported Spray Applied Cellulosic Thermal Insulation	16 CFR 460.5(a)(4)
ASTM C1224	2003	American Society for Testing and Materials	Standard Specification for Reflective Insulation for Building Applications	16 CFR 460.5(c)
ASTM C1371	2004	American Society for Testing and Materials	Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emisometers	16 CFR 460.5(b)
ASTM C1374	2003	American Society for Testing and Materials	Standard Test Method for Determination of Installed Thickness of Pneumatically Applied Loose-Fill Building Insulation	16 CFR 460.5(a)(5)
ASTM D56	1970	American Society for Testing and Materials	Standard Test Method for Flash Point by Tag Closed Cup Tester	29 CFR 1910.106(a)(14)(i)
ASTM D86	2001	American Society for Testing and Materials	Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure	40 CFR 94.108(a)(1) Table B-5
ASTM D86	2004	American Society for Testing and Materials	Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure	40 CFR 1065.710

ASTM D86 (pdf) ASTM D86 (html)	2007	American Society for Testing and Materials	Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure	40 CFR 1065.710
ASTM D88	1956	American Society for Testing and Materials	Standard Test Method for Saybolt Viscosity	29 CFR 1910.106(a)(37)
ASTM D93	2002	American Society for Testing and Materials	Standard Test Method for Flash Point by Pensky-Martens Closed Cup Tester	40 CFR 94.108(a)(1) Table B-5
ASTM D129	1964	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)	40 CFR 60.106(j)(2)
ASTM D129	1995	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)	40 CFR 60.106(j)(2)
ASTM D129 (pdf) ASTM D129 (html)	2000	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)	40 CFR 60.335(b)(10)(i)
ASTM D257	1991	American Society for Testing and Materials	Standard Test Method for DC Resistance of Conductance of Insulating Materials	7 CFR 1755.860(e)(5)
ASTM D287	1992	American Society for Testing and Materials	Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method)	40 CFR 94.108(a)(1) Table B-5
ASTM D323	1958	American Society for Testing and Materials	Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method)	29 CFR 1910.106(a)(30)
ASTM D388	1998	American Society for Testing and Materials	Standard Classification of Coals by Rank	40 CFR 60.251(b)
ASTM D396	1998	American Society for Testing and Materials	Standard Specification for Fuel Oils	40 CFR 60.41b
ASTM D396 (pdf) ASTM D396 (html)	2002	American Society for Testing and Materials	Standard Specification for Fuel Oils	40 CFR 63.7575
ASTM D412	1968	American Society for Testing and Materials	Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension	21 CFR 801.410(d)(2)
ASTM D413	1982	American Society for Testing and Materials	Standard Test Method for Rubber Property--Adhesion to Flexible Substrate	46 CFR 160.055-3 Table 160-055-3(j)
ASTM D445	1965	American Society for Testing and Materials	Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids	29 CFR 1910.106(a)(37)
ASTM D445	1972	American Society for Testing and Materials	Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids	21 CFR 177.1430(c)(2)
ASTM D512	1989	American Society for Testing and Materials	Standard Test Methods for Chloride Ion In Water	40 CFR 136.3(a)
ASTM D611	1982	American Society for Testing and Materials	Standard Test Method for Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents	21 CFR 177.1520(b)

ASTM D1206	1970	American Society for Testing and Materials	Viscosity of Paints, Varnishes and Lacquers by Ford Viscosity Cup	40 CFR 171.8
ASTM D1217	1993	American Society for Testing and Materials	Standard Test Method for Density and Relative Density (Specific Gravity) of Liquids by Bingham Pycnometer	40 CFR 75, Appendix D
ASTM D1246	1995	American Society for Testing and Materials	Bromide - Titrimetric	40 CFR 136.3(a) Table IB
ASTM D1253	1986	American Society for Testing and Materials	Standard Test Method for Residual Chlorine in Water	21 CFR 165.110(b)(4)(iii)(l)(5)(i)
ASTM D1253 (pdf) ASTM D1253 (html)	2003	American Society for Testing and Materials	Standard Test Method for Residual Chlorine in Water	40 CFR 136.3(a) Table IB
ASTM D1266	1998	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Products (Lamp Method)	40 CFR 60.106(j)(2)
ASTM D1298	1999	American Society for Testing and Materials	Standard Practice for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products	40 CFR 75, Appendix D, Section 2.2.6
ASTM D1303	1955	American Society for Testing and Materials	Standard Method of Test for Total Chlorine in Vinyl Chloride Polymers and Copolymers	21 CFR 177.1610(a)
ASTM D1319 (pdf) ASTM D1319 (html)	2003	American Society for Testing and Materials	Standard Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption	40 CFR 80.2(z)
ASTM D1331	1989	American Society for Testing and Materials	Standard Test Methods for Surface and Interfacial Tension of Solutions of Surface Active Agents	40 CFR 63, Appendix A
ASTM D1335	1967	American Society for Testing and Materials	Standard Test Method for Tuft Bind of Pile Floor Coverings	24 CFR 200.945(a)(1)(ii)
ASTM D1412	1993	American Society for Testing and Materials	Standard Test Method for Equilibrium Moisture of Coal at 96 to 97 Percent Relative Humidity and 30 Degrees Celsius	30 CFR 870.19
ASTM D1415	1968	American Society for Testing and Materials	Tentative Method of Test for International Hardness of Vulcanized Natural and Synthetic Rubbers	49 CFR 571.116 S7.4.1(b)
ASTM D1415	1988	American Society for Testing and Materials	Standard Practice for Rubber and Rubber Latices--Nomenclature	21 CFR 177.2600(c)(4)(i)
ASTM D1475	1960	American Society for Testing and Materials	Standard Test Method for Density of Paint, Varnish, Lacquer, and Related Products	40 CFR 60, Appendix A-7
ASTM D1480	1993	American Society for Testing and Materials	Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Bingham Pycnometer	40 CFR 75, Appendix D
ASTM D1481	1993	American Society for Testing and Materials	Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by	40 CFR 136.3(a) Table IC

ASTM D1505	1968	American Society for Testing and Materials	Standard Test Method for Density of Plastics by the Density-Gradient Technique	21 CFR 177.2480
ASTM D1518	1985	American Society for Testing and Materials	Standard Test Method for Thermal Transmittance of Textile Materials	46 CFR 160.174-17(f)
ASTM D1535	1968	American Society for Testing and Materials	Specifying Color by the Munsell System	16 CFR 1402
ASTM D1535	1968	American Society for Testing and Materials	Specifying Color by the Munsell System	16 CFR 1402.4(a)(1)(i)(E)(2)
ASTM D1535	1989	American Society for Testing and Materials	Specifying Color by the Munsell System	7 CFR 1755.860(c)(3)
ASTM D1552	1995	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Products (High-Temperature Method)	40 CFR 60, Appendix A-7
ASTM D1564	1971	American Society for Testing and Materials	Standard Method of Testing Flexible Cellular Materials--Slab Urethane Foam	40 CFR 136.3(a)
ASTM D1687	1992	American Society for Testing and Materials	Standard Test Methods for Chromium in Water	40 CFR 444.12(b)(1)
ASTM D1688	1995	American Society for Testing and Materials	Standard Test Method for Copper in Water	40 CFR 141.23(k)(1)
ASTM D1692	1968	American Society for Testing and Materials	Test for Flammability of Plastic Sheeting and Cellular Plastics	29 CFR 1910.103(c)(1)(v)(D)
ASTM D1785	1986	American Society for Testing and Materials	Standard Specification for Poly (Vinyl Chloride)(PVC) Plastic Pipe, Schedules 40, 80, and 120	46 CFR 56.01-2
ASTM D1835	1997	American Society for Testing and Materials	Standard Specification for Liquefied Petroleum (LP) Gases	49 CFR 180.209(e)
ASTM D1890	1996	American Society for Testing and Materials	Standard Test Method for Beta Particle Radioactivity of Water	40 CFR 136.3(a)
ASTM D1943	1996	American Society for Testing and Materials	Standard Test Method for Alpha Particle Radioactivity of Water	40 CFR 136.3(a)
ASTM D1945	1996	American Society for Testing and Materials	Standard Test Method for Analysis of Natural Gas By Gas Chromatography	40 CFR 60.45(f)(5)(i)
ASTM D1946	1990	American Society for Testing and Materials	Standard Method for Analysis of Reformed Gas by Gas Chromatography	40 CFR 60.614(e)(4)
ASTM D1962	1967	American Society for Testing and Materials	Standard Test Method for Saponification Value of Drying Oils, Fatty Acids, and Polymerized Fatty Acids	21 CFR 178.2010(b)
ASTM D2013	1986	American Society for Testing and Materials	Standard Method of Preparing Coal Samples for Analysis	40 CFR 60, Appendix A-7
ASTM D2015	1996	American Society for Testing and Materials	Standard Test Method for Gross Calorific Value of Solid Fuel by the Adiabatic Bomb Calorimeter	40 CFR 60.45(f)(5)(ii)
ASTM D2036	1998	American Society for Testing and Materials	Standard Test Method for Cyanides in Water	40 CFR 136.3(a) Table IB

ASTM D2090	2000	American Society for Testing and Materials	Standard Test Method for Dynamic Water Resistance of Shoe Upper Maeser Water Penetration Tester	40 CFR 63.5850(b)
ASTM D2156	1965	American Society for Testing and Materials	Method of Tests for Smoke Density in Flue Gases from Distillate Fuels	10 CFR 430 Subpart B
ASTM D2161	1966	American Society for Testing and Materials	Standard Method of Conversion of Kinematic Viscosity to Saybolt Universal Viscosity or to Saybolt Furoil Viscosity	29 CFR 1910.106(a)(37)
ASTM D2163	1991	American Society for Testing and Materials	Standard Test Method for Analysis of Liquefied Petroleum (LP) Gases and Propane Concentrates by Gas Chromatography	40 CFR 86.1313-94(f)(3)
ASTM D2216	1998	American Society for Testing and Materials	Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass	40 CFR 258.41(a)(4)(iii)(A)
ASTM D2234	1998	American Society for Testing and Materials	Standard Practice for Collection of a Gross Sample of Coal	40 CFR 60, Appendix A-7
ASTM D2236	1970	American Society for Testing and Materials	Standard Method of Test for Dynamic Mechanical Properties of Plastics by Means of a Torsional Pendulum	21 CFR 177.1810(c)(2)(i)
ASTM D2247	1968	American Society for Testing and Materials	Standard Practice for Testing Water Resistance of Coatings in 100 Percent Relative Humidity	24 CFR 200, Subpart S
ASTM D2267	1968	American Society for Testing and Materials	Standard Test Method for Aromatics in Light Naphthas and Aviation Gasoline by Gas Chromatography	40 CFR 61.67(h)(1)
ASTM D2460	1997	American Society for Testing and Materials	Standard Test Method for Alpha-Particle-Emitting Isotopes of Radium in Water	40 CFR 136.3(a) Table IE
ASTM D2502	1992	American Society for Testing and Materials	Standard Test Method for Estimation of Molecular Weight (Relative Molecular Mass) of Petroleum Oils from Viscosity Measurements	40 CFR 75, Appendix G
ASTM D2503	1992	American Society for Testing and Materials	Standard Method of Test for Molecular Weight of Hydrocarbons by Thermoelectric Measurement of Vapor Pressure	40 CFR 98.254
ASTM D2505	1988	American Society for Testing and Materials	Standard Test Method for Ethylene, Other Hydrocarbons, and Carbon Dioxide in High-Purity Ethylene by Gas Chromatography	40 CFR 98.7
ASTM D2515	1966	American Society for Testing and Materials	Standard Specification for Kinematic Glass Viscosity	49 CFR 571.116 S6.3.2(a)
ASTM D2565	1970	American Society for Testing and Materials	Standard Practice for Operating Xenon Arc-Type Light-Exposure Apparatus With or Without Water for Exposure of Plastics	16 CFR 1201.4(b)(3)(ii)
ASTM D2597	1994	American Society for Testing and Materials	Standard Test Method for Analysis of Demethanized Hydrocarbon Liquid Mixtures Containing Nitrogen	40 CFR 60.335(b)(9)(i)

ASTM D2622	1998	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry	40 CFR 80.46(a)(1)
ASTM D2724	1987	American Society for Testing and Materials	Standard Test Method for Bonded, Fused, and Laminated Apparel Fabrics	49 CFR 238 Appendix B(a)(1)(ii)
ASTM D2777	1998	American Society for Testing and Materials	Standard Practice for Determination of Precision and Bias of Applicable Test Methods of Committee D-19 on Water	46 CFR 162.050-15(f)(1)
ASTM D2857	1970	American Society for Testing and Materials	Standard Method of Test for Dilute Solution Viscosity of Polymers	21 CFR 177.2210(b)(3)
ASTM D2879	1997	American Society for Testing and Materials	Standard Test Method for Vapor Pressure--Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope	40 CFR 60.116b(e)(3)(ii)
ASTM D2908	1974	American Society for Testing and Materials	Standard Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography	40 CFR 60.564(j)(1)
ASTM D2908	1991	American Society for Testing and Materials	Standard Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography	40 CFR 60.564(j)(1)
ASTM D2986	1995	American Society for Testing and Materials	Standard Method for Evaluation of Air, Assay Media by the Monodisperse DOP (Diocetyl Phthalate) Smoke Test	40 CFR 86.1310-2007(b)(7)(i)(A)
ASTM D3120	1996	American Society for Testing and Materials	Standard Test Method for Trace Quantities of Sulfur in Light Liquid Petroleum Hydrocarbons by Oxidative Microcoulometry	40 CFR 80.46(a)(3)(iii)
ASTM D3168	1973	American Society for Testing and Materials	Standard Recommended Practices for Qualitative Identification of Polymers in Emulsion Paints	21 CFR 200.946
ASTM D3173	1987	American Society for Testing and Materials	Standard Test Method for Moisture in the Analysis Sample of Coal and Coke	40 CFR 60, Appendix A-7
ASTM D3176	1989	American Society for Testing and Materials	Standard Practice for Ultimate Analysis of Coal and Coke	40 CFR 76.15(a)(1)
ASTM D3177	1989	American Society for Testing and Materials	Standard Test Method for Total Sulfur in the Analysis Sample of Coal and Coke	40 CFR 60, Appendix A-7
ASTM D3178	1989	American Society for Testing and Materials	Standard Test Method for Carbon and Hydrogen in the Analysis Sample of Coal and Coke	40 CFR 60.45(f)(5)(i)
ASTM D3236	1988	American Society for Testing and Materials	Standard Test Method for Apparent Viscosity of Hot Metal Adhesives and Coating Materials	21 CFR 177.1520(b)

ASTM D3236	1996	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum Gas by Oxidative Microcoulometry	40 CFR 60.335(b)(10)(ii)
ASTM D3286	1996	American Society for Testing and Materials	Standard Test Method for Gross Calorific Value of Coal and Coke by the Isoperibol Bomb Calorimeter	40 CFR 60.17
ASTM D3371	1995	American Society for Testing and Materials	Standard Test Method for Nitriles in Aqueous Solution by Gas-Liquid Chromatography	40 CFR 136.3(a) Table IF
ASTM D3454	1997	American Society for Testing and Materials	Standard Test Method for Radium-226 in Water	40 CFR 136.3(a) Table IE
ASTM D3559 (pdf) ASTM D3559 (html)	2003	American Society for Testing and Materials	Standard Test Methods for Lead in Water	40 CFR 136
ASTM D3588	1998	American Society for Testing and Materials	Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density (Specific Gravity) of Gaseous Fuels	40 CFR 75, Appendix F
ASTM D3695	1995	American Society for Testing and Materials	Standard Test Method for Volatile Alcohols in Water by Direct Aqueous-Injection Gas Chromatography	40 CFR 136.3(a) Table IF
ASTM D3697	1992	American Society for Testing and Materials	Standard Test Method for Antimony in Water	21 CFR 165.110(b)(4)(iii)(E)(1)(iv)
ASTM D4057	1995	American Society for Testing and Materials	Standard Practice for Manual Sampling of Petroleum and Petroleum Products	40 CFR 80.8(a)
ASTM D4084	1994	American Society for Testing and Materials	Standard Test Method for Analysis of Hydrogen Sulfide in Gaseous Fuels (Lead Acetate Reaction Rate Method)	40 CFR 60.334(h)(1)
ASTM D4177	1995	American Society for Testing and Materials	Standard Practice for Automatic Sampling of Petroleum and Petroleum Products	40 CFR 80.330(b)(2)
ASTM D4239	1997	American Society for Testing and Materials	Standard Test Methods for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion Methods	40 CFR 60, Appendix A-7
ASTM D4268	1993	American Society for Testing and Materials	Standard Test Method for Testing Fiber Ropes	33 CFR 164.74(a)(3)(i)
ASTM D4294	1998	American Society for Testing and Materials	Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectrometry	40 CFR 75, Appendix A, Section 2.1.1.1(c)
ASTM D4329	1999	American Society for Testing and Materials	Standard Practice for Fluorescent UV Exposure of Plastics	49 CFR 571.106
ASTM D4420	1994	American Society for Testing and Materials	Standard Test Method for Determination of Aromatics in Finished Gasoline by Gas Chromatography	40 CFR 61.67(h)(1)
ASTM D4442	1992	American Society for	Standard Test Method for Direct	40 CFR 60, Appendix A-

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ASTM D4444	1992	American Society for Testing and Materials	Standard Test Method for Use and Calibration of Hand-Held Moisture Meters	40 CFR 60, Appendix A-8
ASTM D4763	1988	American Society for Testing and Materials	Standard Practice for Identification of Chemicals in Water by Fluorescence Spectroscopy	40 CFR 136.3(a) Table IF
ASTM D4809	1995	American Society for Testing and Materials	Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method)	40 CFR 61.245(e)(3)
ASTM D4891 (pdf) ASTM D4891 (html)	1989	American Society for Testing and Materials	Standard Test Method for Heating Value of Gases in Natural Gas Range by Stoichiometric Combustion	40 CFR 75, Appendix F, Section 5.5.2
ASTM D4986	1998	American Society for Testing and Materials	Standard Test Method for Horizontal Burning Characteristics of Cellular Polymeric Materials	46 CFR 32.57-10(d)(7-a)
ASTM D5257	1997	American Society for Testing and Materials	Standard Test Method for Dissolved Hexavalent Chromium in Water by Ion Chromatography	40 CFR 136.3(a)
ASTM D5373	1993	American Society for Testing and Materials	Standard Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Laboratory Samples of Coal and Coke	40 CFR 75, Appendix G
ASTM D5392	1993	American Society for Testing and Materials	Standard Test Method for Isolation and Enumeration of Escherichia Coli in Water by the Two-Step Membrane Filter Procedure	40 CFR 136.3(a) Table IH
ASTM D5489	1996	American Society for Testing and Materials	Standard Guide for Care Symbols for Care Instructions on Textile Products	16 CFR 423.8(g)
ASTM D5673	1996	American Society for Testing and Materials	Standard Test Method for Elements in Water by Inductively Coupled Plasma	40 CFR 444.12(b)(1)
ASTM D5865	1998	American Society for Testing and Materials	Standard Test Method for Gross Calorific Value of Coal and Coke	40 CFR 60.45(f)(5)(ii)
ASTM D6216	1998	American Society for Testing and Materials	Standard Practice for Opacity Monitor Manufacturers to Certify Conformance with Design and Performance Specifications	40 CFR 60, Appendix B
ASTM D6228	1998	American Society for Testing and Materials	Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Flame Photometric Detection	40 CFR 60.334(h)(1)
ASTM D6420	1999	American Society for Testing and Materials	Standard Test Method for Determination of Gaseous Organic Compounds by Direct Interface Gas Chromatography-Mass Spectrometry	40 CFR 63.5850(e)(4)
ASTM D6503	1999	American Society for	Standard Test Method for	40 CFR 136.3(a) Table

ASTM D6522	2000	American Society for Testing and Materials	Standard Test Method for Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas-Fired Reciprocating Engines, Combustion Turbines, Boilers, and Process Heaters Using Portable Analyzers	40 CFR 60.335(a)(2)
ASTM E11	1970	American Society for Testing and Materials	Standard Specification for Wire Cloth and Sieves for Testing Purposes	33 CFR 159.4
ASTM E11	1995	American Society for Testing and Materials	Standard Specification for Wire Cloth and Sieves for Testing Purposes	33 CFR 159.125
ASTM E23	1982	American Society for Testing and Materials	Standard Test Methods for Notched Bar Impact Testing of Metallic Materials	46 CFR 56.50-105(a)(1)(ii)
ASTM E23	1993	American Society for Testing and Materials	Standard Test Method for Notched Bar Impact Testing of Metallic Materials	46 CFR 56.50-105(a)(1)(ii)
ASTM E29	1967	American Society for Testing and Materials	Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications	40 CFR 86.609-98
ASTM E29	1990	American Society for Testing and Materials	Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications	40 CFR 86.000-28(a)(4)(iii)
ASTM E29 (pdf) ASTM E29 (html)	2002	American Society for Testing and Materials	Standard Specification for Diesel Fuel Oils	40 CFR 1065.701 Table 1
ASTM E72	1980	American Society for Testing and Materials	Standard Test Methods of Conducting Strength Tests of Panels for Building Construction	30 CFR 75.333(e)(1)(i)
ASTM E84 (pdf) ASTM E84 (html)	2001	American Society for Testing and Materials	Standard Test Method for Surface Burning Characteristics of Building Materials	24 CFR 3280.203(a)
ASTM E96	1995	American Society for Testing and Materials	Standard Test Methods for Water Vapor Transmission of Materials	24 CFR 3280.504(a)
ASTM E119 (pdf) ASTM E119 (html)	2000	American Society for Testing and Materials	Standard Test Methods for Fire Tests of Building Construction and Materials	49 CFR 238 Appendix B(a)(1)(v)
ASTM E145	1994	American Society for Testing and Materials	Standard Specification for Gravity-Convection and Forced-Ventilation Ovens	40 CFR 63.14
ASTM E145	1994	American Society for Testing and Materials	Standard Specification for Gravity-Convection and Forced-Ventilation Ovens	40 CFR 63.4581
ASTM E154	1968	American Society for Testing and Materials	Materials for Use as Vapor Barriers Under Concrete Slabs and as Ground Cover in Crawl Spaces	24 CFR 200, Subpart S

ASTM E163	1963	American Society for Testing and Materials	Methods for Fire Tests of Window Assemblies	24 CFR 200.450
ASTM E168	1967	American Society for Testing and Materials	Standard Practices for General Techniques of Infrared Quantitative Analysis	40 CFR 60.485(d)(1)
ASTM E168	1988	American Society for Testing and Materials	Standard Practices for General Techniques of Infrared Quantitative Analysis	40 CFR 264.1063(d)(1)
ASTM E169	1987	American Society for Testing and Materials	Standard Practices for General Techniques of Ultraviolet-Visible Quantitative Analysis	40 CFR 264.1063(d)(1)
ASTM E185	1982	American Society for Testing and Materials	Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels	10 CFR 50 App. H, I
ASTM E258	1967	American Society for Testing and Materials	Standard Test Method for Total Nitrogen Inorganic Material by Modified Kjeldahl Method	40 CFR 761.71(b)(2)(vi)
ASTM E260	1996	American Society for Testing and Materials	Standard Practice for Packed Column Gas Chromatography	40 CFR 60.485(d)(1)
ASTM E283	1991	American Society for Testing and Materials	Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors	10 CFR 434.402.2
ASTM E298	1968	American Society for Testing and Materials	Standard Methods for Assay of Organic Peroxides	49 CFR 571.116 S6.11.3(a)
ASTM E408	1971	American Society for Testing and Materials	Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques	16 CFR 460.5(b)
ASTM E424	1971	American Society for Testing and Materials	Test for Solar Energy Transmittance and Reflectance (Terrestrial) of Sheet Materials	24 CFR 200, Subpart S
ASTM E606	1980	American Society for Testing and Materials	Standard Recommended Practice for Constant-Amplitude Low-Cycle Fatigue Testing	24 CFR 200.946
ASTM E681	1985	American Society for Testing and Materials	Standard Test Method for Concentration Limits of Flammability of Chemicals	49 CFR 173.115(a)(2)
ASTM E695	1979	American Society for Testing and Materials	Standard Method of Measuring Relative Resistance of Wall, Floor and Roof Construction to Impact Loading	24 CFR 200.946(a)(1) (viii)
ASTM E711	1987	American Society for Testing and Materials	Standard Test Method for Gross Calorific Value of Refuse-Derived Fuel by the Bomb Calorimeter	40 CFR 63, Subpart DDDDD, Table 6
ASTM E773	1997	American Society for Testing and Materials	Standard Test Method for Seal Durability of Sealed Insulating Glass Units	4 CFR 3280.403(d)(2)
ASTM E774	1997	American Society for Testing and Materials	Standard Specifications for Sealed Insulating Glass Units	24 CFR 3280.403(d)(2)
ASTM E775	1987	American Society for Testing and Materials	Standard Test Methods for Total Sulfur in the Analysis Sample of	40 CFR 49.123(e)

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ASTM E776	1987	American Society for Testing and Materials	Standard Test Method for Forms of Chlorine in Refuse-Derived Fuel	40 CFR 63, Subpart DDDDD, Table 6
ASTM E885	1988	American Society for Testing and Materials	Standard Test Method for Analyses of Metals in Refuse-Derived Fuel by Atomic Absorption Spectroscopy	40 CFR 63, Subpart DDDDD, Table 6
ASTM E1333	1996	American Society for Testing and Materials	Standard Test Method for Determining Formaldehyde Levels from Wood Products Under Defined Test Conditions Using a Large Chamber	24 CFR 3280.406(b)
ASTM E1337	1990	American Society for Testing and Materials	Standard Test Method for Determining Longitudinal Peak Braking Coefficient of Paved Surfaces Using Standard Reference Test Tire	49 CFR 571.105 S6.9.2(a)
ASTM E1590 (pdf) ASTM E1590 (html)	2001	American Society for Testing and Materials	Standard Test Method for Fire Testing of Mattresses	49 CFR 238 Appendix B(a)(1)(xi)
ASTM E1625	1994	American Society for Testing and Materials	Standard Test Method for Determining Biodegradability of Organic Chemicals in Semi-Continuous Activated Sludge	40 CFR 799.5085
ASTM E1719	1997	American Society for Testing and Materials	Standard Test Method for Vapor Pressure of Liquids by Ebulliometry	40 CFR 799.5085
ASTM F462	1979	American Society for Testing and Materials	Slip-Resistant Bathing Facilities	24 CFR 200, Subpart S
ASTM F476	1984	American Society for Testing and Materials	Standard Test Method for Security of Swinging Door Assemblies	24 CFR 200.949(a)(1)(ix)
ASTM F478	1992	American Society for Testing and Materials	Standard Specification for In-Service Care of Insulating Line Hose and Covers	29 CFR 1910.137(b)(2)(ix)
ASTM F631	1980	American Society for Testing and Materials	Standard Guide for Collecting Skimmer Performance Data in Controlled Environments	33 CFR 156.40
ASTM F631	1993	American Society for Testing and Materials	Standard Guide for Collecting Skimmer Performance Data in Controlled Environments	33 CFR 154 Appendix C
ASTM F682	1982	American Society for Testing and Materials	Standard Specification for Wrought Carbon Steel Sleeve-Type Pipe Couplings	46 CFR 56.01-2
ASTM F715	1981	American Society for Testing and Materials	Standard Test Methods for Coated Fabrics Used for Oil Spill Control and Storage	33 CFR 154.106
ASTM F715	1995	American Society for Testing and Materials	Standard Test Methods for Coated Fabrics Used for Oil Spill Control and Storage	33 CFR 155, Appendix B, 2.4
ASTM F722	1982	American Society for Testing and Materials	Standard Specification for Welded Joints for Shipboard Piping Systems	33 CFR 155.140
ASTM F808	1983	American Society for Testing and Materials	Guide for Collecting Skimmer Performance Data in Uncontrolled	33 CFR 154, Appendix C

ASTM F808	1983	American Society for Testing and Materials	Guide for Collecting Skimmer Performance Data in Uncontrolled Environments	33 CFR 154, Appendix C, 6.3.1
ASTM F1003	1986	American Society for Testing and Materials	Standard Specification for Searchlights on Motor Lifeboats	46 CFR 199.175(a)(28)(i)
ASTM F1006	1986	American Society for Testing and Materials	Standard Specification for Entrainment Separators for Use in Marine Piping Applications	46 CFR 56.60-1(b)
ASTM F1007	1986	American Society for Testing and Materials	Standard Specification for Pipe-Line Expansion Joints of the Packed Slip Type for Marine Application	46 CFR 56.60-1(b)
ASTM F1014	1992	American Society for Testing and Materials	Standard Specification for Flashlights on Vessels	46 CFR 35.30-20(c)(3)
ASTM F1020	1986	American Society for Testing and Materials	Standard Specification for Line-Blind Valves for Marine Applications	46 CFR 56.60-1(b)
ASTM F1120	1987	American Society for Testing and Materials	Standard Specification for Circular Metallic Bellows Type Expansion Joints for Piping Applications	46 CFR 56.60-1(b)
ASTM F1121	1987	American Society for Testing and Materials	Standard Specification for International Shore Connections for Marine Fire Applications	33 CFR 126.15(a)(5)
ASTM F1122	1987	American Society for Testing and Materials	Standard Specification for Quick Disconnect Couplings	33 CFR 154.500(d)(3)
ASTM F1123	1987	American Society for Testing and Materials	Standard Specification for Non-Metallic Expansion Joints	46 CFR 56.60-1(b)
ASTM F1139	1988	American Society for Testing and Materials	Standard Specification for Steam Traps and Drains	46 CFR 56.60-1(b)
ASTM F1155	1998	American Society for Testing and Materials	Standard Practice for Selection and Application of Piping System Materials	33 CFR 154
ASTM F1172	1988	American Society for Testing and Materials	Fuel Oil Meters of the Volumetric Positive Displacement Type	46 CFR 56.60-1(b)
ASTM F1173	1995	American Society for Testing and Materials	Standard Specification for Thermosetting Resin Fiberglass Pipe and Fittings to be Used for Marine Applications	46 CFR 56.60-1(b)
ASTM F1196	1994	American Society for Testing and Materials	Standard Specification for Sliding Watertight Door Assemblies	46 CFR 170.270(c)(1)
ASTM F1197	1989	American Society for Testing and Materials	Standard Specification for Sliding Watertight Door Control Systems	46 CFR 174.100(e)(2)
ASTM F1199	1988	American Society for Testing and Materials	Cast (All Temperatures and Pressures) and Welded Pipe Line Strainers (150 psig and 150 Degrees F Maximum)	46 CFR 56.60-1(b)
ASTM F1200	1988	American Society for Testing and Materials	Standard Specification for Fabricated (Welded) Pipe Line Strainers (Above 150 psig and 150°F)	46 CFR 56.60-1(b)
ASTM F1201	1988	American Society for Testing and Materials	Standard Specification for Fluid Conditioner Fittings in Piping	46 CFR 56.60-1(b)

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ASTM F1271	1990	American Society for Testing and Materials	Standard Specification for Spill Valves for Use in Marine Tank Liquid Overpressure Protection Applications	46 CFR 39.20-9(c)(1)
ASTM F1273	1991	American Society for Testing and Materials	Standard Specification for Tank Vent Flame Arresters	46 CFR 32.20-10
ASTM F1292	2004	American Society for Testing and Materials	Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment	36 CFR 1191, App B, 105.2.3
ASTM F1321	1992	American Society for Testing and Materials	Standard Guide for Conducting a Stability Test (Lightweight Survey and Inclining Experiment) to Determine Light Ship Displacement and Centers of Gravity of a Vessel	46 CFR 28.535(d)
ASTM F1323	1998	American Society for Testing and Materials	Standard Specification for Shipboard Incinerators	46 CFR 63.25-9
ASTM F1471	1993	American Society for Testing and Materials	Standard Test Method for Air Cleaning Performance of a High-Efficiency Particulate Air-Filter System	40 CFR 86.1310-2007(b)(1)(iv)(B)
ASTM F1546	1996	American Society for Testing and Materials	Standard Specification for Firehose Nozzles	46 CFR 162.027-3(a)
ASTM F1548	1994	American Society for Testing and Materials	Performance of Fittings for Use with Gasketed Mechanical Couplings Used in Piping Applications	46 CFR 56.30-35(a)
ASTM F1951	1999	American Society for Testing and Materials	Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment	36 CFR 1191, App B, 1008.2.6.1
ASTM F2412 (pdf) ASTM F2412 (html) ASTM F2412 (svg)	2005	American Society for Testing and Materials	Standard Test Methods for Foot Protection	29 CFR 1910
ASTM F2413 (pdf) ASTM F2413 (html)	2005	American Society for Testing and Materials	Performance Requirements for Protective Footwear	29 CFR 1910
ASTM G21	1990	American Society for Testing and Materials	Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi	7 CFR 1755.910(d)(5)(iv)
ASTM G23	1969	American Society for Testing and Materials	Standard Practice for Operating Light Exposure Apparatus (Carbon Arc Type) With and Without Water for Exposure of Nonmetallic Materials	49 CFR 571.209 S5.1(e)
ASTM G26	1970	American Society for Testing and Materials	Standard Recommended Practice for Light- and Water-Exposure Apparatus (Xenon-Arc Type) for Exposure of Non-metallic Materials	16 CFR 1201.4(b)(3)(ii)

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ASTM G151	1997	American Society for Testing and Materials	Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources	49 CFR 571.106 S12.7(b)
ASTM G154	2000	American Society for Testing and Materials	Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials	49 CFR 571.106 S12.7(b)
ATAA 300	1996	Air Transport Association of America	Packaging of Airline Supplies, Revision 19	49 CFR 171.7
AWPA A1	1991	American Wood Preservers Association	Standard Methods for Analysis of Creosote and Oil-Type Preservatives	7 CFR 1728.201(i)(1)(i)
AWPA A2	1991	American Wood Preservers Association	Standard Methods for Analysis of Waterborne Preservatives and Fire-Retardant Formulations	7 CFR 1728.201(i)(1)(iii)(A)
AWPA A3	1991	American Wood Preservers Association	Standard Methods for Determining Penetration of Preservatives and Fire Retardants	7 CFR 1728.201(k)(3)
AWPA A5	1991	American Wood Preservers Association	Standard Methods for Analysis of Oil-Borne Preservatives	7 CFR 1728.202(g)(1)(v)(B)
AWPA A6	1989	American Wood Preservers Association	Method for the Determination of Oil-Type Preservatives and Water in Wood	7 CFR 1728.202(g)(1)(v)(A)
AWPA A7	1975	American Wood Preservers Association	Standard Wet Ashing Procedure for Preparing Wood for Chemical Analysis	7 CFR 1728.202(g)(1)(v)(D)
AWPA A9	1990	American Wood Preservers Association	Standard Method for Analysis of Treated Wood and Treating Solutions by X-ray Spectroscopy	7 CFR 1728.202(g)(1)(v)(C)
AWPA A11	1983	American Wood Preservers Association	Standard Method for Analysis of Treated Wood and Treating Solutions by Atomic Absorption Spectroscopy	7 CFR 1728.201(i)(1)(iii)(B)
AWPA M3	1981	American Wood Preservers Association	Standard Quality Control Procedures for Wood Preserving Plants	7 CFR 1728.202(f)(1)
AWPA P1	1991	American Wood Preservers Association	Standard for Coal Tar Creosote for Land and Fresh Water and Marine (Coastal) Water Use	7 CFR 1728.201(i)(1)(i)
AWPA P5	1991	American Wood Preservers Association	Standard for Waterborne Preservative	7 CFR 1728.201(i)(1)(iii)(A)
AWPA P8	1991	American Wood Preservers Association	Standard for Oil-Borne Preservatives	7 CFR 1728.201(i)(1)(iv)
AWPA P9	1991	American Wood Preservers Association	Standard for Solvents and Formulations for Organic Preservative Systems	7 CFR 1728.201(i)(1)(iv)
AWS B3.0	1977	American Welding Society	Standard Qualification Procedure	49 CFR 178.356-2(e)
AWS D1.1	2000	American Welding Society	Structural Welding Code--Steel	30 CFR 250.901(a)(20)
BHMA A156.10	1999	Builders Hardware Manufacturers	Power Operated Pedestrian Doors	36 CFR 1191, App B, 105.2.1

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BHMA A156.19	2002	Builders Hardware Manufacturers Association	Power Assist and Low Energy Power Operated Doors	36 CFR 1191, App B, 408.3.2.1
BOCA	1993	Building Officials and Code Administrators International	Mechanical Code	24 CFR 200.925c(a)(1)(i)
BOCA	1993	Building Officials and Code Administrators International	Plumbing Code	24 CFR 200.925c(a)(1)(i)
BSI EN-13000 (pdf) BSI EN-13000 (html)	2004	British Standards Institute	Cranes--Safety--Mobile Cranes	29 CFR 1926
BSI EN-14439 (pdf) BSI EN-14439 (html)	2006	British Standards Institute	Cranes--Safety--Tower Cranes	29 CFR 1926
CEC Test Method	2004	California Energy Commission	Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies	10 CFR 430 Subpart B
CABO	1992	Council of American Building Officials	One and Two Family Dwelling Code	24 CFR 200.926b(c)
CABO	1993	Council of American Building Officials	One and Two Family Dwelling Code with Errata Package and 1993 Amendments	24 CFR 200.926(d)(1)(ii)((B)(2)(ii))
CFTA	1977	Cosmetic, Toiletry, and Fragrance Association	Cosmetic Ingredient Dictionary	21 CFR 701.3(c)(2)(i)
CGA C-5	1991	Compressed Gas Association	Cylinder Service Life-Seamless Steel High Pressure Cylinders	49 CFR 173.302a(b)(3)(i)(A)
CGA C-8	1985	Compressed Gas Association	Standard for Requalification of DOT-3HT Cylinders	49 CFR 180.205(f)(1)
CGA C-11	2001	Compressed Gas Association	Recommended Practice for Inspection of Compressed Gas Cylinders at Time of Manufacture	49 CFR 178.35(g)
CGA C-12	1994	Compressed Gas Association	Qualification Procedure for Acetylene Cylinder Design	49 CFR 173.303(a)
CGA C-13	2000	Compressed Gas Association	Guidelines for Periodic Visual Inspection and Requalification of Acetylene Cylinders	49 CFR 173.303(e)
CGA G-1	2009	Compressed Gas Association	Acetylene	29 CFR 1910.102(a)
CGA G-2.2	1985	Compressed Gas Association	Guideline Method for Determining Minimum of 0.2% Water in Anhydrous Ammonia	49 CFR 173.315(l)(5)
CGA G-4.1	1985	Compressed Gas Association	Cleaning Equipment for Oxygen Service	49 CFR 178.338-15
CGA P-1	1965	Compressed Gas Association	Safe Handling of Compressed Gases	29 CFR 1910.101(b)
CGA P-20	2003	Compressed Gas Association	Standard for the Classification of Toxic Gas Mixtures	49 CFR 173.115

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CGA S-1	2005	Compressed Gas Association	Pressure Relief Device Standard	49 CFR 178.301(c)
CGA S-1.2	1980	Compressed Gas Association	Safety Release Device Standard-- Cargo and Portable Tanks for Compressed Gases	49 CFR 178.277(e)(4)(iv)
CGA S-7 (pdf) CGA S-7 (html)	2005	Compressed Gas Association	Method for Selecting Pressure Relief Devices for Compressed Gas Mixtures in Cylinders	49 CFR 173.301(c)
CGA TB-2	1980	Compressed Gas Association	Guidelines for Inspection and Repair of MC-330 and MC-331 Cargo Tanks	49 CFR 180.407(g)(3)
CGA TB-25	2008	Compressed Gas Association	Design Considerations for Tube Trailers	49 CFR 173.301
CGSB 43.147	2005	Canadian General Standards Board	Construction, Modification, Qualification, Maintenance, and Selection and Use of Means of Containment for the Handling, Offering for Transport, or Transportation of Dangerous Goods by Rail	49 CFR 171.12
CGSB 43.147	2005	Office des Normes Generales du Canada	Construction, Modification, Qualification, Entretien, Selection Et Utilisation Des Contenants Pour La Manutention, La Demande De Transport Ou La Transport Des Marchandises Dangereuses Par Chemin De Fer	49 CFR 171.12
CI 57	2009	Chlorine Institute	Emergency Shut-Off Systems for Bulk Transfer of Chlorine	49 CFR 177.840(u)
CI 101-7	1993	Chlorine Institute	Excess Flow Valve with Removable Seat	49 CFR 178.276(c)(7)(i)
CI 104-9	2002	Chlorine Institute	Standard Chlorine Angle Valve Assembly	49 CFR 178.337-9(b)(8)
CI 106-6	1993	Chlorine Institute	Excess Flow Valve with Removable Baskets	49 CFR 178.276(c)(7)(ii)
CI 166	2002	Chlorine Institute	Angle Valve Guidelines for Chlorine Bulk Transportation	49 CFR 178.337-9(b)(8)
CI H50155	1996	Chlorine Institute	Pressure Relief Device for Chlorine Service	49 CFR 173.315(i)(13)
CI H51970	1996	Chlorine Institute	Safety Valve for Chlorine Service	49 CFR 173.315(i)(13)
CI	2009	Chlorine Institute	Chlorine Institute Emergency Kit A for 100-lb. and 150-lb. Chlorine Cylinders	49 CFR 173.3(e)(1)
CI	2009	Chlorine Institute	Chlorine Institute Emergency Kit B for Chlorine Ton Containers	49 CFR 173.3(e)(1)
CIE 15	2004	International Commission on Illumination	Technical Report: Colorimetry, 3rd edition	10 CFR 430 Subpart B, App. R, 4.1.1
CIE 15A (xls)	2004	International Commission on Illumination	Supplementary Spectra	10 CFR 430 Subpart B, App. R, 4.1.1

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CIE 15B (USC)	2004	International Commission on Illumination	Supplemental Tables	10 CFR 430 Subpart B, App. R, 4.1.1
CRA A-20	1986	Corn Refiners Association	Analysis for Starch in Corn	7 CFR 801.7(a)(2)
CSA C390	1993	Canadian Standards Association	Energy Efficiency Test Methods for Three-Phase Induction Motors	10 CFR 431.19(b)(4)
CTIOA R8-103-62	1969	Ceramic Tile Institute of America	Standard Specifications for the Installation of Tile Lined Shower Receptors	24 CFR 200, Subpart S
CSVA	2004	Commercial Vehicle Safety Alliance	North American Standard Out-of-Service Criteria and Level VI Inspection Procedures and Out-of-Service Criteria for Commercial Highway Vehicles	49 CFR 385.415(b)(1)
EI IP-501	2005	Energy Institute	Determination of aluminum, silicon, vanadium, nickel, iron, sodium, calcium, zinc and phosphorus in residual fuel oil	40 CFR 1065.705 Table 1
FGMA	1990	Flat Glass Marketing Association	Glazing Manual	24 CFR 200, Subpart S
GLI METHOD 2	2009	Great Lakes Instruments	Turbidity	40 CFR 141.74(a)(1)
GPA 2261	2000	Gas Producers Association	Analysis of Natural Gas and Similar Gaseous Mixtures by Gas Chromatography	40 CFR 75, Appendix F, Section 5.5.2
GPA 2261	2000	Gas Processors Association	Analysis of Natural Gas and Similar Gaseous Mixtures by Gas Chromatography	40 CFR 75, Appendix F
GPA 2377	1986	Gas Processors Association	Test for Hydrogen Sulfide and Carbon Dioxide in Natural Gas Using Length of Stain Tubes	40 CFR 60.334(h)(1)
GRI 02-0057	2002	Gas Research Institute	Internal Corrosion Direct Assessment of Gas Transmission Pipelines Methodology	49 CFR 192.927(c)(2)
HACH 8000	2007	Hach Chemical Company	Oxygen Demand, Chemical Using Reactor Digestion Method	40 CFR 136.3(a)
HACH 8008	2007	Hach Chemical Company	1, 10--Phenanthroline Method Using FerroVer Iron Reagent for Water	40 CFR 136.3(a)
HACH 8009	2007	Hach Chemical Company	Zincon Method for Zinc, Hatch Handbook of Water Analysis	40 CFR 444.12(b)(1)
HACH 8034	2007	Hach Chemical Company	Periodate Oxidation Method for Manganese	40 CFR 136.3(a)
HACH 8507	2007	Hach Chemical Company	Nitrogen Nitrite--Low Range, Diazotization Method for Water and Wastewater	40 CFR 136.3(a)
HI BTS-2000	2007	Hydronics Institute	Method to Determine Efficiency of Commercial Space Heating Boilers	10 CFR 431.86
HPMA HP-SG-96	1996	Hardwood Plywood Manufacturers Association	Structural Design Guide for Hardwood Plywood Wall Panels	24 CFR 3280.304(b)(1)

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IAPMO PS-2	1989	International Association of Plumbing and Mechanical Officials	Material and Property Standard for Cast Brass and Tubing P-Traps	24 CFR 3280.604(b)(2)
IAPMO PS-5	1984	International Association of Plumbing and Mechanical Officials	Material and Property Standard for Special Cast Iron Fittings	24 CFR 3280.604(b)(2)
IAPMO PS-9	1984	International Association of Plumbing and Mechanical Officials	Material and Property Standard for Diversion Tees and Twin Waste Elbow	24 CFR 3280.604(b)(2)
IAPMO PS-14	1989	International Association of Plumbing and Mechanical Officials	Material and Property Standard for Flexible Metallic Water Connectors	24 CFR 3280.604(b)(2)
IAPMO PS-23	1989	International Association of Plumbing and Mechanical Officials	Material and Property Standard for Dishwasher Drain Airgaps	24 CFR 3280.604(b)(2)
IAPMO PS-31	1977	International Association of Plumbing and Mechanical Officials	Material and Property Standard for Backflow Prevention Devices	24 CFR 3280.604(b)(2)
ICAO 9284	2011	International Civil Aviation Organization	Technical Instructions for the Safe Transport of Dangerous Goods by Air	49 CFR 171.7
ICAO Annex 2	1990	International Civil Aviation Organization	Convention on International Civil Aviation, Rules of the Air	14 CFR 135.3(a)(2)
ICAO Annex 16	2008	International Civil Aviation Organization	Environmental Protection, Volume II -- Aircraft Engine Emissions	40 CFR 87.89
ICBO	1991	International Conference of Building Officials	Uniform Building Code (1991)	24 CFR 200.925c(a)(1)(iii)
ICBO	1991	International Conference of Building Officials	Uniform Mechanical Code (1991)	24 CFR 200.925c(c)(3)
ICEA S-87-640	2006	Insulated Cable Engineers Association	Standard for Optical Fiber Outside Plant Communications Cable	7 CFR 901(c)
ICEA S-110-717	2003	Insulated Cable Engineers Association	Standard for Optical Drop Cable	7 CFR 901(c)
ICS	1973	International Chamber of Shipping	Clean Seas Guide for Oil Tankers	33 CFR 157.23(b)
IEEE 45	2002	Institute of Electrical and Electronics Engineers	Recommended Practice for Electrical Installations on Shipboard	46 CFR 110.10-1
IEEE 112	2004	Institute of Electrical and Electronics Engineers	Test Procedure for Polyphase Induction Motors and Generators	10 CFR 431.15
IEEE 114	2010	Institute of Electrical and Electronics Engineers	IEEE Standard Test Procedure for Single-Phase Induction Motors	10 CFR 431

IEEE 1202 (pdf) IEEE 1202 (html)	1991	Institute of Electrical and Electronics Engineers	Standard for Flame Testing of Cables	46 CFR 111
IEEE C2	1997	Institute of Electrical and Electronics Engineers	National Electrical Safety Code	7 CFR 1755.503(d)(1)
IEEE C2	2007	Institute of Electrical and Electronics Engineers	National Electrical Safety Code (2007)	7 CFR 1755.901(b)
IEEE C37.14	2002	Institute of Electrical and Electronics Engineers	Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures	46 CFR 110.10-1
IEEE P730.1	1989	Institute of Electrical and Electronics Engineers	Standard for Software Quality Assurance Plans	7 CFR 1755.522(n)(2)
IESNA LM-45	2000	Illuminating Engineering Society of North America	Method for Electrical and Photometric Measurements of General Service Incandescent Filament Lamps	10 CFR 430 Subpart B
IME 22	2011	Institute of Makers of Explosives	Recommendations for the Safe Transportation of Detonators in a Vehicle with Certain Other Explosive Materials	30 CFR 57.6133(b)
IME	1940	Institute of Makers of Explosives	Safety in the Handling and Use of Explosives	29 CFR 1910.261(a)(4)(iii)
IMO IMDG.1	2006	International Maritime Organization	International Maritime Dangerous Goods Code (Volume 1)	49 CFR 172.519(f)
IMO IMDG.2	2006	International Maritime Organization	International Maritime Dangerous Goods Code (Volume 2)	49 CFR 172.519(f)
IMO ISPS	2003	International Maritime Organization	International Ship and Port Facility Security Code	33 CFR 101.410(a)
AG ENG	1965	Interstate Printers and Publishers, Inc.	Agriculture Engineering	29 CFR 570.71(b)
ISO 535	1991	International Organization for Standardization	Paper and Board--Determination of Water Absorptiveness--Cobb Method	49 CFR 178.516(b)(1)
ISO 1496-1	1990	International Organization for Standardization	Series 1 Freight Containers--Specification and Testing--Part 1, General Cargo Containers	49 CFR 173.411(b)(6)(iii)
ISO 1496-3	1995	International Organization for Standardization	Series 1 Freight Containers--Specification and Testing--Part 3, Tank containers for Liquids, Gases and Pressurized Dry Bulk	49 CFR 178.74(c)(5)(ii)
ISO 3807-2	2000	International Organization for Standardization	Cylinders for acetylene--Basic requirements--Part 2: Cylinders with fusible plugs	49 CFR 173.303(f)(1)
ISO 6406 (pdf) ISO 6406 (html)	2005	International Organization for Standardization	Seamless Steel Gas Cylinders--Inspection and Testing	49 CFR 180
ISO 7225	2005	International Organization for Standardization	Gas Cylinders--Precautionary Labels	49 CFR 178.71(r)(2)

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ISO 7866	1999	International Organization for Standardization	Aluminum Alloy Gas Cylinders--Design, Construction and Testing	49 CFR 171.7
ISO 8115	1986	International Organization for Standardization	Cotton bales—Dimensions and density	49 CFR 171.7
ISO 9809-1	1999	International Organization for Standardization	Gas Cylinders--Refillable Seamless Steel Gas Cylinders--Design, Construction and Testing--Part 1: Quenched and Tempered Steel Cylinders with Tensile Strength less than 1 100 MPa	49 CFR 178.71(g)(1)
ISO 9809-2	2000	International Organization for Standardization	Gas Cylinders--Refillable Seamless Steel Gas Cylinders--Design, Construction and Testing--Part 2: Quenched and Tempered Steel Cylinders with Tensile Strength Greater than or Equal to 1 100 MPa	49 CFR 178.71(g)(2)
ISO 9809-3	2000	International Organization for Standardization	Gas Cylinders--Refillable Seamless Steel Gas Cylinders--Design, Construction and Testing--Part 3: Normalized Steel Cylinders	49 CFR 178.71(g)(3)
ISO 9978	1992	International Organization for Standardization	Sealed Radioactive Sources--Leak Test Methods	49 CFR 173.469(a)(4)(ii)
ISO 10297	1999	International Organization for Standardization	Gas cylinders--Refillable gas cylinder valves--Specification and type testing	49 CFR 173.301b(c)(1)
ISO 10461 (pdf) ISO 10461 (html)	2005	International Organization for Standardization	Seamless Aluminum Alloy Gas Cylinders--Inspection and Testing	49 CFR 180
ISO 10462 (pdf) ISO 10462 (html)	2005	International Organization for Standardization	Transportable Cylinders for Dissolved Acetylene	49 CFR 180
ISO 11114-1	1997	International Organization for Standardization	Transportable gas cylinders--Compatibility of cylinder and valve materials with gas contents--Part 1: Metallic materials	49 CFR 173.301b(a)(2)
ISO 11114-2	2000	International Organization for Standardization	Transportable gas cylinders--Compatibility of cylinder and valve materials with gas contents--Part 2: Non- metallic materials	49 CFR 173.301b(a)(2)
ISO 11117	1998	International Organization for Standardization	Gas cylinders--Valve protection caps and valve guards for industrial and medical gas cylinders--Design, construction and tests	49 CFR 173.301b(c)(2)(ii)
ISO 11118	1999	International Organization for Standardization	Gas cylinders--Non-refillable metallic gas cylinders--Specification and test methods	49 CFR 178.71(i)
ISO 11119-1	2002	International Organization for Standardization	Gas cylinders--Gas cylinders of composite construction--Specification and test methods--Part 1: Hoop-wrapped composite gas cylinders	49 CFR 171.7

ISO 11119-2	2002	International Organization for Standardization	Gas cylinders—Gas cylinders of composite construction—Specification and test methods—Part 2: Fully wrapped fibre reinforced composite gas cylinders with load-sharing metal liners	49 CFR 171.7
ISO 11119-3	2002	International Organization for Standardization	Gas cylinders of composite construction--Specification and test methods--Part 3: Fully wrapped fibre reinforced composite gas cylinders with non-load-sharing metallic or non-metallic liners	49 CFR 171.7
ISO 11120	1999	International Organization for Standardization	Gas cylinders--Refillable seamless steel tubes of water capacity between 150 L and 3000 L--Design, construction and testing	49 CFR 178.71(j)
ISO 11621	1997	International Organization for Standardization	Gas cylinders--Procedures for change of gas service	49 CFR 173.301b(a)(2)
ISO 11623 (pdf) ISO 11623 (html)	2002	International Organization for Standardization	Periodic Inspection and Testing of Composite Gas Cylinders	49 CFR 180
ISO 11660-1 (pdf) ISO 11660-1 (html)	2008	International Organization for Standardization	Cranes: Access, Guards and Restraints: General	29 CFR 1926
ISO 11660-2 (pdf) ISO 11660-2 (html)	1994	International Organization for Standardization	Cranes: Access, Guards and Restraints: Mobile Cranes	29 CFR 1926
ISO 11660-3 (pdf) ISO 11660-3 (html)	2008	International Organization for Standardization	Cranes: Access, Guards and Restraints: Tower Cranes	29 CFR 1926
ISO 14230-4	2000	International Organization for Standardization	Road Vehicles--Diagnostic Systems	40 CFR 1048.110(g)(2)
ISO 18902 (pdf) ISO 18902 (html)	2001	International Organization for Standardization	Photographic Processed Films, Plates, and Papers	36 CFR 1237
ISO 18906 (pdf) ISO 18906 (html)	2000	International Organization for Standardization	Photographic Films--Specifications for Safety Film	36 CFR 1237
ITU-R M-493-11	2004	International Telecommunication Union	Digital Selective-calling System for Use in the Maritime Mobile Service, with Annexes 1 and 2	47 CFR 80.1101(c)(2)(ii)
ITU-R M-541-8	1997	International Telecommunication Union	Operational Procedures for the Use of Digital Selective-Calling Equipment in the Maritime Mobile Service	47 CFR 80.1101(c)(4)(iii)
ITU-R M-541-9	2004	International Telecommunication Union	Operational Procedures for the Use of Digital Selective-Calling Equipment in the Maritime Mobile Service	47 CFR 80.1101(c)(2)(iii)
ITU-R M-628-3	1994	International Telecommunication Union	Technical Characteristics for Search and Rescue Radar Transponders	47 CFR 80.1101(c)(6)(ii)

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ITU-R M-632-3	1997	International Telecommunication Union	Transmission Characteristics of a Satellite Emergency Position Indicating Radio Beacon	47 CFR 80.1101(c)(11)(iii)
ITU-R M-633-3	2004	International Telecommunication Union	Transmission characteristics of a satellite emergency position-indicating radiobeacon system operating through a low polar-orbiting satellite system	47 CFR 80.1101(c)(5)(iii)
ITU-R M-1371-1	2001	International Telecommunication Union	Technical Characteristics for a Universal Shipborne Automatic Identification System Using Time Division Multiple Access	47 CFR 80.1101(c)(12)(i)
ITU-T E.161	2001	International Telecommunication Union	Arrangement of Digits, Letters and Symbols on Telephones and Other Devices that Can Be Used for Gaining Access to a Telephone Network	47 CFR 80.1101(b)(2)
ITU-T E.164.1	2008	International Telecommunication Union	Numbering Plan of the International Telephone Service	47 CFR 80.1101(b)(3)
LACHAT 10-204	2008	Lachat Instruments	Digestion and Distillation of Total Cyanide in Drinking and Wastewaters	40 CFR 136.3(a) Table IB
STEAM	1917	Commonwealth of Massachusetts	District Police Steam Boiler Rules	
MSS SP-44	1996	Manufacturers Standardization Society	Steel Pipe Line Flanges	46 CFR 56.01-2
MSS SP-75	2004	Manufacturers Standardization Society	Specification for High-Test Wrought Butt Welding Fittings	49 CFR 118(a)
NACE RP-0502	2002	National Association of Corrosion Engineers	Pipeline External Corrosion Direct Assessment Methodology	49 CFR 192.925(b)(3)
NACM	2003	National Association of Chain Manufacturers	Welded Steel Chain Specifications	49 CFR 393.104(e)(2)
NAS	1972	National Academy of Sciences	Food Chemicals Codex (1972)	21 CFR 701.3(c)(2)(iv)
NAS	1996	National Academy of Sciences	Food Chemicals Codex (1996)	21 CFR 184
NAS	2011	National Academy of Sciences	Prudent Practices in the Laboratory: Handling and Disposal of Chemicals	42 CFR 52b.12(c)(6)
NCASI 98-01	1998	National Council of the Paper Industry for Air and Stream Improvements	Chilled Impinger Method For Use At Wood Products Mills to Measure Formaldehyde, Methanol, and Phenol	40 CFR 63, Subpart DDDD
NCASII 94-03	2002	National Council of the Paper Industry for Air and Stream Improvements	Methanol in Process Liquids by Gas Chromatography/Flame Ionization Detection	40 CFR 63.457(c)(3)(ii)
NCASI A105	2001	National Council of the Paper Industry for Air	Impinger Source Sampling Method for Selected Aldehydes, Ketones,	40 CFR 63, Subpart DDDD

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NCASI 99-02	2002	National Council of the Paper Industry for Air and Stream Improvements	Impinger/Canister Source Sampling Method For Selected HAPs and Other Compounds at Wood Products Facilities	40 CFR 63, Subpart DDDD
NCCA	2011	National Cotton Council of America	Specifications for Cotton Bale Packaging Material	7 CFR 1427.5(b)(10)
UCC	2002	National Conference of Commissioners on Uniform State Laws	2002 Official Text and Comments, Sections 8–102 and 8-103	17 CFR 270.17f-4(c)(1)
UCC	2002	National Conference of Commissioners on Uniform State Laws	2002 Official Text and Comments, Sections 8–501 through 8–511	17 CFR 270.17f-4(c)(1)
NCUTLO	1969	National Committee on Uniform Traffic Laws and Ordinances	Uniform Vehicle Code and Model Ordinance	41 CFR 50-204.75
NFPA 10 (pdf) NFPA 10 (html) NFPA 10 (svg)	2002	National Fire Protection Association	Standard for Portable Fire Extinguishers	29 CFR 1915
NFPA 11 (pdf) NFPA 11 (html)	2005	National Fire Protection Association	Standard for Foam	29 CFR 1915
NFPA 12 (pdf) NFPA 12 (html)	2005	National Fire Protection Association	Standard for Carbon Dioxide Extinguishing Systems	29 CFR 1915
NFPA 13	2002	National Fire Protection Association	Standard for the Installation of Sprinkler Systems	36 CFR 1234.12(i)
NFPA 25 (pdf) NFPA 25 (html)	2002	National Fire Protection Association	Standard for Water-Based Fire Protection Systems	29 CFR 1915
NFPA 30 (pdf) NFPA 30 (html)	2003	National Fire Protection Association	Flammable and Combustible Liquids Code	49 CFR 192
NFPA 54 (pdf) NFPA 54 (html) NFPA 54 (svg)	2002	National Fire Protection Association	National Fuel and Gas Code	24 CFR 3280
NFPA 58 (pdf) NFPA 58 (html)	2001	National Fire Protection Association	Standard for Liquefied Petroleum Gases	49 CFR 173
NFPA 58	2004	National Fire Protection Association	Standard for the Storage and Handling of Liquefied Petroleum Gases	49 CFR 192.11(b)
NFPA 59	2004	National Fire Protection Association	Standard for the Storage and Handling of Liquefied Petroleum Gases at Utility Gas Plants	49 CFR 192.11(b)
NFPA 72 (pdf) NFPA 72 (html) NFPA 72 (svg)	2002	National Fire Protection Association	National Fire Alarm Code	29 CFR 1915
NFPA 99	2005	National Fire Protection Association	Standard for Health Care Facilities	38 CFR 51.200(b)(4)
NFPA 101 (pdf) NFPA 101 (html)	2000	National Fire Protection Association	Life Safety Code	59 CFR 130
NFPA 704	2007	National Fire Protection Association	Standard System for the Identification of the Hazards of Materials for Emergency Response	6 CFR 27.204(a)(2)

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NFPA D 951	1951	National Fire Protection Association	Report of Impacts and Explosions	
NFPA HOST	1953	National Fire Protection Association	Handling Hose and Ladders	
NFPA 70	2005	National Fire Protection Association	National Electrical Code	49 CFR 192.189(c)
NACHA	2005	National Automated Clearing House Association	A Complete Guide to the Rules Governing the ACH Network	45 CFR 162.920
ISS-MCB	2011	International Space Station Multilateral Coordination Board	International Docking Standard	1 Code of Intergalactic Regulations 32
NCRP 33	1968	National Council on Radiation Protection and Measurement	Medical X-ray and Gamma-Ray Protection for Energies Up to 10 MeV--Equipment Design and Use	42 CFR 37.43
NCRP 48	1976	National Council on Radiation Protection and Measurement	Medical Radiation Protection for Medical and Allied Health Personnel	42 CFR 37.43
NCRP 49	1976	National Council on Radiation Protection and Measurement	Structural Shielding Design and Evaluation for Medical Use of X-Rays and Gamma-Rays up to 10 MeV	42 CFR 37.43
NEMA MG-1	2009	National Electrical Manufacturers Association	Motors and Generators	10 CFR 431
NSF 61 (pdf) NSF 61 (html)	2001	National Sanitation Foundation	Drinking Water System Components--Health Effects	24 CFR 3280
OECD 404	2002	Organization for Economic Cooperation and Development	Guideline for Testing of Chemicals, Acute Dermal Irritation/Corrosion	49 CFR 173.137
OECD C93	1974	Organization for Economic Cooperation and Development	Green List of Wastes	40 CFR 262.89(e)
OR REG	1975	State of Oregon	Oregon Grade Standards Hazelnuts in Shell	7 CFR 982.45(a)
ORION	1970	ORION Research Incorporated	Residual Chlorine Electrode Model 97-70	40 CFR 136.3(a) Table IB
PCI MNL-121	1977	Precast/Prestressed Concrete Institute	Manual for Structural Design of Architectural Precast Concrete	24 CFR 200, Subpart S
PCI MNL-117-77	1977	Precast/Prestressed Concrete Institute	Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products	24 CFR 200, Subpart S
PCSA 1	1968	Power Crane and Shovel Association	Mobile Crane and Excavator Standards	29 CFR 1926.602(b)(3)
PCSA 2	1968	Power Crane and Shovel Association	Mobile Hydraulic Crane Standards	29 CFR 1926.602(b)(3)
PCSA 3	1969	Power Crane and Shovel Association	Mobile Hydraulic Excavator Standards	29 CFR 1926.602(b)(3)
PPI TR-3	2004	Plastics Pipe Institute	Policies and Procedures for Developing Hydrostatic Design Bases (HDB), Pressure Design	49 CFR 192.121

RTCM C071	1995	Radio Technical Commission for Maritime Services	Recommended Standards for Marine Radar Equipment Installed on Ships of Less Than 300 Tons Gross Tonnage	33 CFR 164.72(a)(1)(i)(B)
RTCM C191	1993	Radio Technical Commission for Maritime Services	Recommended Standards for Marine Radar Equipment Installed on Ships of 300 Tons Gross Tonnage and Upwards	33 CFR 164.72(a)(1)(iii)(B)
SAE Paper 770141	1977	Society of Automotive Engineers	Optimization of a Flame Ionization Detector for Determination of Hydrocarbon in Diluted Automotive Exhausts	40 CFR 1065.360(c)
SAE J4C	1965	Society of Automotive Engineers	Motor Vehicle Seat Belt Assembly	29 CFR 1928.51(b)(2)(ii)
SAE J30	1998	Society of Automotive Engineers	Fuel and Oil Hoses	40 CFR 1051.501(c)(2)
SAE J166	1971	Society for Automotive Engineering	Minimum Performance Criteria for Brake Systems for Off-Highway Trucks and Wagons	29 CFR 1926.602(a)(4)
SAE J166	1971	Society of Automotive Engineers	Minimum Performance Criteria for Brake Systems for Off-Highway Trucks and Wagons	29 CFR 1926.602(a)(4)
SAE J167	1970	Society for Automotive Engineering	Protective Frame with Overhead Protection	29 CFR 1926.1003(g)
SAE J167	1974	Society of Automotive Engineers	Protective Frame with Overhead Protection	30 CFR 77.403-1(d)(1)(v)
SAE J168	1970	Society for Automotive Engineering	Protective Enclosures--Test Procedures and Performance Requirements	29 CFR 1926.1002(a)(5)(i)
SAE J185	1988	Society of Automotive Engineers	Recommended Practice for Access Systems for Off-Road Machines	29 CFR 1910.266(f)(5)(i)
SAE J186A	1977	Society of Automotive Engineers	Supplemental High Mounted Stop and Rear Turn Signal Lamps	49 CFR 571.108
SAE J211-1 (pdf) SAE J211-1 (html)	1995	Society of Automotive Engineers	Instrumentation for Impact Test	49 CFR 571
SAE J211	1971	Society of Automotive Engineers	Instrumentation for Impact Tests	49 CFR 571.222 S6.6.2
SAE J222	1970	Society of Automotive Engineers	Parking Lamps (Position Lamps)	49 CFR 571.108 S5.1.1.6
SAE J231	1971	Society for Automotive Engineering	Minimum Performance Criteria for Falling Object Protective Structures (FOPS)	30 CFR 77.403(a)
SAE J231	1971	Society of Automotive Engineers	Minimum Performance Criteria for Falling Object Protective Structures (FOPS)	30 CFR 77.403(a)
SAE J231	1981	Society of Automotive Engineers	Minimum Performance Criteria for Falling Object Protective Structures	29 CFR 1910.266(f)(3)(iii)

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SAE J236	1971	Society for Automotive Engineering	Minimum Performance Criteria for Brake Systems for Rubber Tire Self-Propelled Graders	29 CFR 1926.602(a)(4)
SAE J237	1971	Society for Automotive Engineering	Minimum Performance Criteria for Brake Systems for Off-Highway Rubber-Tired Front End Loaders and Dozers	29 CFR 1926.602(a)(4)
SAE J244	1983	Society for Automotive Engineering	Recommend Practice for Measurement of Intake Air or Exhaust Gas Flow of Diesel Engines	40 CFR 92.108(a)(3)
SAE J319	1971	Society of Automotive Engineers	Minimum Performance Criteria for Brake Systems for Off-Highway Rubber-Tired Self-Propelled Scrapers	29 CFR 1926.602(a)(4)
SAE J320	1972	Society for Automotive Engineering	Minimum Performance Criteria for Roll-Over Protective Structures for Rubber-Tired Self-Propelled Scrapers	29 CFR 1926.1001(h)
SAE J320A	1969	Society of Automotive Engineers	Minimum Performance Criteria for Roll-Over Protective Structures for Rubber-Tired Self-Propelled Scrapers	30 CFR 77.403-1(d)(1)(i)
SAE J321	1970	Society of Automotive Engineers	Fenders for Pneumatic-Tired Earthmoving Haulage Equipment	29 CFR 1926.602(a)(5)
SAE J333	1970	Society for Automotive Engineering	Operation Protection for Wheel-Type Agricultural and Industry Tractors	29 CFR 1926.602(a)(2)
SAE J334	1968	Society of Automotive Engineers	Protective Frame Test Procedures and Performance Requirements	30 CFR 77.403-1(d)(1)(vi)
SAE J334	1970	Society for Automotive Engineering	Protective Frame Test Procedures and Performance Requirements	30 CFR 77.403-1(d)(1)(vi)
SAE J386	1969	Society of Automotive Engineers	Operator Restraint Systems for Off-Road Work Machines	29 CFR 1926.602(a)(2)
SAE J386	1985	Society for Automotive Engineering	Operator Restraint Systems for Off-Road Work Machines	30 CFR 56.14130(h)
SAE J386	1993	Society of Automotive Engineers	Operator Restraint Systems for Off-Road Work Machines	30 CFR 56.14130(h)
SAE J386	1997	Society of Automotive Engineers	Operator Restraint Systems for Off-Road Work Machines	30 CFR 57.14131(c)
SAE J387 (pdf) SAE J387 (html)	1987	Society of Automotive Engineers	Terminology: Motor Vehicle Lighting	49 CFR 571
SAE J394	1969	Society of Automotive Engineers	Minimum Performance Criteria for Roll-Over Protective Structures for Rubber-Tired Front End Loaders and Rubber-Tired Dozers	30 CFR 77.403-1(d)(1)(ii)
SAE J394	1972	Society of Automotive Engineers	Minimum Performance Criteria for Rollover Protective Structures for Wheeled Front-End Loaders and Wheeled Dozers	30 CFR 77.403-1(d)(1)(ii)
SAE J395	1969	Society of Automotive	Minimum Performance Criteria for	30 CFR 77.403-1(d)(1)

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SAE J396	1972	Society for Automotive Engineering	Minimum Performance Criteria for Roll-Over Protective Structures for Motor Graders	30 CFR 77.403-1(d)(1)(iv)
SAE J397	1969	Society of Automotive Engineers	Deflection Limiting Volume-Protective Structures Laboratory Evaluation	29 CFR 1926.1001(f)(1)(ii)
SAE J397	1988	Society of Automotive Engineers	Deflection Limiting Volume-Protective Structures Laboratory Evaluation	29 CFR 1910.266(f)(3)(iv)
SAE J429	1971	Society for Automotive Engineering	Mechanical and Quality Requirements for Externally Threaded Fasteners	30 CFR 77.403-1(d)(2)(iii)(B)
SAE J429	1983	Society of Automotive Engineers	Mechanical and Quality Requirements for Externally Threaded Fasteners	46 CFR 58.30-15(c)
SAE J429D	1967	Society of Automotive Engineers	Mechanical and Quality Requirements for Externally Threaded Fasteners	30 CFR 77.403-1(d)(2)(iii)(B)
SAE J449a	1963	Society of Automotive Engineers	Surface Texture Control	49 CFR 581.6(b)(1)
SAE J476a	1961	Society of Automotive Engineers	Dryseal Pipe Threads	49 CFR 393.67(c)(3)
SAE J527	1967	Society of Automotive Engineers	Brazed Double Wall Low Carbon Steel Tubing	49 CFR 571.116 S6.13.3(b)
SAE J533	1972	Society of Automotive Engineers	Flares for Tubing	24 CFR 3280.703
SAE J557	1968	Society of Automotive Engineers	High Tension Ignition Cable	33 CFR 183.440(a)
SAE J565	1969	Society of Automotive Engineers	Semi-Automatic Headlamp Beam Switching Devices	49 CFR 571.108 S5.5.1
SAE J566	1960	Society of Automotive Engineers	Headlamp Mountings	49 CFR 571.108
SAE J571	1976	Society of Automotive Engineers	Dimensional Specification for Sealed Beam Headlamp Units	49 CFR 571.108
SAE J573d (pdf) SAE J573d (html)	1968	Society of Automotive Engineers	Requirements for Lamp Bulbs and Sealed Units	49 CFR 571
SAE J575	1970	Society of Automotive Engineers	Test for Motor Vehicle Lighting Devices and Components	49 CFR 571.108 S6.1
SAE J575	1983	Society for Automotive Engineering	Test for Motor Vehicle Lighting Devices and Components	49 CFR 571.131 S6.2.3
SAE J575	1988	Society of Automotive Engineers	Test for Motor Vehicle Lighting Devices and Components	49 CFR 571.108 S7.5.8.3(e)
SAE J576	1970	Society of Automotive Engineers	Plastic Materials for Use in Optical Parts, such as Lenses and Reflectors, of Motor Vehicle Lighting Devices	49 CFR 571.108 S6.2
SAE J576 (pdf)	1991	Society of Automotive	Plastic Materials for Use in Optical	49 CFR 571

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SAE J576B	1966	Society of Automotive Engineers	Plastic Materials for Use in Optical Parts, such as Lenses and Reflectors, of Motor Vehicle Lighting Devices	49 CFR 571.108 S6.2
SAE J578 (pdf) SAE J578 (html)	1995	Society of Automotive Engineers	Color Specifications for Electric Signal Lighting Devices	49 CFR 571.403
SAE J584	1964	Society of Automotive Engineers	Motorcycle and Motor Driven Cycle Headlamps	49 CFR 571.108 S7.9.1(a)
SAE J584 (pdf) SAE J584 (html)	1993	Society of Automotive Engineers	Requirements for Motorcycle Headlamps	49 CFR 571
SAE J585	1970	Society for Automotive Engineering	Tail Lamps (Rear Position Lamps) for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 571.108 S5.8.8
SAE J585	1977	Society for Automotive Engineering	Tail Lamps (Rear Position Lamps) for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 571.108 S5.1.1.6
SAE J585	2000	Society of Automotive Engineers	Tail Lamps (Rear Position Light)	49 CFR 571.108 S6.1
SAE J586	1970	Society of Automotive Engineers	Stop Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width	49 CFR 571.108 S5.8.3(b)
SAE J586	1984	Society for Automotive Engineering	Stop Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 571.108 S6.1
SAE J586	2000	Society of Automotive Engineers	Stop Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width	49 CFR 571.108 S6.1
SAE J586B	1966	Society of Automotive Engineers	Stop Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width	49 CFR 571.108 S5.8.3(a)
SAE J587 (pdf) SAE J587 (html)	1981	Society of Automotive Engineers	License Plate Lamps (Rear Registration Lamps)	49 CFR 571
SAE J588	1970	Society for Automotive Engineering	Turn Signal Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 571.108 S5.1.1.1
SAE J588	1970	Society of Automotive Engineers	Turn Signal Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 571.108 S5.8.4(b)
SAE J588 (pdf) SAE J588 (html)	1984	Society of Automotive Engineers	Requirements for Turn Signal Lamps	49 CFR 571
SAE J588	2000	Society of Automotive Engineers	Turn Signal Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 393.25(c)
SAE J588D	1966	Society of Automotive Engineers	Turn Signal Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width	49 CFR 571.108 S5.8.4(a)
SAE J592	1972	Society of Automotive Engineers	Clearance, Side Marker and Identification Lamps	49 CFR 571.108 Table III
SAE J592 (pdf) SAE J592 (html)	1992	Society of Automotive Engineers	Clearance, Side Marker, and Identification Lamps	49 CFR 571

SAE J593C SAE J593C (pdf) SAE J593C (html)	1983	Society of Automotive Engineers	Back-up Lamps	49 CFR 571.408
SAE J594f (pdf) SAE J594f (html)	1977	Society of Automotive Engineers	Requirements for Reflex Reflectors	49 CFR 571
SAE J599	1997	Society of Automotive Engineers	Lighting Inspection Code	49 CFR 581.5(c)(1)
SAE J602 (pdf) SAE J602 (html)	1980	Society of Automotive Engineers	Mechanically Aimable Sealed Beam Headlamps	49 CFR 571
SAE J743A	1964	Society of Automotive Engineers	Tractor Mounted Side Boom	29 CFR 1926.550(a)(18)
SAE J759 (pdf) SAE J759 (html)	1995	Society of Automotive Engineers	Lighting Identification Code	49 CFR 571
SAE J800C	1973	Society of Automotive Engineers	Recommended Practice, Motor Vehicle Seat Belt Installations	49 CFR 571.209
SAE J826	1962	Society of Automotive Engineers	Devices for Use in Defining and Measuring Vehicle Seating Accommodations	49 CFR 571.3(b)
SAE J826	1980	Society for Automotive Engineering	Devices for Use in Defining and Measuring Vehicle Seating Accommodations	49 CFR 571.214 S12.1.3(b)(1)
SAE J826 (pdf) SAE J826 (html)	1995	Society of Automotive Engineers	Defining and Measuring Vehicle Seating Accommodation	49 CFR 571
SAE J839	1991	Society of Automotive Engineers	Passenger Car Side Door Latch System	49 CFR 571.206
SAE J839B	1965	Society of Automotive Engineers	Passenger Car Side Door Latch System	49 CFR 571.201
SAE J845	1997	Society of Automotive Engineers	Optical Warning Devices for Authorized Emergency, Maintenance and Service Vehicles	49 CFR 393.25(e)
SAE J887	1964	Society of Automotive Engineers	School Bus Red Signal Lamps	49 CFR 571.108
SAE J902A	1967	Society of Automotive Engineers	Passenger Car Windshield Defrosting Systems	49 CFR 571.103
SAE J934	1965	Society of Automotive Engineers	Recommended Practice for Vehicle Passenger Door Hinge Systems	49 CFR 571.206
SAE J942	1965	Society of Automotive Engineers	Passenger Car Windshield Washer System	49 CFR 571.104
SAE J944	1980	Society for Automotive Engineering	Steering Control System-Passenger Car-Laboratory Test Procedure	49 CFR 571.203 S5.1(a)
SAE J945	1966	Society of Automotive Engineers	Vehicular Hazard Warning Signal Flashers	49 CFR 571.108 Table I
SAE J959	1966	Society of Automotive Engineers	Lifting Crane Wire-Rope Strength Factors	29 CFR 1926.550(a)(7)(vi)
SAE J964	1984	Society for Automotive Engineering	Test Procedure for Determining Reflectivity of Rear View Mirrors	49 CFR 571.111
SAE J972	1966	Society of Automotive Engineers	Moving Barrier Collision Test	49 CFR 571.105
SAE J995	1967	Society of Automotive Engineers	Mechanical and Quality Requirements for Steel Nuts	30 CFR 77.403-1(d)(2)(iii)(B)

SAE J995	1971	Society of Automotive Engineers	Mechanical and Quality Requirements for Steel Nuts	30 CFR 77.403(d)(2)(iii)(B)
SAE J1040	1994	Society of Automotive Engineers	Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry and Mining Machines	30 CFR 56.14130(b)(1)
SAE J1063	1993	Society of Automotive Engineers	Cantilevered Boom Crane Structures--Method of Test	29 CFR 1926.1433(c)
SAE J1100	1984	Society for Automotive Engineering	Motor Vehicle Dimensions	49 CFR 571.3(b)
SAE J1100 (pdf) SAE J1100 (html)	2001	Society of Automotive Engineers	Motor Vehicle Dimensions	49 CFR 571
SAE J1127	1980	Society for Automotive Engineering	Battery Cable	33 CFR 183.430(a)(2)(ii)
SAE J1128	1975	Society of Automotive Engineers	Low Tension Primary Cable	33 CFR 183.430(a)(2)(ii)
SAE J1133	1984	Society for Automotive Engineering	School Bus Stop Arm	49 CFR 571.131 S6.2.3
SAE J1151	1991	Society of Automotive Engineers	Methane Measurement Using Gas Chromatography	40 CFR 86.111-94(b)(3)(vii)
SAE J1194	1983	Society for Automotive Engineering	Roll-Over Protective Structures for Wheeled Agricultural Tractors	30 CFR 56.14130(h)
SAE J1194	1994	Society of Automotive Engineers	Roll-Over Protective Structures for Wheeled Agricultural Tractors	30 CFR 56.14130(h)
SAE J1194	1999	Society of Automotive Engineers	Roll-Over Protective Structures for Wheeled Agricultural Tractors	30 CFR 57.14130(h)
SAE J1228	1991	Society of Automotive Engineers	Small Craft-Marine Propulsion Engine and Systems-Power Measurements and Declarations	40 CFR 91.115(a)
SAE J1292	1981	Society of Automotive Engineers	Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring	49 CFR 393.28
SAE J1318	1986	Society of Automotive Engineers	Gaseous Discharge Warning Lamp for Authorized Emergency, Maintenance, and Service Vehicles	49 CFR 393.25(e)
SAE J1383 (pdf) SAE J1383 (html)	1985	Society of Automotive Engineers	Performance Requirements for Motor Vehicle Headlamps	49 CFR 571
SAE J1395 (pdf) SAE J1395 (html)	1985	Society of Automotive Engineers	Turn Signal Lamps for Use on Motor Vehicles	49 CFR 571
SAE J1398 (pdf) SAE J1398 (html)	1985	Society of Automotive Engineers	Stop Lamps for Use on Motor Vehicles	49 CFR 571
SAE J1475	1984	Society for Automotive Engineering	Hydraulic Hose Fittings for Marine Applications	46 CFR 27.211(e)(2)(v)(B)
SAE J1527	1993	Society of Automotive Engineers	Marine Fuel Hoses	33 CFR 183.540(a)
SAE J1703	1983	Society for Automotive Engineering	Motor Vehicle Brake Fluid	49 CFR 571.116 S6.5.4.1
SAE J1703 (pdf) SAE J1703 (html)	1995	Society of Automotive Engineers	Motor Vehicle Brake Fluids	49 CFR 571
SAE J1733 (pdf)	1994	Society of Automotive	Sign Convention for Vehicle Crash	49 CFR 572

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SAE J1733 (html) SAE Case #17-7035	2001	Engineers	Testing	Filed: 01/31/2018	Page 319 of 460
SAE J1817	2001	Society of Automotive Engineers	Long Stroke Air Brake Actuator Marking		49 CFR 393.47(e)
SAE J1850	1995	Society of Automotive Engineers	Class B Data Communication Network Interface		40 CFR 86.099-17(h)(1)(i)
SAE J1850	2001	Society of Automotive Engineers	Class B Data Communication Network Interface		40 CFR 86.1806-05(h)(1)(i)
SAE J1877	1994	Society of Automotive Engineers	Recommended Practice for Bar-Coded Vehicle Identification Number Label		40 CFR 86.095-35(h)(2)(i)
SAE J1892	1993	Society of Automotive Engineers	Recommended Practice for Bar-Coded Vehicle Emission Configuration Label		40 CFR 86.095-35(h)(2)(i)
SAE J1930	1993	Society of Automotive Engineers	Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms		40 CFR 1039.135(c)(8)
SAE J1930	2002	Society of Automotive Engineers	Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms		40 CFR 86.1806-05(h)(1)(v)
SAE J1937	1989	Society of Automotive Engineers	Recommended Practice for Engine Testing with Low Temperature Charge Air Cooler Systems in a Dynamometer Test Cell		40 CFR 86.1330-90(b)(5)
SAE J1962	1995	Society of Automotive Engineers	Diagnostic Connector Equivalent to ISO/DIS		40 CFR 86.094-17(h)(4)
SAE J1962	2002	Society of Automotive Engineers	Diagnostic Connector Equivalent to ISO/DIS 15031		40 CFR 86.1806-05(h)(1)(iv)
SAE J1978	2002	Society of Automotive Engineers	OBD II Scan Tool Equivalent to ISO/DIS 15031-4		40 CFR 86.1806-05(h)(1)(vi)
SAE J1979	2002	Society of Automotive Engineers	E/E Diagnostic Test Modes		40 CFR 86.1806-05(h)(1)(ii)
SAE J2009 (pdf) SAE J2009 (html)	1993	Society of Automotive Engineers	Discharge Forward Lighting Systems		49 CFR 571
SAE J2012	2002	Society of Automotive Engineers	Diagnostic Trouble Code Definitions		40 CFR 86.1806-04(h)(1)(iii)
SAE J2040	2002	Society of Automotive Engineers	Tail Lamps (Rear Position Lamps) for Use on Vehicles 2032 mm or More in Overall Width		9 CFR 393.25(c)
SAE J2260	1996	Society of Automotive Engineers	Non-metallic Fuel System Tubing with One or More Layers		40 CFR 1048.105(a)(2)
SAE J2261	2002	Society of Automotive Engineers	Stop Lamps and Front- and Rear-Turn Signal Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width		49 CFR 393.25(c)
SAE J2534	2002	Society of Automotive Engineers	Recommended Practice for Pass-Thru Vehicle Programming		40 CFR 86.096-38(g)(17)(iv)
SCTE 26	2010	Society of Cable Telecommunications Engineers	Home Digital Network Interface Specification with Copy Protection		47 CFR 76.640(b)(4)(iii)
SCTE 28	2007	Society of Cable	Host-POD Interface Standard		47 CFR 15.123(b)(4)

USCA Case #17-7035		Telecommunications Engineers	Document #1715850	Filed: 01/31/2018 Page 320 of 460
SCTE 40	2004	Society of Cable Telecommunications Engineers	Digital Cable Network Interface Standard (2004)	47 CFR 15.123(b)(2)
SCTE 40	2011	Society of Cable Telecommunications Engineers	Digital Cable Network Interface Standard (2011)	47 CFR 15.123(b)(2)
SCTE 41	2011	Society of Cable Telecommunications Engineers	POD Copy Protection System	47 CFR 76.640(b)(2)(ii)
SCTE 54	2009	Society of Cable Telecommunications Engineers	Digital Video Service Multiplex and Transport System Standard for Cable Television	47 CFR 15.123(b)(3)
SCTE 65	2008	Society of Cable Telecommunications Engineers	Service Information Delivered Out-of-Band for Digital Cable Television	47 CFR 76.640(b)(1)(ii)
SEAC	1996	Structural Engineers Association of California	Recommended Lateral Force Requirements and Commentary including Errata	42 CFR 52b.12(c)(5)
SJI	1994	Steel Joist Institute	Standard Specification Load Tables and Weight Tables for Steel Joists and Joist Girders	24 CFR 3280.304(b)(1)
SMACCNA HVAC (pdf) SMACCNA HVAC (html) SMACCNA HVAC (svg)	1985	Sheet Metal and Air Conditioning Contractors National Association	SMACCNA: HVAC Air Duct Leakage Test Manual	10 CFR 434.403.2.9.3
SMACCNA DUCT (pdf) SMACCNA DUCT (html) SMACCNA DUCT (svg)	1995	Sheet Metal and Air Conditioning Contractors National Association	SMACCNA: HVAC Duct Construction Standards -- Metal and Flexible (RS-34)	10 CFR 434.403.2.9.3
SMACCNA GLASS (pdf)	1992	Sheet Metal and Air Conditioning Contractors National Association	SMACCNA: Fibrous Glass Duct Construction Standards (RS-36)	10 CFR 434.403.2.9.3
SMACCNA AIR (pdf)	1978	Sheet Metal and Air Conditioning Contractors National Association	SMACCNA: Energy Recovery Equipment and Systems, Air-to-Air	10 CFR 440 Appendix A
NIST Handbook H-28	1942	Department of Commerce	Handbook of Screw-Thread Standards for Federal Service	49 CFR 178.45(f)(5)(ii)
DOD AFTO 11A-1-47	1988	Department of Defense	Explosive Hazard Classification Procedures	49 CFR 173.56(b)(2)(i)
FedSpec RR-C-901D	2003	Department of Transportation	Cylinders, Compressed Gas: High Pressure, Steel DOT 3AA, and Aluminum Applications	49 CFR 173.302(b)(3)
RTCA 23-63	1963	Radio Technical Commission for Aeronautics	Standard Adjustment Criteria for Airborne Localizer and Glide Slope Receivers	14 CFR 91 App. A, 3(a)(1)

SNELL B-95	1998	Snell Memorial Foundation	Standard for Protective Headgear for Use in Bicycling	16 CFR 1203.53(a)(4)
SNELL B-95	1998	Snell Memorial Foundation	Standard for Protective Headgear for Use in Bicycling	16 CFR 1203.53(a)(7)
SRCC OG-300	2008	Solar Rating and Certification Corporation	Operating Guidelines and Minimum Standards for Certifying Solar Water Heating Systems	24 CFR 200.950(a)(1)
TPI	1985	Truss Plate Institute	Design Specifications for Metal Plate Connected Wood Trusses	24 CFR 3280.304(b)(1)
TTMA RP-61	1998	Truck Trailer Manufacturers Association	Performance of Manhole and/or Fill Opening Assemblies	49 CFR 180.405(g)(2)(i)
TTMA RP-81	1997	Truck Trailer Manufacturers Association	Performance of Spring Loaded Pressure Relief Valves	49 CFR 178.345-10(b)(3)(i)
TTMA RP-107	1998	Truck Trailer Manufacturers Association	Procedure for Testing In-Service Unmarked and/or Uncertified MC 306 and Non-ASME MC 312 Type Cargo Tank Manhole	49 CFR 180.405(g)(2)(i)
UL 17	1988	Underwriters Laboratories	Vent or Chimney Connector Dampers for Oil-Fired Appliances	10 CFR 440 Appendix A
UL 38	1993	Underwriters Laboratories	Standard for Manually Actuated Signaling Boxes for Use with Fire-Protective Signaling Systems	46 CFR 161.002-4(b)(1)
UL 44	2002	Underwriters Laboratories	Standard for Thermoset-Insulated Wire and Cable	46 CFR 110.10-1
UL 50	1995	Underwriters Laboratories	Standard for Enclosures for Electrical Equipment	46 CFR 111.81-1(d)
UL 62	1997	Underwriters Laboratories	Standard for Flexible Cord and Fixture Wire	46 CFR 110.10-1
UL 127	1996	Underwriters Laboratories	Factory-Built Fireplaces	24 CFR 3280
UL 142 (pdf) UL 142 (html)	1968	Underwriters Laboratories	Steel Above Ground Tanks for Flammable and Combustible Liquids	49 CFR 1910
UL 174	1989	Underwriters Laboratories	Household Electric Storage Tank Water Heaters	46 CFR 63.25-3(a)
UL 217	1993	Underwriters Laboratories	Single and Multiple Station Smoke Detectors	46 CFR 181.450(a)(1)
UL 486A	1990	Underwriters Laboratories	Wire Connections and Soldering Lugs for Use With Copper Conductors	46 CFR 175.600
UL 521	1993	Underwriters Laboratories	Heat Detectors for Fire Protective Signaling Systems	46 CFR 161.002-4(b)(1)
UL 727	1994	Underwriters Laboratories	Oil-Fired Central Furnaces	10 CFR 431.76(c)(1)
UL 746C	1995	Underwriters Laboratories	Polymeric Material--Use in Electrical Equipment Evaluations	16 CFR 1211.10(e)(2)
UL 913	1988	Underwriters Laboratories	Intrinsically Safe Apparatus and Associated Apparatus for Use in	46 CFR 111.105-11(a)

			Hazardous (Classified) Locations	
UL 991	1995	Underwriters Laboratories	Tests for Safety-Related Controls Employing Solid-State Devices	16 CFR 1211.4(c)
UL 1042	1995	Underwriters Laboratories	Electric Baseboard Heating Equipment	24 CFR 3280.703
UL 1072	1995	Underwriters Laboratories	Standard for Medium-Voltage Power Cables	46 CFR 111.60-1(e)
UL 1096	1986	Underwriters Laboratories	Electrical Central Air Heating Equipment	24 CFR 3280.703
UL 1104	1983	Underwriters Laboratories	Standard for Marine Navigation Lights	46 CFR 120.420
UL 1426	1986	Underwriters Laboratories	Cables for Boats	33 CFR 183.435(a)(4)
UL 1570	1995	Underwriters Laboratories	Fluorescent Lighting Fixtures	46 CFR 183.410(d)
UL 1571	1995	Underwriters Laboratories	Incandescent Lighting Fixtures	46 CFR 111.75-20(e)
UL 1572	1995	Underwriters Laboratories	High Intensity Discharge Lighting Fixtures	46 CFR 120.410(d)
UL 1574	1995	Underwriters Laboratories	Track Lighting Systems	46 CFR 111.75-20(e)
UL 1995	1995	Underwriters Laboratories	Heating and Cooling Equipment, Second Edition, with 1999 revisions	24 CFR 3280.4
UN ECE	1996	United Nations Economic Commission of Europe	Uniform Provisions Concerning the Approval of Vehicles with Regard to the Installation of Lighting and Light-Signaling Devices	49 CFR 571.108
UN ESC	2009	United Nations Economic and Social Council	Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria	49 CFR 173.128(c)(3)
UN ESC	2005	United Nations Economic and Social Council	Recommendations on the Transport of Dangerous Goods	49 CFR 173.40(d)(2)
FAO 4	1995	UN Food and Agriculture Organization	Requirements for the Establishment of Pest-free Areas	7 CFR 319.56
IAEA Circular 225	1999	International Atomic Energy Agency	Physical Protection of Nuclear Material and Nuclear Facilities	10 CFR 110.44(b)(1)
IAEA TS-R-1	2009	International Atomic Energy Agency	Regulations for the Safe Transport of Radioactive Material	49 CFR 171.23
IMO Resolution A.264	1960	International Maritime Organization	Amendment to Chapter VI of the International Convention for the Safety of Life at Sea	46 CFR 172.015(a)(2)
IMO Resolution A.265	1973	International Maritime Organization	Carriage of Grain	46 CFR 170.135(a)
IMO Resolution A.342	1975	International Maritime Organization	Recommendations on Performance Standards for Automatic Pilots	33 CFR 164.13(d)(1)
IMO Resolution A.414	1979	International Maritime Organization	Code for Construction and Equipment of Mobile Offshore	33 CFR 143.207(c)

IMO Resolution A.520	1983	International Maritime Organization	Code of Practice for the Evaluation, Testing and Acceptance of Prototype Novel Life-Saving Appliances and Arrangements	46 CFR 108.105(c)(1)
IMO Resolution A.525	1983	International Maritime Organization	Performance Standards for Narrow-band Direct Printing Telegraph Equipment for the Reception of Navigational and Meteorological Warnings	47 CFR 80.1101(c)(1)(i)
IMO Resolution A.601	1987	International Maritime Organization	Provision and Display of Manoeuvring Information on Board Ships	33 CFR 157.450
IMO Resolution A.649	1991	International Maritime Organization	Code for the Construction and Equipment of Mobile Offshore Drilling Units (MODU Code)	46 CFR 108.503
IMO Resolution A.654	1989	International Maritime Organization	Graphical Symbols for Fire Control Plans	46 CFR 109.563(a)(6)
IMO Resolution A.657	1989	International Maritime Organization	Instructions for Action in Survival Craft	46 CFR 160.151-21(v)(3)
IMO Resolution A.658	1989	International Maritime Organization	Use and Fitting of Retro-Reflective Materials on Life-Saving Appliances	46 CFR 108.645(a)(4)
IMO Resolution A.662	1989	International Maritime Organization	Performance Standards for Float-Free Release and Activation Arrangements for Emergency Radio Equipment	47 CFR 80.1101(c)(11)(ii)
IMO Resolution A.664	1989	International Maritime Organization	Performance Standards for Enhanced Group Call Equipment	47 CFR 80.1101(c)(10)
IMO Resolution A.688	1991	International Maritime Organization	Fire Test Procedures for Ignitability of Bedding Components	46 CFR 116.405(j)(2)
IMO Resolution A.689	1996	International Maritime Organization	Recommendation on Testing Life-Saving Appliances	46 CFR 160.151-21(f)
IMO Resolution A.694	1991	International Maritime Organization	General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System and for Electronic Navigational Aids	47 CFR 80.1101(b)(1)
IMO Resolution A.700	1991	International Maritime Organization	Performance Standards for Narrow-band Direct-printing Telegraph Equipment for the Reception of Navigational and Meteorological Warnings and Urgent Information to Ships	47 CFR 80.1101(c)(4)(iv)
IMO Resolution A.739	1993	International Maritime Organization	Guidelines for the Authorization of Organizations Acting on Behalf of the Administration	33 CFR 96.440(a)(12)
IMO Resolution A.741	1993	International Maritime Organization	International Management Code for the Safe Operation of Ships and for Pollution Prevention	33 CFR 96.220(b)
IMO Resolution A.744	1993	International Maritime Organization	Guidelines on the Enhanced Program of Inspections During Surveys of Bulk Carriers and Oil	33 CFR 157.430(a)

IMO Resolution A.751	1994	International Maritime Organization	Interim Standards for Ship Manoeuverability	33 CFR 157.445(a)
IMO Resolution A.753	1993	International Maritime Organization	Guidelines for the Application of Plastic Pipe on Ships	46 CFR 56.60-25(a)
IMO Resolution A.760	1993	International Maritime Organization	Symbols Related to Life-Saving Appliances and Arrangements	46 CFR 108.646(a)
IMO Resolution A.788	1995	International Maritime Organization	Guidelines on Implementation of the International Safety Management (ISM) Code by Administrations	33 CFR 96.320(c)(2)
IMO Resolution A.802	1995	International Maritime Organization	Performance Standards for Survival Craft Radar Transponders for Use in Search and Rescue Operations	47 CFR 80.1101(c)(6)(i)
IMO Resolution A.803	1995	International Maritime Organization	Performance Standards for Shipborne VHF Radio Installations Capable of Voice Communication and Digital Selective Calling	47 CFR 80.1101(c)(2)(i)
IMO Resolution A.804	1995	International Maritime Organization	Performance Standards for Shipborne MF Radio Installations Capable of Voice Communication and Digital Selective Calling	47 CFR 80.1101(c)(3)(i)
IMO Resolution A.806	1995	International Maritime Organization	Performance Standards for Shipborne MF/HF Radio Installations Capable of Voice Communication, Narrow-Band Direct Printing and Digital Selective Calling	47 CFR 80.1101(c)(4)(i)
IMO Resolution A.807	1995	International Maritime Organization	Performance Standards for INMARSAT Standard-C Ship Earth Stations Capable of Transmitting and Receiving Direct-Printing Communications	47 CFR 80.1101(c)(9)
IMO Resolution A.808	1995	International Maritime Organization	Performance Standards for Ship Earth Stations Capable of Two-Way Communications	47 CFR 80.1101(c)(8)
IMO Resolution A.809	1995	International Maritime Organization	Performance Standards for Survival Craft Two-Way VHF Radiotelephone Apparatus	47 CFR 80.1101(c)(7)(i)
IMO Resolution A.810	1995	International Maritime Organization	Performance Standards for Float-free Satellite Emergency Position-Indicating Radio Beacons (EPIRBs) Operating on 406 MHz	47 CFR 80.1101(c)(5)(i)
IMO Resolution A.812	1995	International Maritime Organization	Performance Standards for Float-Free Satellite EPIRBs Operating Through the Geostationary INMARSAT Satellite System on 1.6 GHz	47 CFR 80.1101(c)(11)(i)
USEC 651	1995	United States Enrichment Corporation	Good Handling Practices for Uranium Hexafluoride	49 CFR 173.417(a)(3)(i)
USPHS 934	1962	U.S. Public Health Service	Food Service Sanitation Ordinance and Code	29 CFR 1910.142(i)(1)

USPHS 956 USCA Case # 17-7035	1962	U.S. Public Health Service	Drinking Water Standards	46 CFR 160.026-4(a)
USPHS 934	1962	U.S. Public Health Service	Food Service Sanitation Ordinance and Code	29 CFR 1910.142(i)(1)
USPHS 9	2003	U.S. Public Health Service	The Ships Medicine Chest and Medical Aid at Sea	33 CFR 143.405(a)(15)
WCLIB R17	2004	West Coast Lumber Inspection Bureau	Grading Rules for West Coast Lumber	7 CFR 1728.201(f)(1)(i)
WHO	1973	World Health Organization	Laboratory Techniques in Rabies	9 CFR 113.209(d)(3)
WIPO ST.25	2001	World Intellectual Property Organization	Handbook on Industrial Property Information and Documentation	37 CFR 1.821(a)(1)
WQA S-100	1985	Water Quality Association	Water Softeners	24 CFR 200, Subpart S
WQA S-200	1988	Water Quality Association	Water Filters	24 CFR 200, Subpart S
WQA S-300	1984	Water Quality Association	Point-of-Use, Low Pressure Reverse Osmosis Drinking Water Systems	24 CFR 200, Subpart S
WQA S-400	1986	Water Quality Association	Point-of-Use Distillation Drinking Water Systems	24 CFR 200, Subpart S
WSTDA T-1	2005	Web Sling and Tiedown Association	Recommended Standard Specification for Synthetic Web Tiedowns	49 CFR 393.104(e)(3)

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EXHIBIT 5

1 IN THE UNITED STATES DISTRICT COURT
2 FOR THE DISTRICT OF COLUMBIA

3
4 AMERICAN SOCIETY FOR TESTING
5 AND MATERIALS d/b/a ASTM
6 INTERNATIONAL; NATIONAL FIRE
7 PROTECTION ASSOCIATION, INC., ;
8 and AMERICAN SOCIETY OF HEATING,
9 REFRIGERATING, AND AIR-CONDITIONING
10 ENGINEERS, INC.

11 Plaintiffs, CIVIL ACTION FILE
12 vs. NO. 1:13-CV-01215-EGS
13 PUBLIC.RESOURCE.ORG, INC.,
14 Defendant.

15
16 30(b)(6) VIDEOTAPED DEPOSITION OF
17 STEVEN COMSTOCK
18 March 5, 2015
19 10:20 a.m.
20 1075 Peachtree Street
21 Suite 3625
22 Atlanta, Georgia 30309
23 Lee Ann Barnes, CCR-1852, RPR, CRR

24
25 PAGES 1 - 199

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1 A. Yeah, about 12 years ago I had one taken.
 2 Q. Is that the only deposition?
 3 A. That's the only one.
 4 Q. What kind of case did that involve?
 5 A. That was a personnel matter for our
 6 organization.
 7 Q. Did you testify at trial?
 8 A. No, I did not.
 9 Q. Did you have a chance to meet with
 10 Mr. Lewis or other counsel before this deposition to
 11 prepare for the deposition?
 12 A. Yes, I did.
 13 Q. I'll ask you to look at Exhibit 1076 --
 14 (Defendant's Exhibit 1076 was marked for
 15 identification.)
 16 Q. (By Mr. Bridges) -- which is Defendant's
 17 Notice of 30(b)(6) deposition of ASHRAE. Please take
 18 a look at it, Mr. Comstock.
 19 Do you understand that you are here today
 20 testifying as a representative of ASHRAE on Topics 4,
 21 5, 7, 8, 9, 10, 12, 13, 14, 18, 23, 24, 30, and 31?
 22 A. Yes, that's my understanding.
 23 Q. When did ASHRAE start providing a reading
 24 room for public access to ASHRAE's standards?
 25 A. We made selected standards available for

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1 read-only access, and I believe that was about 15
 2 years ago. I don't have the exact date. It was in
 3 that -- that range of time.
 4 Q. How did ASHRAE select what standards to
 5 make available?
 6 A. These are our -- our most popular
 7 standards, the ones for which there was the greatest
 8 demand.
 9 Q. How many standards -- strike that.
 10 How many current standards does ASHRAE
 11 publish?
 12 A. I don't have the exact number. My
 13 recollection would be in the neighborhood of -- of
 14 75.
 15 Q. How many of those standards are on ASHRAE's
 16 reading room available to the public now?
 17 A. At the current time, I believe there are 10
 18 of those standards available.
 19 Q. Does ASHRAE also make available through its
 20 reading room earlier versions of those 10 standards?
 21 A. We provide -- we provide the current
 22 versions of those standards.
 23 Q. But not the earlier versions?
 24 A. I believe that's the case.
 25 Q. Do you know why ASHRAE began providing

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1 public access to some of its standards?
 2 A. We were actually hoping to increase our
 3 sales of those standards. It would be to the -- to
 4 allow somebody to view those standards, but not be
 5 able to download those standards or print those
 6 standards. So that would drive demand for those --
 7 for those standards.
 8 Q. What was ASHRAE's experience in that
 9 regard?
 10 A. It was -- our experience was that it was
 11 relatively flat. It didn't have -- seem to have much
 12 of a positive impact, nor in -- in that case did it
 13 seem to have a negative impact.
 14 Q. Does ASHRAE have information about how many
 15 persons have accessed the standards in its reading
 16 room?
 17 A. We did. We changed the -- the -- the
 18 software platform from which they were made available
 19 for viewing. We originally used -- we originally
 20 used a RealRead vendor-supplied system and then we
 21 went -- they went out of business, I believe, and
 22 then we switched to iWrapper.
 23 But I -- I know for certain when we were
 24 with RealRead, we would track the views. There was
 25 no registration so we wouldn't know who those people

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1 were, but we did track views.
 2 I think we do so with iWrapper, as well,
 3 now, but I know for certain it was done with
 4 RealRead.
 5 Q. Do you recall any statistics regarding the
 6 number of accesses of various standards?
 7 A. I -- the -- the -- the most prominent of
 8 those standards was 90.1, and I think if my
 9 recollection is correct, I believe maybe 40-, 45,000
 10 views of the 2010 version of that -- that -- that
 11 standard over the course of the time it was made
 12 available.
 13 Q. And was it ASHRAE's experience that the
 14 effect of the public access to the 90.1 standard was
 15 somewhere between nothing and minimal?
 16 A. That's --
 17 MR. LEWIS: Object to the form.
 18 Q. (By Mr. Bridges) You can answer.
 19 A. I didn't see much of an impact one way or
 20 the other.
 21 Q. Does ASHRAE still sell earlier versions of
 22 its current standards?
 23 A. Yes.
 24 Q. How much -- strike that.
 25 Roughly how much revenue per year does

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1 there's a relationship between sales or licenses of a
2 standard and incorporation of that standard into
3 law --
4 MR. LEWIS: Objection.
5 Q. (By Mr. Bridges) -- or regulation?
6 A. No. We don't -- that's -- that's not a
7 metric that we use at all. I mean, I imagine, you
8 know, perhaps you -- you look at where sales are
9 from, but we don't do that. That's not part of our
10 business.
11 And I would think that the -- there's
12 people who do work in our industry do work across
13 states, across municipalities, but that's not a
14 metric that we -- we keep as part of our business
15 operation.
16 Q. Apart from keeping a metric, do you have
17 any, let's say, anecdotal experience observing that
18 incorporation of a particular ASHRAE standard leads
19 to a jump in sales of that standard?
20 MR. LEWIS: Objection.
21 THE WITNESS: Really, no. I have -- I
22 mean, there'll be times when somebody will say
23 to me, "Steve, how do I find an older version of
24 a standard in our bookstore," because we're --
25 we -- we have to put on education, training

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1 related to that standard.
2 So I have anecdotal questions that are
3 asked or comments that are made to me along
4 those lines, but nothing that's -- that -- that
5 would, you know, trigger that back to specific
6 sales totals.
7 Q. (By Mr. Bridges) Is there anything that
8 can tie it to a general trend of sales, in your view?
9 MR. LEWIS: Objection.
10 THE WITNESS: I don't believe so. I mean,
11 I -- we sell -- when a new standard -- a -- a
12 new version of a standard is -- is published,
13 there's interest in the market to buy that
14 standard, and if stan- -- if older versions of
15 standards are still relevant, we sell those
16 standards and continue to sell those.
17 Q. (By Mr. Bridges) In what circumstances
18 would an older version of an ASHRAE standard be
19 relevant in the marketplace?
20 A. I assume that would be because it's -- it's
21 referenced in -- in legislation or regulation or --
22 or codes. I think it would probably depend upon what
23 the owners of the -- the -- the -- the owner of a
24 building may have in their specifications.
25 Q. When ASHRAE revises a standard and the

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1 standard before the revision has been on the reading
2 room -- strike that.
3 Is "reading room" a term that you use at
4 ASHRAE?
5 A. We do not.
6 Q. What do you use -- what term do you use for
7 the facility by which the public can view ASHRAE
8 standards for free?
9 A. I believe we call it free viewing.
10 Q. Free viewing?
11 A. Free viewing.
12 Q. When ASHRAE revises a standard and the
13 standard before that revision has been available for
14 free viewing, does ASHRAE replace the older version
15 of the standard with the newer version of the
16 standard for free viewing as soon as ASHRAE issues
17 the standard?
18 A. Yes, we do.
19 Q. And does ASHRAE then take the older version
20 of the standard out of the free viewing facility when
21 that happens?
22 A. Yes, we do.
23 Q. Is there a reason why ASHRAE removes the
24 older standard from the free viewing?
25 A. That's been our process going back to when

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1 we first started the free viewing, which is the -- 15
2 years ago or so.
3 And the -- the -- the reason for that is --
4 is we always wish to have the most current
5 application of the technology used. So the -- the --
6 the notion is that as a standard is revised, it's
7 a -- it's a better application of the technology
8 that's current at the time.
9 So we -- it -- it -- it's always been
10 our -- our preference to -- to have -- to -- to move
11 the market towards the more current version of the
12 standard because of the application of technology.
13 Q. Now, I think you mentioned a few minutes
14 ago -- and please correct me if I'm wrong because I
15 don't want to misquote you -- that there are some
16 times when people want older standards but they
17 aren't in stock and so there has to be a new print
18 order for those; is that correct?
19 MR. LEWIS: Objection.
20 THE WITNESS: Actually, our objective is to
21 never have them out of -- out of stock. It's --
22 usually, I will be asked a question, "Steve, do
23 we have these in stock," and I will say, "Yes."
24 And we go through a process where we have
25 a -- a trigger -- this is what we do for all of

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1 Washington.
2 Q. Who is ASHRAE's principal contact there?
3 A. Riaz Ahmed.
4 Q. R-I-A-Z A-H-M-E-D?
5 A. Yes. That's the first name and last name.
6 Q. Who at ASHRAE supervises the relationship
7 with iENGINEERING?
8 A. Well, at the -- approving the payment of
9 invoices and approving the initiation of work, it is
10 me, and -- and then there's a -- a gentleman in my
11 group who actually then works on a day-to-day basis
12 with vendor relationships. David Soltis is his name.
13 Q. How do you spell Soltis?
14 A. S-O-L-T-I-S.
15 Q. If a member of the public wanted to write
16 an article about the evolution of the 90.1 standard
17 over the last 20 years by showing a comparison
18 through, let's say, a redline, an electronic
19 comparison -- let me back up.
20 Do you understand what a redline is?
21 A. I do.
22 Q. If a member of the public wanted to write
23 an article about the evolution of the 90.1 standard
24 over the last 20 years by providing a redline of the
25 various changes from version to version, is there

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1 a -- what would the -- I'm going to start the
2 question again. Let me strike that.
3 If a member of the public wanted to write
4 an article about the evolution of the 90.1 standard
5 over the last 20 years by providing a redline of
6 various changes from version to version, what steps
7 would that person need to go through in order to
8 generate a comparison document?
9 MR. LEWIS: Objection.
10 THE WITNESS: We currently offer for the
11 current version of Standard 90.1 -- .1 a redline
12 version that's available for sale. That's
13 something we only initiated a year ago, year and
14 a half. So we would not be able to provide that
15 document, if that's a -- if that's -- if that's
16 the question.
17 If they wish to reuse our content, then we
18 have a process that we follow for reprint
19 permission or request for -- for -- for use.
20 Q. (By Mr. Bridges) Leaving aside the
21 permissions process, how, from a technical
22 standpoint, would one be able to generate that
23 redline? Would one have access to earlier versions
24 in an electronic format that would be suitable for
25 applying a comparison tool to?

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1 MR. LEWIS: Objection.
2 THE WITNESS: Yes.
3 Q. (By Mr. Bridges) And what would the
4 earlier versions be?
5 A. PDFs.
6 MR. LEWIS: Objection.
7 Q. (By Mr. Bridges) PDF.
8 And if one wanted to trace the evolution
9 across four versions to produce one document with
10 annotations showing, for example, when each provision
11 entered into the standard and when various provisions
12 disappeared from the standard, would the person need
13 to get permissions to reuse each of the four
14 versions, according to ASHRAE's practices?
15 A. If they were doing this for their personal
16 use, then no, because that would be allowed for in
17 their purchase of the standards.
18 The permission would require -- would be
19 required for the extent to which that person would
20 want to make information available more widely other
21 than for personal use, and then there would be
22 considerations that would be given for amount of
23 content, so on.
24 Q. Well, what -- what if somebody wanted to
25 write an article criticizing the evolution and saying

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1 that it had gotten off track and wanting to
2 illustrate the arguments by quoting substantial bits,
3 let's say two pages at a time for five different
4 instances.
5 According to ASHRAE's practices, what would
6 be required for the person -- for that person to be
7 able to do this?
8 MR. LEWIS: Objection.
9 THE WITNESS: Whether the article is
10 critical or not isn't part of our process of
11 granting permission for use of content.
12 Q. (By Mr. Bridges) Leaving that part aside,
13 then, what would the person need to do, according to
14 ASHRAE's practices, to get permission to provide,
15 let's say, four two-page excerpts showing the
16 changes?
17 MR. LEWIS: Objection.
18 THE WITNESS: They would need to specify
19 what content from the standard they wished to
20 use, what -- how much content, what type of
21 content, and what the use would be, say an
22 article.
23 We do not ask what that article is going to
24 say, nor do we review that article before it is
25 used. That's not part of our process.

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1 So they would have to specify the amount of
2 content that they wish to use, what content, and
3 how and what that use would be.
4 Q. (By Mr. Bridges) Would ASHRAE give that
5 permission without charge?
6 A. We always use a balance in -- in -- in how
7 we approach reprint requests.
8 If I do not feel there's going to be a
9 negative impact on the sales of -- of a standard,
10 typically I will grant reprint permission use,
11 because I think it also promotes awareness of a
12 standard.
13 I should say that we also have an on-line
14 system that we use, as well, RightsLink. You can go
15 to our website and you can see that. But that hasn't
16 worked very well. That was my attempt at trying to
17 remove a little bit of the care and hand- -- well,
18 the time that has to go in with processing requests.
19 In -- in that system, it was a cookie
20 cutter, a certain amount of money for a certain --
21 for a certain number of figures and so on. But
22 that's really not a very practical system and it's
23 just about -- we -- I think we still have the link
24 there, but it's really -- doesn't have very good
25 functionality.

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1 Q. And it sounds to me as though the reason
2 for that is that it wasn't flexible enough to
3 accommodate different use cases?
4 A. That -- that's correct. And -- and it's
5 hard to keep it up to date. We publish many
6 articles, we publish many standards, and so to try to
7 keep that database of permission -- so when somebody
8 goes in and they identify the -- the source of the
9 content, it was as much work for us to keep the
10 database up to date as it was to handle the
11 permissions personally.
12 Q. Do you have a dedicated permission staff?
13 A. My administrative assistant is the focal
14 point for permissions.
15 Q. What is your assistant's name?
16 A. Julie Harr, H-A-R-R.
17 MR. BRIDGES: If it's all right with you, I
18 ask that we take a break. We've gone just a
19 little bit over an hour. Normally I'd like to
20 go longer, but I'm working on sleep deprivation.
21 I'll try and keep the breaks short, but I may
22 need them every hour.
23 VIDEOGRAPHER: This is the end of Video 1.
24 We're going off the record at 11:26 a.m.
25 (Thereupon, there was an interruption in

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1 the proceedings.)
2 VIDEOGRAPHER: This is the beginning of
3 Video 2. We are going on the record at
4 11:46 a.m.
5 Q. (By Mr. Bridges) Do you know roughly what
6 percentage of publications income comes from
7 government sources for ASHRAE?
8 A. I do not.
9 Q. Do you know what government support ASHRAE
10 gets in the development or revision of standard --
11 standards?
12 A. I am not aware of any funding received by
13 ASHRAE for development or the revision of -- of
14 standards.
15 Q. You're aware that government employees
16 participate in the standard development process?
17 A. I do. And -- well, I -- what I am aware of
18 is that there -- there may be individuals with the
19 government who purchase copies of -- of standards.
20 I'm not exactly sure of their role on project
21 committees, but -- but they are -- would be included
22 in the -- the customer base for standards.
23 Q. And you're aware that -- does the U.S.
24 government enter into any contracts with ASHRAE for
25 the sale or availability of standards?

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1 A. We have had -- in -- in recent -- this is
2 in recent years, we've had three contracts I've been
3 engaged with related to the distribution of
4 standards, specifically 90.1.
5 Q. What were the contracts for?
6 A. Three -- first contract was for making
7 90.1 -- and I believe that was the 2010 version of
8 the standard -- available to ASHRAE members for --
9 well, I -- available from the ASHRAE website for free
10 download.
11 And then there were two subsequent
12 contracts that were done in conjunction with the
13 International Code Council where actually they did
14 the -- the distribution, but inclu- -- which -- which
15 the distribution included one of their documents,
16 the -- what is called the IECC, International Energy
17 Conservation Code.
18 So -- so that -- that document was
19 provided -- distributed by ICC and included in that
20 package ASHRAE Standard 90.1 2010.
21 And then the third contract added 90.1 2007
22 distribution, and that was to a distribution list
23 provided to ICC from, in this case, Pacific Northwest
24 Laboratories, which was a -- a laboratory under
25 contract at the Department of Energy.

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1 Q. I'd like to go back to the beginning of
2 your answer, because I -- I didn't quite understand
3 it.
4 The first contract was for making the 2010
5 version of the standard available in some fashion and
6 I think first you said available to ASHRAE members
7 and then I think you said available from the ASHRAE
8 website for free download.
9 Is -- did you mean available not
10 specifically to ASHRAE members, but available from
11 the ASHRAE website for download?
12 MR. LEWIS: Objection.
13 THE WITNESS: I meant to say was available
14 for free download from the ASHRAE website.
15 Q. (By Mr. Bridges) Who -- and under that
16 contract, who had access to the free downloads?
17 A. Anyone who logged into our website and
18 clicked on the option to complete that download.
19 Q. Oh, any person --
20 A. Anybody could --
21 Q. -- any person, country?
22 A. That's correct. Actually, in the world.
23 Q. In the world.
24 A. That's my -- as I say that, that's my
25 recollection, is it was not rest- -- I know it was

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1 not restricted to members -- I misspoke at first --
2 and I think it was open to -- to anyone.
3 Q. And that's what I was trying to figure out.
4 A. Yeah.
5 Q. Okay. So the first contract -- just to
6 summarize again, the first contract was for ASHRAE to
7 make 90.1 available for free to the public by
8 download; correct?
9 A. That is correct.
10 Q. Was that contract for a limited period of
11 time or was it for -- what were the terms of that
12 contract?
13 A. There was a contract that had a -- a dollar
14 amount associated with it, and so there was a fee
15 that every -- every time a download was made, a fee
16 for that unit was charged. So once that total
17 contract amount was met, then the downloads stopped.
18 Q. Do you recall what the per-download fee
19 was?
20 A. I believe it was \$15 a -- a document.
21 Q. Do you know how ASHRAE knew when a download
22 occurred?
23 A. Yes, because we had a -- a system that
24 would click -- keep track of the downloads.
25 Q. How --

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1 A. So that was how we did the -- knew when it
2 ended.
3 Q. How could you distinguish, let's say,
4 between a download and a simple view of the document
5 from ASHRAE's website?
6 A. There was no viewing associated with this
7 particular functionality. You just clicked on a box
8 that said "Download."
9 Q. Got it.
10 With what government agency was the
11 contract?
12 A. Our contract was with PNL, Pacific
13 Northwest Laboratory, which is a laboratory of the
14 U.S. Department of Energy.
15 Q. Did ASHRAE ever come to have an
16 understanding as to why Pacific Northwest Laboratory
17 wished to have that facility available?
18 A. This was part of the -- the time frame is
19 2011, and I believe this was part of the -- the
20 Recovery Acts, the National Recovery Acts that were
21 in place at that time.
22 And I was approached by somebody from PNL
23 as a -- to do that. I do not know what their --
24 their motivations were except to make the standard
25 available.

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1 Q. Do you know how many downloads occurred
2 under that contract?
3 A. I do not, but if -- if it was the 15 per
4 download and the contract was \$322,000, it would be
5 that division.
6 (Defendant's Exhibit 1077 was marked for
7 identification.)
8 Q. (By Mr. Bridges) My brain is sitting next
9 to me and my brain hands me important things from
10 time to time.
11 Mr. Comstock, I ask you to look at
12 Exhibit 1077.
13 Could you identify it, please?
14 A. This appears to be the -- the proposal that
15 I just -- I just spoke of. I think I did say 2010.
16 This document says 2000 -- 2007 version of that --
17 oh, no, I'm sorry. Yeah, it says --
18 MR. LEWIS: I'll just note for the record
19 that the document is two sided.
20 Q. (By Mr. Bridges) Yes, always. I think all
21 of our documents will be.
22 A. So it's the 2007 version, yes.
23 Q. Okay. Was this free download facility
24 something that ASHRAE proposed?
25 A. No. The -- we -- we were approached by

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1 PNL, to my -- to my knowledge.
2 Q. The -- just the format, it's in response to
3 an RFP or request for proposals.
4 Do you know what the RFP No. 140008
5 specified?
6 A. I -- I do not.
7 Q. The proposal envisioned that ASHRAE would
8 promote the free download program through targeted
9 e-mails to members of ASHRAE; correct? I'm looking
10 rough- -- just above the midpoint in that exhibit.
11 A. Correct.
12 Q. Do you know to what extent ASHRAE promoted
13 the free download program to the broader public,
14 apart from members of ASHRAE?
15 A. I -- we put notices on our website to -- is
16 my recollection. I believe we did news releases, but
17 I am -- that's an assumption on my part.
18 Q. And then you said there were two other
19 contracts; is that correct?
20 A. That's correct. Both of those also
21 involved versions of Standard 90.1 and then also
22 included a document, the -- the IECC that I
23 referenced.
24 Q. Were they on roughly the same terms as the
25 terms in Exhibit 1077?

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1 A. No. That -- that was a -- a different
2 arrangement. For that process, the documents were
3 sent in hard copy form to recipients who were
4 provided to us from the -- from PNL. And the
5 distribution was made by ICC, which is the publisher
6 of the IECC. ICC is International Code Council.
7 Q. Were the second and third contracts
8 contracts between PNL and ICC?
9 A. No. I believe they were contracts between
10 PNL and ASHRAE and then ICC was engaged to fulfill
11 the agreement.
12 Q. Do you recall the expected audience,
13 recipients, of the hard-copy publications in the
14 second and third contracts?
15 A. I believe the targeted audience for that
16 was code officials at state and municipalities.
17 Q. Do you recall quantities and financial
18 terms for the second and third contracts?
19 A. The -- the -- the -- the purchase price for
20 the 90.1 inclusion was the same as this, \$15, if I
21 recall, and then there was a -- I believe ICC charge
22 for distribution of the IECC was also \$15 and then
23 there was a \$15 charge by ICC for printing, mailing,
24 inventory, distribution. So that was a total per
25 unit, that I recall, of \$45.

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1 Now, the first agreement I believe was
2 \$188,000, in that neighborhood. The second agreement
3 was \$230,000. The -- the -- but the second
4 agreement, I think -- so the first one, it would be
5 dividing the 45,000 into that -- \$45 into that total
6 amount. The second agreement actually included two
7 versions of 90.1, if I recall, and two different
8 versions of the IECC, so it could have been that cost
9 was \$90 total in- -- \$90 per unit into that \$230,000
10 number.
11 Q. And just to clarify one thing.
12 In the last couple of answers, you referred
13 to the first contract and the second contract. If we
14 put them in the context of the other contract, that
15 would make these the second and third contracts?
16 A. That's correct.
17 Q. Okay. In your answer just now, when you
18 were saying first and second, in the broader scope,
19 you were referring to the second and third contracts;
20 is that correct?
21 A. That is correct.
22 Q. As a result of these contracts, did ASHRAE
23 observe any effect on its other sales or licenses of
24 the 90.1 standard?
25 A. These -- these three contracts all involve

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1 distribution of not the current version of the ASHRAE
2 standard, but the previous version.
3 Did we see any noticeable change in the
4 distribution or the sales of the -- the current
5 version? Nothing seemed to jump out.
6 Q. Did ASHRAE observe any noticeable effect on
7 the distribution, even of the earlier versions, apart
8 from -- from these contracts?
9 A. Intuitively, I would think there would have
10 been some impact, but I can't say -- we didn't
11 monitor that, so I have no evidence one way or the
12 other.
13 Q. So you don't know one way or the other
14 whether these contracts cannibalized other types of
15 sales of the same versions?
16 A. Yeah, I have no -- no evidence one way or
17 the other.
18 Q. Has ASHRAE entered into any other
19 agreements for public access or distribu- -- public
20 access to or distribution of its -- strike that.
21 Has ASHRAE en- -- entered into any other
22 agreements for broad public access to or distribution
23 of its standards, either for free or for reduced
24 price?
25 MR. LEWIS: Objection.

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1 THE WITNESS: Was your question by --
2 repeat the question, please?
3 Q. (By Mr. Bridges) Sure.
4 Has ASHRAE entered into any other
5 agreements to provide broad public access to or
6 distribution of its standards either for free or for
7 a reduced price?
8 A. At -- at times over the past -- not for
9 90.1, but for some other standards, a company may pay
10 a license fee to make a standard available if it
11 relates specifically to their products. That would
12 be a license agreement.
13 And that's very rare. I mean, it's --
14 it's -- perhaps one standard every three to five
15 years would -- would be the case. But nothing with
16 government like was done here.
17 Q. Okay. What proportion of ASHRAE's yearly
18 revenues comes from the monetization of its
19 publications? Do you understand that term?
20 A. When you say "publications," do you include
21 periodicals?
22 Q. Good point, so I'm going to withdraw my
23 question.
24 But I just want to make sure -- I think you
25 understand my -- my word "monetization" in this

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1 context. You nodded, but the court reporter can't
2 take nods down.
3 Do you understand, broadly speaking,
4 monetization of publications through revenue sources
5 like purchasing and licensing and the like?
6 A. Yes.
7 Q. And royalties?
8 A. Yes.
9 Q. What proportion of ASHRAE's yearly revenues
10 comes from the monetization of its standards as
11 publications?
12 A. I'm making sure I'm doing the math right.
13 Q. That's fair. That's fair.
14 A. Let's see. It would be -- directly
15 attributable to standards would be approximately
16 10 percent.
17 Q. How else does ASHRAE earn revenue, other
18 than through the monetization of its standards?
19 A. Membership dues, conference registrations,
20 advertising, subscription sales, educational course
21 registrations, certification, exposition income.
22 And when you said "publications," if -- so
23 in addition to publications, we have books. So
24 books, if -- if -- if that's -- if you
25 distinguish between standards in your questions, then

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1 there would be books. And I believe that -- that --
2 that covers it.
3 Q. Roughly what percentage of ASHRAE's
4 expenses pertain to the organization and supervision
5 of the standards development process and the costs of
6 publication and the costs of administering the
7 permissions and distributions and the like?
8 MR. LEWIS: Objection.
9 THE WITNESS: I can speak to the side of
10 that process that deals with the -- the -- the
11 publications part. I do not know what the --
12 the costs would be to support the development of
13 the product. My role begins when we push that
14 standard out to the -- to -- to the marketplace.
15 What would be -- I -- I'd probably say
16 there are staff salaries that would be
17 attributable to standards activities from the
18 publication side of things, production, so on.
19 If you add portions of people's time together,
20 we're probably speaking of four people from the
21 publications side.
22 And then the -- the cost of the
23 infrastructure for the book- -- for the
24 bookstore, the on-line process, and warehousing,
25 and finally the -- the -- the work that may be

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1 involved in -- in -- in managing that on-line
2 bookstore.
3 Q. (By Mr. Bridges) Are you able to estimate
4 a percentage of ASHRAE's expenses involved in what
5 you've just described?
6 A. Boy, and I -- and I -- I left -- the
7 easiest numbers, the printing costs, I just left out.
8 Q. Right.
9 A. The cost to print --
10 Q. Right.
11 A. -- a unit would be included.
12 You know, if -- if we have a hundred -- I'm
13 just guessing now. If you have a -- I said those --
14 those individuals, you know, we have a hundred
15 employees, so -- with various activities.
16 So I'd say 5 percent of labor and then you
17 figure the -- the cost of that infrastructure,
18 standards amounts to a large portion of it. And
19 permissions, a lot of that is attributed to
20 standards. That's maybe -- that part, \$200,000.
21 Q. 200,000 to the --
22 A. For the -- just the expenses of doing those
23 things. The bookstore, I mean, you know, processing
24 orders, apart from the -- the -- the labor.
25 Q. So you're saying 5 -- 5 percent of the

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1 staff count plus about 200,000 in expenses?
 2 A. That's correct, for the portion of the
 3 standards work that is involved in what we do, which
 4 is the distribution of those to the -- to the
 5 marketplace.
 6 I -- probably in terms of context, our
 7 bookstore is actually -- we do that in partnership
 8 with an outside group, so that is a -- we pay fees
 9 associated with -- any time orders are taken through
 10 our bookstore. So there are -- are costs that we
 11 have through the -- through the vendor for operation
 12 of our bookstore.
 13 Q. And just to be clear, I think you either
 14 said this or started to say it. I think I didn't
 15 hear it completely.
 16 The expenses you just described were from
 17 that point in the process where your part of the
 18 organization takes over and pushes the standards out
 19 to the public. These numbers did not include the
 20 costs and expenses and staffing that ASHRAE invests
 21 in the creation and revision of the standards
 22 themselves; correct?
 23 MR. LEWIS: Objection.
 24 THE WITNESS: That is correct.
 25 Q. (By Mr. Bridges) Has -- do you understand
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1 what a subvention is of a publication?
 2 A. I do not.
 3 Q. Has ASHRAE ever received any grants to
 4 support the publication of any particular standards?
 5 A. I have no knowledge of ASHRAE receiving
 6 funds for that.
 7 Q. Is ASHRAE aware of any monetary losses that
 8 it has suffered as a consequence of the defendant's
 9 conduct in this case?
 10 A. I can't speak to any -- any tracking of --
 11 of losses. And anecdotally, people say if -- they've
 12 asked me if a standard is available on the Internet,
 13 is that -- is that allowed, is that permissible, so
 14 we -- in those cases, we will seek to remove them.
 15 But we don't -- we -- I don't have any
 16 record of tracking such loss of -- of revenue.
 17 Q. Apart from tracking it, does ASHRAE have
 18 any information regarding monetary losses it has
 19 suffered as a consequence of defendant's conduct?
 20 A. I -- I do recall there was one message we
 21 got from somebody who refer- -- I think it was
 22 somebody with Carrier Corporation, if I recall, who
 23 referred to -- who referred to that. I don't know if
 24 they had intended to purchase or not, but that was
 25 one specific case I do recall.
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1 Q. Is that David Hollman?
 2 A. It was somebody with Carrier, Carrier
 3 Corporation.
 4 Q. Carrier UTC?
 5 A. Yes. Yeah, yeah.
 6 Q. Does the name David Hollman ring a bell to
 7 you?
 8 A. I -- I think so.
 9 Q. Do you know whether he's an ASHRAE member?
 10 A. I do not know. Carrier's -- there are many
 11 employees with -- with -- from -- of Carrier who are
 12 members of ASHRAE.
 13 Q. Do you recall any other information ASHRAE
 14 has regarding any potential monetary loss as a
 15 consequence of defendant's conduct?
 16 A. I have no firsthand knowledge of -- of
 17 that.
 18 Q. Do you have any other information that you
 19 might have acquired secondhand?
 20 A. With regard to --
 21 Q. Monetary losses.
 22 A. -- this -- this -- in this case?
 23 Q. Caused by defendants, yes.
 24 A. No, I do not have any -- any other
 25 knowledge of that.
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1 Q. Are you aware of any persons being misled
 2 as to a relationship between the defendants and
 3 ASHRAE?
 4 A. I'm not aware of that.
 5 Q. Are you aware of anybody being confused in
 6 any way as a consequence -- strike that.
 7 Are you aware of anyone being deceived in
 8 any way by defendant?
 9 A. I am not aware --
 10 MR. LEWIS: Objection.
 11 THE WITNESS: -- of that.
 12 Q. (By Mr. Bridges) Are you aware of anyone
 13 being confused in any way by any conduct of the
 14 defendant?
 15 MR. LEWIS: Objection.
 16 THE WITNESS: If I recall, I think that
 17 was -- the fellow from Carrier was asking me a
 18 question of whether that was an authorized use,
 19 perhaps. I can't remember the exact wording,
 20 but there was a -- a question that I was asked
 21 of that -- of that person.
 22 Q. (By Mr. Bridges) Are you aware of any
 23 other instances of anyone being confused in any way
 24 by any conduct of the defendant?
 25 MR. LEWIS: Objection.
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1 ASHRAE.
2 Q. What newspaper were you working for?
3 A. Bergen News.
4 Q. Bergen County, New Jersey?
5 A. Bergen County, New Jersey, yes.
6 Q. And you mentioned you graduated from a
7 school that had a very strong engineering program.
8 Which one was that?
9 A. Lehigh University in Bethlehem,
10 Pennsylvania.
11 Q. So you had come to -- you came to ASHRAE
12 from a publishing and -- from a publishing background
13 with a technology slant in the publishing?
14 A. With a familiarity, to some degree, of
15 engineering, but it was mainly with an editorial
16 background.
17 Q. To what extent -- strike that.
18 Earlier today when we were talking about
19 revenues, I think you were distinguishing between
20 revenues that ASHRAE receives directly from the sale
21 or licensing of publications and other revenues that
22 may in some way involve the publications, such as
23 training programs where a copy of a standard would be
24 furnished.
25 Do you recall that?

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1 MR. LEWIS: Objection.
2 THE WITNESS: Yes, I do.
3 Q. (By Mr. Bridges) I'd like to explore for a
4 little bit what activities ASHRAE engages in that may
5 touch upon standards, apart from the sale or
6 licensing of standards.
7 So education is one; right?
8 A. Correct.
9 Q. What types of education offerings does
10 ASHRAE provide?
11 A. We -- we offer a -- a varied program. We
12 really take seriously trying to help with the
13 application of the standard, ensure the standards are
14 applied properly.
15 And so that consists of instructor-led
16 training that we will provide, either -- typically,
17 three-hour or six-hour courses for which there are
18 registration fees, and we also will have web-based
19 learning programs that are available, which would be
20 e-learning experiences that are available on demand.
21 And many of those courses deal with
22 applications of -- of standards, and specifically
23 there's -- there's quite a few courses that would
24 deal with topics related to 90.1.
25 And -- and we also offer a -- a -- a

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1 five -- a total of five days of training, which is
2 a -- an intensive HVAC design training program, and
3 much of that content deals with Standard 90.1
4 content, Standard 62.1 content.
5 Q. What other revenue-generating activities
6 does ASHRAE engage in, apart from the publication
7 sales and licensing and the education offerings you
8 just mentioned?
9 A. Do you mean with a direct or indirect tie
10 to standards, for example?
11 Q. Yes.
12 A. The -- the magazine will -- our -- our
13 principal magazine, which is a -- a trade
14 publication, B-to-B publication, ASHRAE journal
15 will -- will have -- will be quite often articles
16 about ASHRAE standards there.
17 So that -- that is always -- when we have
18 topics related to standards, those are often articles
19 that we will promote to our -- to our advertising
20 base.
21 Q. What other activities does -- strike that.
22 What other revenue-generating activities
23 does ASHRAE engage in relating to --
24 A. We have --
25 Q. -- standards?

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1 A. We have some electronic products, for
2 example, that are based on ASHRAE standards that --
3 that -- apps that are based on content and ASHRAE
4 standards specifically. So we offer those types of
5 products for sale.
6 Q. What are some of the apps?
7 A. For -- related to 62.1, there would be a --
8 a ventilation rate effectiveness app that we have
9 available, a duct-fitting app and a duct-fitting
10 database. However, that probably relates more to our
11 hand- -- that relates more to our handbook than to
12 standards.
13 Right now, we're developing an app for 90.1
14 compliance.
15 Q. Anything else in terms of standards
16 relating to revenue-generating activities?
17 A. Users manuals.
18 Q. How are they organized? In other words, is
19 there a user's manual for each standard?
20 A. Not for all the standards, but the more
21 popular standards, the more complex standards, we
22 have users manuals to assist with their appropriate
23 and proper application.
24 Q. I assume there's a user's manual for 90.1?
25 A. There is.

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1 Q. What other rev- -- revenue-generating
2 activities does ASHRAE engage in pertaining to
3 standards?
4 A. We've covered royalties. We've covered the
5 sales of the documents. We've covered the articles
6 that would impact the advertising, the courses, the
7 ancillary support documents.
8 I could imagine at one -- at -- some
9 extension of that could be either sessions that are
10 presented at our conferences that would deal with
11 90.1, for which -- for which there would be
12 attendance interests that would be generated for
13 that.
14 I believe that -- I believe that would
15 cover the -- the -- the potential for -- for revenue.
16 Q. Does the sale of -- strike that.
17 Does the sale and licensing of standards
18 subsidize other ASHRAE activities apart from
19 standards development --
20 MR. LEWIS: Objection.
21 Q. (By Mr. Bridges) -- and publication?
22 A. All of the revenue flows into a single --
23 single source. There's some standards that are --
24 are very low-selling standards, so there are -- so it
25 would be fair to say that some -- if a standard

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1 generates more revenue, that helps support those
2 activities that don't have revenue streams that would
3 cover them.
4 Q. There's no requirement that each activity
5 fully self-support itself?
6 MR. LEWIS: Objection.
7 THE WITNESS: Our -- our obligation's to
8 advance the technology. We -- we -- there are
9 some items that are needed, but they have a
10 difficult time finding the financial support to
11 carry them forward.
12 Q. (By Mr. Bridges) And in your last
13 statement, you said, "Our obligation is to advance
14 the technology."
15 Is that a summary or a reference to
16 ASHRAE's mission?
17 A. In our bylaws, ASHRAE's organized to
18 advance the arts and sciences of heating,
19 refrigeration, air-conditioning, ventilation, and
20 their allied arts and sciences.
21 Q. How does ASHRAE's development and
22 publication of its standards advance the technology?
23 A. Because it sets a -- a standard for
24 practice. It incorporates through user experiences
25 those solutions to technical applications that are --

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1 that are -- are -- are deemed by peers to have been
2 successful. They're developed by people who are
3 recognized by their peer -- peers as being
4 knowledgeable in their respective fields.
5 So it provides standards. And especially
6 the -- the ASHRAE handbook really provide -- they
7 provide solutions. They -- they -- they incorporate
8 new technology that's available in products and
9 equipment and assist designers as to what new design
10 options may be available because of new products in
11 the marketplace.
12 Q. You use terminology that I hear frequently.
13 I often push back at it a little bit wherever I hear
14 it, so don't take this personally.
15 But I've never quite understood what
16 "solutions" means, because it's often a very vague
17 term. Sometimes it's a liquid in a bottle; okay?
18 That's not what you meant here.
19 How else would you describe what you're
20 referring to as solutions here?
21 MR. LEWIS: Objection.
22 THE WITNESS: One of the things that I've
23 noticed in the industry as an editorial person
24 is that there's so many different technologies
25 that can be provided that are available to

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1 maintain air in a building, whether it be
2 conditioned air at a particular temperature or
3 air that's free of contaminants. There's many,
4 many different methods of applying technology,
5 different types of technology, to provide a --
6 an air-conditioning -- HVAC system in a building
7 or a refrigeration system.
8 And so designers have more choices
9 available to them than ever before, so part of
10 the role that ASHRAE provides in offering
11 solutions is to help guide those engineers to --
12 to provide the appropriate -- the -- the
13 appropriate application of technology which best
14 solves the design problem that they face.
15 Q. (By Mr. Bridges) Thank you for that
16 explanation.
17 I spoke with ASHRAE counsel during a break
18 about your testimony earlier today about the reading
19 room.
20 Did you have any clarifications that you
21 wanted to make about the functionality of the reading
22 room? I'm sorry, about the functionality of the free
23 viewing facility.
24 A. Yes. I -- in -- in -- in checking that
25 point, I understand now that there's search

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1 CERTIFICATE
2
3
4 STATE OF GEORGIA:
5 COUNTY OF FULTON:
6
7 I hereby certify that the foregoing transcript was
8 taken down, as stated in the caption, and the
9 questions and answers thereto were reduced to
10 typewriting under my direction; that the foregoing
11 pages represent a true, complete, and correct
12 transcript of the evidence given upon said hearing,
13 and I further certify that I am not of kin or counsel
14 to the parties in the case; am not in the regular
15 employ of counsel for any of said parties; nor am I
16 in anywise interested in the result of said case.
17
18
19
20
21
22
23
24
25
Lee Ann Barnes
LEE ANN BARNES, CCR B-1852, RPR, CRR
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1 DEPOSITION ERRATA SHEET
2
3 Our Assignment No. 2023730
4 Case Caption: AMERICAN SOCIETY FOR TESTING
5 AND MATERIALS d/b/a ASTM INTERNATIONAL, et al. vs.
6 PUBLIC.RESOURCE.ORG, INC.
7
8 DECLARATION UNDER PENALTY OF PERJURY
9 I declare under penalty of perjury
10 that I have read the entire transcript of
11 my Deposition taken in the captioned matter
12 or the same has been read to me, and
13 the same is true and accurate, save and
14 except for changes and/or corrections, if
15 any, as indicated by me on the DEPOSITION
16 ERRATA SHEET hereof, with the understanding
17 that I offer these changes as if still under
18 oath.
19 Signed on the _____ day of
20 _____, 20____.
21
22 _____
23 STEVEN COMSTOCK
24
25
Page 199

EXHIBIT 6

1 UNITED STATES DISTRICT COURT
2 FOR THE DISTRICT OF COLUMBIA

3
4 AMERICAN SOCIETY FOR)
5 TESTING AND MATERIALS,)
6 d/b/a ASTM INTERNATIONAL;) Civil Action No.
7 NATIONAL FIRE PROTECTION) 1:13-cv-01215-TSC
8 ASSOCIATION, INC.; and)
9 AMERICAN SOCIETY OF)
10 HEATING, REFRIGERATION AND)
11 AIR CONDITIONING ENGINEERS,)
12 Plaintiffs and)
13 Counter-Defendants,)
14 vs.)
15 PUBLIC.RESOURCE.ORG, INC.,)
16 Defendant and)
17 Counter-Plaintiff.

18 VIDEOTAPED 30(b)(6) DEPOSITION OF NATIONAL
19 FIRE PROTECTION ASSOCIATION, INC., BY
20 CHRISTIAN DUBAY, before Jeanette N. Maracas,
21 Registered Professional Reporter and Notary
22 Public in and for the Commonwealth of
23 Massachusetts, at 42 Chauncy Street, Boston,
24 Massachusetts, on Wednesday, April 1, 2015,
25 commencing at 10:00 a.m.

PAGES 1 - 250

1 Q. In what forums do you speak as NFPA's primary 10:09:00
 2 technical spokesman? 10:09:12
 3 A. One example is media interviews. 10:09:15
 4 Q. How else? 10:09:25
 5 A. Another example is public forums around our 10:09:26
 6 technical topics of expertise, our standards. 10:09:32
 7 Q. What type of public forums do you mean? 10:09:36
 8 A. One example is speaking at the conferences 10:09:40
 9 and training seminars and such. 10:09:47
 10 Q. What types of conferences do you speak at 10:09:49
 11 for NFPA? 10:09:52
 12 A. In my current role primarily, I guess that's 10:09:52
 13 a standards role, technically it could 10:09:57
 14 involve the topic at hand. It could be a 10:09:59
 15 trade event or an association of, say, an 10:10:01
 16 association of manufacturers or constituents 10:10:08
 17 or government, like fire marshals. 10:10:11
 18 Q. On what topics do you typically speak at 10:10:18
 19 those conferences? 10:10:23
 20 A. As broad as our scope of NFPA. 10:10:25
 21 Q. And how broad is that scope? 10:10:34
 22 A. We -- our mission is based upon safety and 10:10:36
 23 improving safety and reducing loss. And that 10:10:42
 24 covers approximately 300 codes and standards 10:10:44
 25 on a multitude of topics. 10:10:49
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1 Q. How do codes and standards improve safety 10:11:01
 2 and reduce loss? 10:11:03
 3 A. Codes and standards are designed -- part of 10:11:05
 4 them is to learn from losses, learn from 10:11:13
 5 incidents as such to ensure what protection 10:11:17
 6 needs to be in place to account for that. 10:11:20
 7 That's one of the ways. 10:11:23
 8 Q. How else do codes and standards improve 10:11:27
 9 safety and reduce losses? 10:11:30
 10 MR. REHN: I'll just object that 10:11:35
 11 these questions are outside the scope of the 10:11:36
 12 topics for which this witness was designated, 10:11:38
 13 but you can answer. 10:11:41
 14 MR. BRIDGES: I disagree, but we 10:11:42
 15 don't need to argue it. 10:11:44
 16 A. Codes and standards, at least the NFPA 10:11:46
 17 process, brings together a multitude of 10:11:48
 18 interested parties which can determine, 10:11:51
 19 through the consensus process, a best minimum 10:11:53
 20 level of safety. 10:11:58
 21 Q. Who determines what the best minimum level 10:12:14
 22 of safety is in that process? 10:12:50
 23 MR. REHN: Objection as to form. 10:12:55
 24 Q. You may answer. 10:12:58
 25 A. At NFPA our process relies upon our technical 10:12:59
 Page 15

1 committee volunteers. 10:13:04
 2 Q. Is it the technical committee of volunteers 10:13:15
 3 who determine what constitutes the best 10:13:22
 4 minimum level of safety? 10:13:24
 5 MR. REHN: Objection as to form. 10:13:26
 6 A. It's a combination of -- our technical 10:13:29
 7 committee members determine the final 10:13:32
 8 technical requirements, however, that's 10:13:34
 9 balanced with extensive public review and 10:13:37
 10 comment. 10:13:39
 11 Q. I'll come back to that in a minute. How else 10:13:49
 12 do you -- in what other forums do you speak 10:14:14
 13 as primary technical spokesman for NFPA? You 10:14:17
 14 mentioned media interviews, certain public 10:14:24
 15 forums. You mentioned conferences and 10:14:27
 16 training seminars. Are there any other ways 10:14:29
 17 in which you serve as the primary technical 10:14:32
 18 spokesman for NFPA? 10:14:34
 19 A. I often give presentations relating to 10:14:35
 20 awareness of our process and awareness of how 10:14:39
 21 to get involved and how to be part of this 10:14:42
 22 public codes and standards process. 10:14:46
 23 Q. To whom do you make those presentations? 10:14:51
 24 A. Various affected parties. Again, really 10:14:55
 25 depends on the breadth of topics. So it 10:14:59
 Page 16

1 varies. 10:15:04
 2 Q. What are some examples of groups to which you 10:15:04
 3 make these presentations? 10:15:08
 4 A. For example, if there's an emerging technical 10:15:09
 5 topic of safety or concern to the 10:15:13
 6 association, I may meet with fire marshals or 10:15:16
 7 local safety officials in a given 10:15:19
 8 jurisdiction or state to present what we know 10:15:22
 9 at that time. 10:15:26
 10 Q. To your knowledge, what use do they make of 10:15:30
 11 the information that you present to them? 10:15:42
 12 MR. REHN: Objection as to form. 10:15:45
 13 Calls for speculation. 10:15:47
 14 A. It would really depend on the group. 10:15:49
 15 Q. Let's say fire marshals. 10:15:56
 16 MR. REHN: Same objection. 10:15:58
 17 A. They often utilize that information as 10:16:01
 18 information to make safety decisions within 10:16:05
 19 their various jurisdictions or with the 10:16:07
 20 situations that they're facing. 10:16:11
 21 Q. What kind of safety decisions are you 10:16:12
 22 referring to? 10:16:14
 23 A. It could be, for example, how to understand a 10:16:19
 24 new technology or a new application of 10:16:27
 25 safety, a new safety standard, a new adoption 10:16:34
 Page 17

1 meetings are open to anyone who wishes to 10:30:44
 2 attend. 10:30:46
 3 Q. Anything else? 10:30:46
 4 A. No. I think that covers it. 10:30:49
 5 Q. What do you mean by call the meeting, NFPA 10:30:55
 6 calls the meeting? 10:31:06
 7 A. We provide advance public notice when we call 10:31:08
 8 the meeting, including on our website, social 10:31:12
 9 media announcements to the committee members 10:31:16
 10 to make not only the committee but the public 10:31:20
 11 aware of the next meeting date, location, 10:31:22
 12 et cetera. 10:31:26
 13 Q. How does NFPA book the meeting? 10:31:29
 14 A. We have a meetings department whose 10:31:34
 15 responsibility is to book all of our 10:31:38
 16 meetings. 10:31:41
 17 Q. Does that mean to arrange the logistics, like 10:31:42
 18 the hotels and conferences rooms and things 10:31:47
 19 like that? 10:31:50
 20 A. The meetings department is responsible -- 10:31:52
 21 MR. REHN: Objection to form. 10:31:51
 22 A. The meetings department is responsible for 10:31:56
 23 taking care of finding a proper hotel, large 10:32:02
 24 enough meeting rooms, things like that. 10:32:04
 25 Whatever the size of the logistics, they 10:32:07
 Page 26

1 handle all the logistics around that meeting 10:32:09
 2 space and any required hotels. 10:32:12
 3 Q. How does NFPA host the meeting? 10:32:14
 4 MR. REHN: Objection to the form. 10:32:20
 5 Q. I should say how does NFPA host the meetings? 10:32:24
 6 MR. REHN: Same objection. 10:32:28
 7 A. I think the best approach is that because 10:32:29
 8 it's an NFPA meeting, so it's -- we're 10:32:31
 9 calling -- when I say we're calling the 10:32:36
 10 meeting, so it's our committee meeting as an 10:32:37
 11 example. 10:32:41
 12 So NFPA staff is there, technical 10:32:41
 13 staff is there facilitating and running the 10:32:46
 14 meeting along with the actual volunteer 10:32:48
 15 technical committee chair. So I think that 10:32:50
 16 should clarify what I'm implying by 10:32:54
 17 "hosting." 10:32:56
 18 Q. How does the NFPA staff facilitate and run 10:32:57
 19 the meetings along with the technical 10:33:15
 20 committee chairs? 10:33:17
 21 A. Again, just to clarify, just focusing on 10:33:20
 22 technical committee meetings? 10:33:23
 23 Q. Yes. 10:33:24
 24 A. Okay. We have a technical staff liaison 10:33:25
 25 who's assigned to each of our standards and a 10:33:30
 Page 27

1 portion of their job is to attend the 10:33:33
 2 technical committee meetings. 10:33:36
 3 Q. What do the liaisons do at those meetings 10:33:39
 4 when they attend them? 10:33:45
 5 MR. REHN: Objection to the form. 10:33:45
 6 A. Their primary responsibility is to capture 10:33:46
 7 all of the technical changes that the 10:33:51
 8 committee is making to the document they're 10:33:54
 9 working on or standard they're working on. 10:33:57
 10 Q. What do you mean by technical changes in that 10:34:02
 11 context? 10:34:24
 12 A. Our technical committees are responsible for 10:34:27
 13 developing changes to our codes and 10:34:31
 14 standards. And one of the primary 10:34:34
 15 responsibilities of the technical staff 10:34:37
 16 liaison is to capture those changes. 10:34:39
 17 Q. In what respect are those changes technical 10:34:46
 18 changes? 10:34:50
 19 A. Those changes are specific, technical being 10:34:53
 20 scientific or wording changes to our codes 10:34:57
 21 and standards which are technical documents. 10:35:01
 22 Q. How do you distinguish between scientific 10:35:08
 23 changes and wording changes to the technical 10:35:11
 24 documents? 10:35:17
 25 MR. REHN: Objection to the form. 10:35:18
 Page 28

1 Lacks foundation. Mischaracterizes the 10:35:19
 2 testimony. 10:35:22
 3 A. A technical change, in my view, would be 10:35:22
 4 changing a specific requirement. A wording 10:35:28
 5 change may be a change the committee could do 10:35:32
 6 if they have determined that the requirement 10:35:34
 7 is confusing or not clear what the specific 10:35:36
 8 requirement is, so they may adjust the 10:35:40
 9 wording to make it easier to interpret or 10:35:41
 10 understand what that actual technical 10:35:45
 11 requirement is. 10:35:46
 12 Q. Who determines what wording changes are 10:35:48
 13 appropriate in the technical committees? 10:35:52
 14 MR. REHN: Objection to the form. 10:35:55
 15 Ambiguous. 10:35:56
 16 A. It's a combination of extensive public review 10:35:58
 17 and comment, the committee's review of that 10:36:02
 18 and their expertise and with the help of our 10:36:05
 19 technical staff to land on the final wording, 10:36:09
 20 which is ultimately decided by the technical 10:36:13
 21 committee. 10:36:15
 22 Q. What criteria do the members of the technical 10:36:23
 23 committee use in choosing the wording of a 10:36:32
 24 code or standard? 10:36:38
 25 MR. REHN: Objection to the form. 10:36:39
 Page 29

1 Q. Is there anything about the development of 11:16:19
 2 standards that the regulations do not cover? 11:16:21
 3 A. Our regulations cover the specific accredited 11:16:27
 4 rules and hence, its regulations. We also 11:16:33
 5 have our committee officers guide which 11:16:35
 6 provides guidance to our technical committee 11:16:37
 7 members as well as our chairs and our manual 11:16:41
 8 style. 11:16:46
 9 Q. What other documents govern or regulate the 11:16:46
 10 development of standards within NFPA? 11:17:44
 11 A. Off the top of my head I can't think of 11:17:56
 12 anything else. 11:17:59
 13 Q. Who participates in -- strike that. 11:18:09
 14 Who are the members, generally 11:18:17
 15 speaking, the category of NFPA's technical 11:18:20
 16 committees? 11:18:26
 17 A. Just for clarification, the representation or 11:18:29
 18 are they members of NFPA? We have 11:18:36
 19 categories -- we have interest categories of 11:18:39
 20 our committee members. 11:18:43
 21 Q. Who -- what persons are entitled to be 11:18:43
 22 members of NFPA's technical committees? 11:18:48
 23 MR. REHN: Objection as to form. 11:18:51
 24 A. Anyone can apply to be a member of an NFPA 11:18:55
 25 technical committee, and based upon their 11:18:59
 Page 50

1 expertise and their background, they're 11:19:01
 2 evaluated through a process that ultimately 11:19:04
 3 involves standards council appointing them 11:19:07
 4 to, or not appointing, depending on their 11:19:10
 5 credentials, to the various technical 11:19:12
 6 committees. 11:19:14
 7 Q. So the standards council determines who gains 11:19:17
 8 admission to membership in the technical 11:19:21
 9 committees? 11:19:23
 10 A. That's correct. 11:19:24
 11 Q. What criteria does the standards council 11:19:27
 12 apply in determining who should gain 11:19:35
 13 membership to the technical committees? 11:19:39
 14 MR. REHN: Objection as to form. 11:19:42
 15 A. It's a multipart criteria. First is 11:19:46
 16 technical expertise within that subject 11:19:51
 17 matter. Second is balance; is the committee 11:19:54
 18 an appropriate balance. And third is the 11:20:01
 19 ability to participate. 11:20:02
 20 Q. What do you mean by balance? 11:20:06
 21 A. By our regulations, NFPA technical committees 11:20:12
 22 are required to have a balance of interest 11:20:16
 23 categories to ensure that no one party or one 11:20:18
 24 interest category can dominate the process. 11:20:21
 25 Q. What are the interest categories? 11:20:24
 Page 51

1 A. There are, I believe, nine interest 11:20:27
 2 categories, including -- one example is 11:20:31
 3 research and testing is an example. Another 11:20:37
 4 example is enforcer, which includes 11:20:40
 5 government officials, both, sometimes federal 11:20:44
 6 but state and local jurisdictions, as well as 11:20:48
 7 special expert, which is consultants as an 11:20:52
 8 example. 11:20:56
 9 Users, installer maintainers which 11:20:56
 10 are those who install the systems, consumers, 11:21:02
 11 and that's all I can think of. I'm not sure 11:21:13
 12 if I said it, but consumer is another one 11:21:30
 13 that can represent a special -- have a 11:21:34
 14 specific slot. Oh, I'm sorry, one other slot 11:21:35
 15 is labor, is another slot. 11:21:38
 16 Q. Thank you. Are all NFPA employees members of 11:21:51
 17 the technical committees? 11:22:16
 18 MR. REHN: Objection as to form. 11:22:20
 19 A. NFPA employees are not -- cannot be members 11:22:23
 20 of our technical committees. However, as I 11:22:27
 21 stated previously, it's important -- there's 11:22:30
 22 an important role that NFPA staff plays in 11:22:32
 23 guiding, advising the committee, coordinating 11:22:35
 24 the activities and providing their technical 11:22:37
 25 expertise, especially technical staff liaison 11:22:40
 Page 52

1 into this committee process. But they do not 11:22:43
 2 have -- they're not members of the committee, 11:22:46
 3 and they do not carry a vote in the decisions 11:22:48
 4 of the committees. 11:22:51
 5 Q. Who constitutes by category of employment 11:23:01
 6 is -- strike that. 11:23:08
 7 By category of employment, who 11:23:09
 8 constitutes the members of the standards 11:23:11
 9 council? 11:23:15
 10 MR. REHN: Objection as to form. 11:23:15
 11 It's vague. 11:23:17
 12 A. I'd like to provide just a quick comment to 11:23:19
 13 help you clarify the question from my 11:23:26
 14 understanding. Oftentimes our council 11:23:27
 15 members and our committee members are not 11:23:29
 16 appointed based upon employment. It's based 11:23:31
 17 upon the interest category they represent. 11:23:33
 18 Q. Thank you, yes. By interest category -- 11:23:37
 19 strike that. 11:23:43
 20 You mentioned interest categories 11:23:44
 21 for technical committee membership, correct? 11:23:47
 22 A. Yes. 11:23:49
 23 Q. Do the same interest categories apply for 11:23:49
 24 appointments or election to -- strike that. 11:23:53
 25 How is the standards council -- strike that. 11:23:58
 Page 53

1 How are persons chosen to serve on 11:24:06
 2 the standards council? 11:24:08
 3 MR. REHN: Object to the form. 11:24:12
 4 A. Because the standards council is the 11:24:15
 5 overarching body over our entire standards 11:24:18
 6 development process, they are appointed 11:24:21
 7 through a process that involves the NFPA 11:24:24
 8 president making recommendations to the NFPA 11:24:27
 9 board of directors. Ultimately the standards 11:24:29
 10 council members are appointed by our board of 11:24:33
 11 directors. 11:24:35
 12 Q. Are any NFPA employees members of the 11:24:40
 13 standards council? 11:24:43
 14 MR. REHN: Objection as to form. 11:24:45
 15 A. Specifically, no. However, similar to the 11:24:49
 16 technical committees, there is staff assigned 11:24:51
 17 to support the standards council, their 11:24:55
 18 activities and their decisions. 11:24:58
 19 Q. I'd like to go back for a moment to the 11:25:11
 20 process after the technical committee has 11:25:19
 21 decided on changes to a standard. 11:25:26
 22 And you say that a staff 11:25:31
 23 representative, NFPA staff representative 11:25:38
 24 will capture those changes from the technical 11:25:41
 25 committee, correct? 11:25:44
 Page 54

1 MR. REHN: Object to the form. 11:25:48
 2 A. The NFPA technical staff that serves as, the 11:25:50
 3 term we use is a staff liaison to a technical 11:25:54
 4 committee, they do more than just capture the 11:25:56
 5 specific wordings. 11:26:00
 6 What they do is they are each 11:26:01
 7 technical experts in their field and they not 11:26:03
 8 only capture or record those changes, but 11:26:06
 9 they provide their expertise to the 11:26:09
 10 committee, their field experience, what they 11:26:11
 11 have, the information that they're bringing 11:26:14
 12 in through questions on the standards and 11:26:16
 13 such. 11:26:18
 14 And they provide that technical 11:26:19
 15 expertise to the committee so the committee 11:26:21
 16 can utilize that, a complete combination with 11:26:24
 17 all the public input or comments, to land on 11:26:27
 18 a final set of proposed language. In 11:26:32
 19 summary, it's more than just recording. 11:26:37
 20 They're not really recording secretaries, per 11:26:39
 21 se. 11:26:43
 22 Q. But who ultimately determines the language of 11:26:43
 23 the technical committee's proposed changes to 11:26:47
 24 a code or standard? 11:26:51
 25 MR. REHN: Objection as to form. 11:26:53
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1 It's ambiguous. 11:26:54
 2 A. The final decision is accomplished through 11:26:56
 3 that ballot of the technical committee, but 11:26:58
 4 the wording itself is that combination of the 11:27:01
 5 technical staff and the committee working to 11:27:05
 6 capture the requirement and get it worded 11:27:07
 7 properly in the right context, in the right 11:27:09
 8 order within a document so that when the 11:27:12
 9 final specific words are balloted, the 11:27:14
 10 committee has it in context of the whole 11:27:18
 11 standards and they can make that decision, 11:27:20
 12 seeing it within the body of the standard. 11:27:22
 13 Q. When the text is balloted, is there any 11:27:24
 14 indication to the members of the committee 11:27:27
 15 what variations have occurred as a 11:27:32
 16 consequence of staff input from the text that 11:27:38
 17 the committee itself was proposing? 11:27:43
 18 MR. REHN: Objection as to form. 11:27:47
 19 Vague. Lacks foundation. Assumes facts not 11:27:48
 20 in evidence. 11:27:51
 21 A. There are really two types of changes the 11:27:53
 22 committee is balloted on. One is the -- a 11:27:57
 23 plain first revision or second revision, 11:28:01
 24 which may have been edited to comply with our 11:28:04
 25 manual style, get the wording right. That is 11:28:07
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1 connected directly to the work of the 11:28:09
 2 committee. The second is a revision that's 11:28:11
 3 tied to a pure editorial change. 11:28:15
 4 Q. Do either of these sets of revisions get 11:28:19
 5 identified to technical committee members so 11:28:24
 6 that they can understand what input or 11:28:28
 7 changes, if any, the technical committee 11:28:31
 8 staff contributed? 11:28:35
 9 MR. REHN: Objection as to form. 11:28:41
 10 A. Yes, they all do. All changes are indicated 11:28:44
 11 to the technical committees for balloting. 11:28:48
 12 And if there is, in the sense of an editorial 11:28:50
 13 revision, it's indicated that this was 11:28:54
 14 identified by staff as a potential editorial 11:28:57
 15 revision. The committee can then, in their 11:29:01
 16 voting, decide whether that change moves 11:29:05
 17 forward or not. 11:29:10
 18 Q. Where in the records of the development of 11:29:10
 19 each standard does one find the indications 11:29:12
 20 of those changes? 11:29:17
 21 MR. REHN: Objection to the form. 11:29:21
 22 A. They are part of the first draft report or, 11:29:25
 23 and/or, depending, the second draft report. 11:29:29
 24 Both those reports consolidate the whole 11:29:33
 25 record. 11:29:35
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1 go -- strike that. 11:40:50
 2 If you needed to identify the 11:40:53
 3 language that NFPA employees contributed to 11:40:55
 4 NFPA codes and standards, how would you 11:41:05
 5 determine that language? 11:41:07
 6 MR. REHN: Objection as to form. 11:41:10
 7 It's vague and compound. 11:41:11
 8 A. What we could determine is the language the 11:41:15
 9 technical committee at the end of the day 11:41:19
 10 approved. Into -- each individual word and 11:41:21
 11 such would be difficult, if not impossible, 11:41:25
 12 because of ultimately the technical staff 11:41:30
 13 provides that content to the committee which 11:41:33
 14 then approves those words. 11:41:35
 15 Q. You said the technical staff provides the 11:41:37
 16 content to the committee? The technical 11:41:44
 17 staff doesn't draft the standards, correct? 11:41:47
 18 MR. REHN: Objection as to form. 11:41:51
 19 Mischaracterizes. 11:41:53
 20 A. In many cases the technical staff in the room 11:41:59
 21 is drafting the text. 11:42:02
 22 Q. Is proposing new text? 11:42:04
 23 A. In some cases yes, to accomplish what the 11:42:10
 24 committee is trying to accomplish. The 11:42:13
 25 technical staff of NFPA are experts in their 11:42:15
 Page 66

1 field, and the committee may want to 11:42:20
 2 establish a requirement for X and the 11:42:23
 3 technical staff is there saying, well, we can 11:42:24
 4 word it this way and that way, does this meet 11:42:27
 5 your intent, how about we do this, I can 11:42:29
 6 research some information, get back to you at 11:42:30
 7 the next meeting. 11:42:32
 8 The technical staff provides a vital 11:42:33
 9 role in helping the technical committee 11:42:35
 10 accomplish their mission of developing those 11:42:38
 11 words that become ultimately the final words 11:42:40
 12 of the standard. 11:42:43
 13 Q. Who makes the decision about the words in a 11:42:44
 14 standard? 11:42:46
 15 MR. REHN: Objection as to form. 11:42:46
 16 Ambiguous. 11:42:48
 17 A. The final decision is -- and to summarize, 11:42:49
 18 it's a two-part decision. A committee 11:42:54
 19 ballots on it, the ballot's on the final 11:42:55
 20 word, the committee approves it. At the 11:42:58
 21 end of the day our standards council issues 11:43:00
 22 that document, but the committee ballot 11:43:03
 23 establishes the position of the type of 11:43:03
 24 committee at that time. 11:43:07
 25 Q. And how does the text evolve up to the point 11:43:07
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1 that the text of the technical committee is 11:43:16
 2 balloted? 11:43:19
 3 MR. REHN: Objection as to form. 11:43:20
 4 Ambiguous. Compound. 11:43:22
 5 A. The text can evolve and by evolve, you mean 11:43:25
 6 created and included? Is that what you're 11:43:28
 7 saying? 11:43:31
 8 Q. I think so. 11:43:32
 9 A. So in a few ways. One is it can be submitted 11:43:33
 10 through a proposal form or public input form 11:43:37
 11 or a public comment form. The language can 11:43:45
 12 come from that. It can come from the 11:43:49
 13 expertise of the technical committee members 11:43:53
 14 who are sitting on the committee, or it can 11:43:55
 15 come from technical staff providing that to 11:43:58
 16 the committee as their work progresses along. 11:44:01
 17 Ultimately that evolution is the 11:44:06
 18 staff liaison synthesizes all that with the 11:44:08
 19 direction of the committee to land on the 11:44:13
 20 final technical language that is balloted. 11:44:15
 21 Q. With the direction of the committee, meaning 11:44:18
 22 with the approval of the committee members? 11:44:29
 23 MR. REHN: Objection as to form. 11:44:31
 24 Mischaracterizes the testimony. 11:44:34
 25 Q. What do you mean by with the direction of the 11:44:36
 Page 68

1 committee? 11:44:38
 2 A. So a committee could want to establish a 11:44:40
 3 requirement again for X for something and 11:44:45
 4 they may say, we want the requirement to read 11:44:48
 5 12 and the staff liaison would have to put 11:44:51
 6 text around that to get it to read in context 11:44:55
 7 of the document. Or they may say we want to 11:44:57
 8 have a draft chapter on something, technical 11:45:00
 9 staff can you do research, pull together 11:45:03
 10 drafting of documents to present to the 11:45:12
 11 committee to consider. 11:45:14
 12 In the end the committee will agree 11:45:16
 13 through a meeting vote what text is going to 11:45:19
 14 move forward towards ballot. Then the 11:45:21
 15 staff's job is to turn that into a ballot and 11:45:24
 16 make sure it fits to our manual style and 11:45:28
 17 ballot with the technical committee on the 11:45:28
 18 final language. 11:45:31
 19 Q. What criteria do technical committees use 11:45:31
 20 to determine what text moves forward to a 11:45:34
 21 ballot? 11:45:37
 22 MR. REHN: Objection as to form. 11:45:38
 23 A. It's their expertise. It's their 11:45:42
 24 professional opinion in a balanced way 11:45:46
 25 through a meeting vote of what they believe 11:45:48
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1 will move forward. There's motions we 11:45:50
 2 follow, Robert's Rules of Order, and when 11:45:53
 3 there's a motion and it carries by a meeting 11:45:55
 4 vote, which is 50 percent plus one, that 11:45:57
 5 proposed change is then approved to move 11:46:00
 6 forward to ballot, to letter ballot, excuse 11:46:02
 7 me. 11:46:08
 8 Q. Your answer focused on the process. I'm 11:46:08
 9 asking what criteria the technical committee 11:46:10
 10 members use to decide what text to move 11:46:15
 11 forward to a ballot. 11:46:18
 12 MR. REHN: Objection as to form. 11:46:20
 13 A. I would think the criteria would depend on 11:46:24
 14 each individual member of the technical 11:46:26
 15 committee and their expertise and what bar 11:46:28
 16 they believe needs to be crossed or what 11:46:31
 17 things they need to have answered 11:46:32
 18 professionally to make a decision to modify 11:46:34
 19 the standard. 11:46:36
 20 Q. What criteria in your role as the person in 11:46:36
 21 charge of standards development at NFPA -- 11:46:42
 22 strike that. 11:46:46
 23 In your role as the person in charge 11:46:46
 24 of standards development at NFPA, what do you 11:46:49
 25 understand the most typical criteria to be by 11:46:52
 Page 70

1 which technical committees determine what 11:46:59
 2 text to move forward to a ballot? 11:47:02
 3 MR. REHN: Objection as to form. 11:47:04
 4 It's vague. 11:47:06
 5 A. I don't think there's a single answer to 11:47:09
 6 that, and that's why we rely on a consensus 11:47:11
 7 ballot that requires two-thirds of our 11:47:15
 8 technical committee to move anything forward. 11:47:16
 9 That's part of the open consensus process in 11:47:20
 10 that you need two-thirds of a balanced 11:47:22
 11 committee to agree on a technical change to 11:47:26
 12 move it forward. 11:47:28
 13 Each party is going to have a 11:47:29
 14 different motivation for how they want to 11:47:31
 15 vote or how they want things to go forward or 11:47:32
 16 not. 11:47:35
 17 Q. Tell me and enumerate for me some of the 11:47:35
 18 criteria that you understand them to apply in 11:47:38
 19 determining what text to move forward to a 11:47:42
 20 ballot. 11:47:44
 21 MR. REHN: Same objection. 11:47:44
 22 A. Some criteria could include what's the loss 11:47:49
 23 data associated with this issue that we're 11:47:54
 24 facing, fire loss data, injuries, deaths and 11:47:57
 25 such. Some can include economic gain. It's 11:48:00
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1 cheaper, easier to accomplish things, 11:48:04
 2 accomplishes a higher level of safety. Those 11:48:07
 3 are a few examples. 11:48:10
 4 Q. Please give me more examples of criteria that 11:48:12
 5 technical committee members would use in 11:48:16
 6 deciding what text to move forward to ballot. 11:48:18
 7 MR. REHN: Same objection. 11:48:20
 8 A. Other the examples could include research, 11:48:23
 9 data. Such things -- another example could 11:48:30
 10 be loss reports. For example, there's been a 11:48:37
 11 large fire somewhere, a large chemical hazard 11:48:41
 12 or something. There's often an investigative 11:48:43
 13 report that NTSB or CSB or local fire marshal 11:48:45
 14 has done. And the committee would look at 11:48:50
 15 that and say we may have a safety issue that 11:48:52
 16 needs to be addressed. 11:48:54
 17 Q. So you've mentioned information that they 11:48:56
 18 may -- that may motivate them, but I think 11:48:59
 19 your answers are focusing less on what 11:49:06
 20 criteria they apply to determining what text 11:49:09
 21 would move forward. 11:49:11
 22 I'd like for you to tell me the 11:49:12
 23 different criteria that technical committee 11:49:14
 24 members apply, to your knowledge, in deciding 11:49:17
 25 what text to move forward to a ballot. 11:49:20
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1 MR. REHN: Same objection. 11:49:23
 2 A. Again, I think it would be difficult, without 11:49:25
 3 speculating, I'm not sure what each person 11:49:29
 4 would use for criteria, and that's why my 11:49:31
 5 answer previously focused on having a 11:49:34
 6 balanced committee of different experts, 11:49:36
 7 topical experts in that area, will each bring 11:49:39
 8 a different set of personal criteria, 11:49:39
 9 personal decisionmaking that will decide 11:49:43
 10 what's going to move forward. 11:49:45
 11 Q. I'd like for you to tell me what some of 11:49:47
 12 those personal criteria are that you were 11:49:49
 13 aware of, based on your interactions with 11:49:52
 14 technical committee members at NFPA. 11:49:55
 15 MR. REHN: Objection as to form. 11:50:00
 16 A. I think many of those things I stated, like 11:50:01
 17 data, research reports, information combined 11:50:03
 18 is one of the main reasons, information is 11:50:09
 19 one of the main things, data, facts are 11:50:11
 20 important criteria for our committee members. 11:50:14
 21 I think the other thing that's very 11:50:17
 22 important to our committee members and to our 11:50:18
 23 process is their extensive experience in the 11:50:20
 24 field and seeing results of different 11:50:24
 25 approaches. 11:50:27
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1 Q. Let me rephrase it differently because I'm 11:50:27
 2 not sure you're responding to my question 11:50:29
 3 about criteria. What are the different 11:50:31
 4 reasons, not what background information are 11:50:34
 5 they acting on, but what are the different 11:50:38
 6 goals that, to your knowledge, technical 11:50:40
 7 committee members have in deciding whether to 11:50:45
 8 progress certain text to a ballot? 11:50:49
 9 MR. REHN: Objection as to form. 11:50:54
 10 A. I think the biggest overarching goal is the 11:50:55
 11 accomplishment of the NFPA mission. They 11:51:03
 12 want to ultimately reduce life loss, injury, 11:51:04
 13 property loss, economic loss due to fire and 11:51:09
 14 other related hazards. 11:51:11
 15 Q. How do decisions regarding progressing 11:51:13
 16 certain text to a ballot touch upon that 11:51:17
 17 mission? 11:51:24
 18 MR. REHN: Objection as to form. 11:51:26
 19 A. Fundamentally does it progress towards 11:51:30
 20 accomplishing that mission? Does the 11:51:33
 21 institution of a new technology or a new 11:51:37
 22 requirement or modifying an existing 11:51:39
 23 requirement lead to better life safety, 11:51:42
 24 better fire protection, better electrical 11:51:46
 25 safety, better protection of our nation's 11:51:48
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1 first responders? Does it accomplish the 11:51:51
 2 mission? So that's the best way. 11:51:53
 3 Q. Does it -- would you say that a general 11:51:59
 4 question that technical committees address in 11:52:05
 5 deciding whether to progress certain text to 11:52:18
 6 a ballot is whether the proposed change will 11:52:22
 7 improve outcomes? 11:52:29
 8 MR. REHN: Object to the form of the 11:52:34
 9 question. 11:52:37
 10 A. I would speculate that each decision would be 11:52:41
 11 in guidance or in alignment with improving 11:52:47
 12 safety. And those would be the outcomes, 11:52:53
 13 improving safety, reducing loss, preventing 11:52:53
 14 incidents from happening again that resulted 11:52:57
 15 in life loss injuries, property loss, 11:52:59
 16 et cetera. 11:53:04
 17 Q. Who pays for members of the technical 11:53:11
 18 committees to participate in their work? 11:53:15
 19 A. Again, a lot of my answers are it depends. 11:53:23
 20 In this case, you have everything from 11:53:26
 21 companies to people's own time, people taking 11:53:30
 22 vacation time and in some cases, NFPA 11:53:34
 23 reimburses participation through our enforcer 11:53:37
 24 fund to get public safety officials like fire 11:53:41
 25 marshals, electrical inspectors, and other, 11:53:44
 Page 75

1 we call them enforcers, to attend our 11:53:46
 2 committee meetings. 11:53:48
 3 Q. Do any -- does NFPA pay any persons for their 11:53:50
 4 time in participation in the technical 11:53:57
 5 committee work? 11:54:02
 6 A. NFPA does not pay for time, but what we do 11:54:06
 7 for public sector officials who we classify 11:54:09
 8 as enforcers, we have an enforcer fund which 11:54:12
 9 we pay 80 percent of their associated travel 11:54:15
 10 to a committee meeting, including hotel, 11:54:15
 11 airfare, et cetera. 11:54:20
 12 Q. What is the motivation of persons, as you 11:54:20
 13 understand it, to participate in technical 11:54:23
 14 committees? 11:54:28
 15 MR. REHN: Object to the form. 11:54:29
 16 A. I think there's lots of motivations. I think 11:54:32
 17 overwhelmingly the number one motivation, in 11:54:35
 18 my opinion and my years of service, is the 11:54:37
 19 overarching mission of NFPA. Our mission of 11:54:40
 20 safety is very attractive to many people. 11:54:44
 21 Many of our volunteers not only 11:54:47
 22 volunteer to participate in the NFPA process 11:54:49
 23 but also volunteer their time to do so, and 11:54:51
 24 that's a strong indication to me that that's 11:54:54
 25 the primary motivation. 11:54:56
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1 Q. Are you aware of any person whose primary 11:55:02
 2 motivation is to receive some financial 11:55:05
 3 reward for participation in the technical 11:55:10
 4 committee process? 11:55:13
 5 A. I'm not aware of an individual, per se, but I 11:55:21
 6 would speculate that these people are experts 11:55:26
 7 in their fields, and there's professional 11:55:28
 8 recognition and acknowledgment for being on 11:55:32
 9 an NFPA technical committee. 11:55:36
 10 MR. BRIDGES: Why don't we take a 11:55:46
 11 break. We've been going for a while. What 11:55:47
 12 time is it? 11:55:51
 13 VIDEOGRAPHER: 11:55. 11:55:51
 14 MR. BRIDGES: We'll keep going. 11:55:52
 15 VIDEOGRAPHER: There's another 11:55:54
 16 15 minutes on the tape. 11:55:55
 17 MR. BRIDGES: We'll keep going 11:55:56
 18 another 15 minutes. 11:55:58
 19 Q. How can the public gain access without 11:56:15
 20 payment to NFPA's codes and standards? 11:56:33
 21 A. NFPA provides free read-only access to all of 11:56:37
 22 our codes and standards to ensure that 11:56:42
 23 anyone, public or private sector or citizen 11:56:46
 24 consumer, has the ability to read and 11:56:49
 25 understand the requirements of any of our 11:56:52
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1 electrical style manual, which applies to our 02:50:24
 2 electrical documents. 02:50:27
 3 Q. Do the terms "annex" and "appendix" coexist 02:50:37
 4 in NFPA's forms today? 02:50:45
 5 MR. REHN: Object to the form. 02:50:48
 6 Lacks foundation. 02:50:54
 7 A. We updated our manual style in, I believe it 02:50:56
 8 was year 2000, and we changed the term 02:51:02
 9 "appendix" to "annex" at that time to be 02:51:05
 10 consistent with other standards developers 02:51:09
 11 terminology. 02:51:12
 12 And so it's my opinion that most, if 02:51:14
 13 not all, of our documents, many of our 02:51:17
 14 documents have gone through the process of a 02:51:21
 15 full revision where that is changed from 02:51:23
 16 appendix to annex. 02:51:26
 17 Q. You said NFPA made the change to be 02:51:29
 18 consistent with other standards development 02:51:33
 19 organizations' terminology; is that correct? 02:51:35
 20 A. That's correct. 02:51:39
 21 Q. Is there a general style manual for standards 02:51:41
 22 developers terminology? 02:51:46
 23 A. Not that I'm aware of. 02:51:53
 24 Q. Do the different standards developers tend to 02:51:55
 25 converge around using words in similar 02:51:58
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1 fashion? 02:52:01
 2 MR. REHN: Object to the form. 02:52:03
 3 A. In my opinion I would say standard developers 02:52:08
 4 converge around terminology and format that 02:52:13
 5 works for their constituents that utilize 02:52:15
 6 their standards. 02:52:18
 7 Q. Does that lead to some convergence among the 02:52:20
 8 practices of various standards development 02:52:23
 9 organizations? 02:52:26
 10 MR. REHN: Object to the form. May 02:52:33
 11 call for speculation. 02:52:34
 12 A. I would -- from my personal opinion, I view 02:52:37
 13 it as a usability and we want to make it as 02:52:41
 14 easy and as possible for users to understand 02:52:45
 15 the structure of the standard and the 02:52:49
 16 requirements and the layout of the documents, 02:52:51
 17 so often those changes may end up in a common 02:52:53
 18 format to make it easier to understand. 02:52:57
 19 Q. A common format with some other standards 02:52:59
 20 developers organizations? 02:53:01
 21 MR. REHN: Object to the form. 02:53:05
 22 Vague. 02:53:06
 23 A. In my view, yes. For example, a given set 02:53:06
 24 chapter where all the definitions are 02:53:13
 25 contained is a good example. 02:53:14
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1 Q. Another example is changing the word appendix 02:53:17
 2 to annex, correct? 02:53:20
 3 A. To the best of my recollection, that's an 02:53:22
 4 example that I could think of why we shifted 02:53:25
 5 there, but the best example I can give you is 02:53:28
 6 a single chapter where all the definitions 02:53:30
 7 are included. 02:53:33
 8 Q. Then you mentioned that there were updates to 02:53:36
 9 disclaimers and copyright releases; is that 02:53:40
 10 correct? 02:53:47
 11 A. That is correct. Over my 20 years, I'm aware 02:53:48
 12 that updates were added to the forms or just 02:53:51
 13 to the forms on a -- not on a specific basis, 02:53:57
 14 but as needed. 02:54:00
 15 Q. What updates were needed to the disclaimers 02:54:02
 16 and copyright releases? 02:54:06
 17 MR. REHN: Object to the form. May 02:54:08
 18 call for a legal opinion. Ambiguous with 02:54:10
 19 respect to the terms used in the question. 02:54:14
 20 A. From my perspective, my team's perspective, 02:54:17
 21 we never got into the details of those. It 02:54:22
 22 was often our legal team would ask us to 02:54:24
 23 update our forms, and we would accomplish 02:54:27
 24 that through our process. 02:54:29
 25 Q. What were some of the changes to the forms 02:54:31
 Page 140

1 that you recall as part of those updates? 02:54:35
 2 MR. REHN: Objection. Documents 02:54:38
 3 speak for themselves. 02:54:40
 4 A. I think some of the major changes are 02:54:43
 5 consistent format. If you notice 02:54:46
 6 historically, there was lots of different 02:54:49
 7 formattings and layouts. Having consistent 02:54:49
 8 format, consistent titles, consistent look 02:54:51
 9 and feel is probably the biggest ones that I 02:54:55
 10 was -- that I'm aware of and was involved in. 02:54:59
 11 Q. My question was specifically to the updates 02:55:02
 12 of disclaimers and copyright releases. What 02:55:05
 13 updates do you recall to the text of the 02:55:09
 14 disclaimers and copyright releases? 02:55:12
 15 MR. REHN: Object to the form. 02:55:15
 16 A. That was not, again, not part of my 02:55:18
 17 responsibility. Oftentimes we were given a 02:55:21
 18 set of text to insert as that part of the 02:55:23
 19 form and we didn't do a line by line 02:55:26
 20 comparison. That was -- our job was to 02:55:29
 21 implement the appropriate disclaimers, which 02:55:31
 22 was legal's responsibility to provide to us 02:55:33
 23 and ensure that it got in there. 02:55:35
 24 Q. What are some of the changes that you recall? 02:55:37
 25 MR. REHN: Objection. Asked and 02:55:40
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1 Electrical Code; is that correct? 03:04:18
 2 MR. REHN: Objection as to form. 03:04:21
 3 A. It appears based on Line Item 1A that the 03:04:26
 4 document the person was submitting it on was 03:04:29
 5 to the National Electrical Code. 03:04:32
 6 Q. There was normally -- didn't you say there 03:04:34
 7 was normally a different type of form for 03:04:36
 8 submissions for the National Electrical Code? 03:04:39
 9 A. If we look at some of the forms you've 03:04:45
 10 submitted to me, some of them had the title. 03:04:47
 11 The title was different, said form for the X 03:04:49
 12 edition of the National Electrical Code, and 03:04:51
 13 so we didn't prohibit you from using any 03:04:53
 14 standard form. 03:04:57
 15 (Exhibit 1248 marked for 03:05:30
 16 identification.) 03:06:03
 17 (Pause) 03:06:05
 18 Q. Do you recognize Exhibit 1248 as a form for 03:06:05
 19 proposal that NFPA has maintained in the 03:06:44
 20 ordinary course of business as part of its 03:06:47
 21 standards development process? 03:06:50
 22 A. Yes, Exhibit 1248 does look typical. 03:06:53
 23 (Exhibit 1249 marked for 03:07:33
 24 identification.) 03:07:41
 25 Q. Do you recognize Exhibit 1249 as a form for 03:07:41
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1 proposal that NFPA has maintained in the 03:07:53
 2 ordinary course of business in its standards 03:07:58
 3 development process? 03:08:04
 4 A. Yes, Exhibit 1249 does look typical. 03:08:13
 5 Q. And some persons might suggest proposals with 03:08:21
 6 attachments where they can't fit the text of 03:08:27
 7 the proposal in the lines on the form. And 03:08:33
 8 this exhibit reflects an attachment on the 03:08:36
 9 reverse page of Exhibit 1249; is that 03:08:42
 10 correct? 03:08:45
 11 A. Based upon my review of the statement of 03:08:47
 12 Item 4 and the proposed text on the back, it 03:09:02
 13 appears to be consistent that the two pages 03:09:06
 14 were copied correctly. 03:09:08
 15 (Exhibit 1250 marked for 03:09:26
 16 identification.) 03:09:41
 17 Q. I've handed you Exhibit 1250. Do you 03:09:46
 18 recognize this as a form for proposals that 03:10:01
 19 NFPA has maintained in the ordinary course of 03:10:09
 20 business in its standards development 03:10:13
 21 process? 03:10:17
 22 A. (Witness examines document) Based upon my 03:10:18
 23 review, it appears that this is typical. 03:10:33
 24 Q. So that's a yes? 03:10:36
 25 A. That's a yes. It appears to be typical, 03:10:37
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1 Exhibit 1250. 03:10:40
 2 Q. Do you know Mr. Belke, James C. Belke? 03:10:41
 3 A. No, sir. 03:10:46
 4 Q. Do you know whether he's a member of any 03:10:46
 5 technical committee? 03:10:50
 6 A. Not off the top of my head. 03:10:55
 7 Q. Do you know what the annotations in 03:10:56
 8 handwriting various places in the form 03:11:05
 9 indicate? There's a checkmark in several 03:11:14
 10 different places. There's some asterisks, 03:11:21
 11 there's a pound sign A, pound sign B, pound 03:11:32
 12 sign C. 03:11:36
 13 MR. REHN: Is that the question? 03:11:46
 14 MR. BRIDGES: Yes. 03:11:48
 15 MR. REHN: Objection that it's 03:11:49
 16 compound. 03:11:50
 17 A. So let me first answer the first part and we 03:11:57
 18 can follow up if we need to. Each change 03:12:00
 19 that came in was processed, again, by 03:12:03
 20 full-time staff to verify signatures and 03:12:06
 21 copyright concerns. And if you notice on 03:12:09
 22 the first page under Proposals, not original 03:12:11
 23 material, there's supporting material which 03:12:15
 24 has an attached CSB report. 03:12:16
 25 And it appears that someone wrote 03:12:26
 Page 148

1 down that it was not being submitted as 03:12:29
 2 change but as supporting material to support 03:12:31
 3 a change. 03:12:35
 4 Q. Go ahead. 03:12:41
 5 A. The checkmarks, each of these changes had to 03:12:42
 6 be keyed manually by the staff who verified 03:12:45
 7 all the text, editorial and production staff, 03:12:47
 8 and oftentimes they would check the forms as 03:12:51
 9 they worked through them to ensure they had 03:12:53
 10 captured everything. That -- in this case it 03:12:55
 11 would be speculation on my part that that's 03:12:57
 12 what those checkmarks are there for. 03:12:59
 13 (Exhibit 1251 marked for 03:13:22
 14 identification.) 03:13:30
 15 Q. Does Exhibit -- strike that. 03:13:30
 16 Do you recognize 1251 as a document 03:13:46
 17 that NFPA maintains in the ordinary course of 03:13:49
 18 business in the standards development 03:13:52
 19 process? 03:13:53
 20 A. Exhibit 1251 does look typical for a proposal 03:13:54
 21 form. 03:13:58
 22 Q. So the answer is yes? 03:13:59
 23 MR. REHN: Object to the form. 03:14:01
 24 A. Yes, Exhibit 1251 does look typical. 03:14:05
 25 03:14:30
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1 MR. REHN: Object to the form. 06:01:45
 2 Argumentative. Question has been asked and 06:01:46
 3 answered. 06:01:49
 4 A. And my response remains the same that I can't 06:01:50
 5 speculate specifically to that level of 06:01:52
 6 detail of their day-to-day tasks. 06:01:54
 7 Q. You can speculate as to specific detail about 06:01:57
 8 other tasks, but not about these tasks? 06:02:00
 9 MR. REHN: Objection. 06:02:02
 10 Argumentative. Mischaracterizes the 06:02:03
 11 testimony. 06:02:05
 12 Q. Why are you not answering the question I've 06:02:05
 13 asked, which is, what's your best estimate of 06:02:07
 14 the time, of the percentage of time those 06:02:10
 15 persons spent on checking for signatures and 06:02:12
 16 copyright information in the submissions? 06:02:17
 17 MR. REHN: Objection. 06:02:20
 18 Argumentative. Asked and answered. 06:02:21
 19 A. I can speculate on their total workload, 06:02:24
 20 their tasks they took -- 06:02:27
 21 Q. That wasn't my question. My question is, 06:02:29
 22 what percentage applied to checking for 06:02:30
 23 signatures and copyright information? That's 06:02:33
 24 my question. Is it clear? 06:02:37
 25 MR. REHN: Objection. 06:02:39

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1 Argumentative. 06:02:39
 2 Q. Is the question clear? 06:02:41
 3 A. No. 06:02:43
 4 Q. What's unclear about it? Do you understand 06:02:44
 5 what checking for signatures means in looking 06:02:47
 6 at the assignment for copyright forms? Do 06:02:51
 7 you understand? 06:02:58
 8 MR. REHN: Objection. 06:02:58
 9 Argumentative. 06:02:59
 10 A. I understand that we have a policy that each 06:03:00
 11 and every proposal and comment is checked for 06:03:02
 12 copyright and any associated submitted 06:03:04
 13 material is also checked. I have a team, a 06:03:07
 14 full-time staff that that is one of their 06:03:09
 15 primary tasks to do each and every day. 06:03:11
 16 Q. Great. I'm glad to know about the policy. 06:03:14
 17 Now my question is, what percentage of their 06:03:18
 18 time do you estimate, your best estimate, 06:03:23
 19 that they spend carrying out that policy? 06:03:27
 20 MR. REHN: Objection. Asked and 06:03:30
 21 answered. 06:03:31
 22 A. I would restate that, due to all the 06:03:34
 23 variables and the amount of variations that 06:03:37
 24 happen each year, I cannot speculate on that 06:03:39
 25 specific singular task. 06:03:42

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1 Q. You can't give any estimate at all? 06:03:44
 2 A. No. 06:03:46
 3 Q. Were you ever aware of how much time they 06:03:46
 4 spent on the task? 06:03:54
 5 A. I'm aware of the full-time resources that it 06:03:57
 6 takes to accomplish our process of supporting 06:04:00
 7 our technical committees. 06:04:03
 8 Q. But you're unaware of how much time they 06:04:08
 9 spend carrying out the policy that you 06:04:10
 10 described? 06:04:14
 11 MR. REHN: Objection. 06:04:14
 12 Argumentative. 06:04:14
 13 A. I believe I've answered your question. 06:04:17
 14 Q. What verification -- strike that. 06:04:19
 15 What efforts did NFPA make to obtain 06:04:34
 16 assignments from the companies that employed 06:04:38
 17 individuals who submitted proposals or 06:04:48
 18 comments for NFPA's codes and standards? 06:04:53
 19 MR. REHN: Object to the form. It's 06:04:58
 20 ambiguous. It assumes facts. There's some 06:05:00
 21 embedded legal conclusions. 06:05:04
 22 A. NFPA verifies through our policy the 06:05:07
 23 submission from the individual. We do not go 06:05:11
 24 to their companies to verify authority of 06:05:16
 25 their signature. 06:05:18

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1 Q. And how does NFPA verify submissions from the 06:05:20
 2 individuals? 06:05:30
 3 MR. REHN: Objection. I think this 06:05:36
 4 topic has been extensively asked and answered 06:05:38
 5 at this point. 06:05:40
 6 A. Several ways, one of which includes verifying 06:05:43
 7 that the submitter has signed the release 06:05:46
 8 form indicating it is their right or their 06:05:48
 9 authority to release it. 06:05:53
 10 Q. What else does NFPA do to verify the 06:05:54
 11 submission from the individual? 06:06:06
 12 MR. REHN: Same objection. 06:06:08
 13 A. Another example is if we review the material 06:06:10
 14 and there's an obvious copyright statement 06:06:14
 15 that is not of that individual who submitted 06:06:18
 16 it, we then contact them and if possible, we 06:06:21
 17 contact the owner of the copyright of the 06:06:24
 18 statement that's within that attached 06:06:27
 19 material. 06:06:28
 20 Q. What else does NFPA do to verify the 06:06:31
 21 submission from the individual? 06:06:35
 22 MR. REHN: Same objection. 06:06:37
 23 A. That's -- to the best of my recollection, 06:06:44
 24 that's the direct way we do it to the person 06:06:48
 25 who submitted it. 06:06:50

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1 Q. Yes. 06:51:42
 2 A. Top left-hand paragraph below the bold 06:51:52
 3 discusses what we used to indicate changes 06:51:57
 4 including shaded or bulleting, like a dot. 06:51:59
 5 Q. It says, "Changes other than editorial are 06:52:07
 6 highlighted with gray shading." Do you see 06:52:13
 7 that? 06:52:15
 8 A. Yes. 06:52:15
 9 Q. What's an example of some editorial changes 06:52:16
 10 that would have occurred between editions of 06:52:19
 11 the NEC? 06:52:22
 12 A. Sample could be a spelling error. 06:52:23
 13 Q. Anything else? 06:52:34
 14 A. The only thing I can think of is occasionally 06:52:36
 15 documents, paragraphs roll into each other, 06:52:46
 16 so spacing, things like that. 06:52:50
 17 Q. The document contains lists of persons 06:52:52
 18 starting at Page 17547 up through Page 17558, 06:53:07
 19 correct? 06:53:18
 20 MR. FEE: Could you repeat that. 06:53:25
 21 What was the question? 06:53:30
 22 Q. The document contains lists of persons 06:53:31
 23 starting at Page 17547 up through Page 17558, 06:53:34
 24 correct? 06:53:39
 25 A. Just to make sure I understand your question, 06:53:41
 Page 238

1 you just indicated there is a list of 06:53:49
 2 persons? 06:53:50
 3 Q. Right. 06:53:51
 4 A. Those pages appear to contain lists of 06:53:54
 5 technical committee members as well as NFPA 06:53:57
 6 staff, where appropriate. 06:54:00
 7 Q. And I think you testified earlier but just 06:54:02
 8 for the sake of clarification, committees 06:54:04
 9 that are called technical committees for 06:54:09
 10 other codes and standards are called 06:54:11
 11 code-making panels when it comes to the 06:54:13
 12 National Electrical Code; is that correct? 06:54:15
 13 A. That is partially correct. There are two 06:54:18
 14 ways we address the National Electrical Code. 06:54:21
 15 There are code-making panels and their work 06:54:24
 16 is overseen by a technical correlating 06:54:26
 17 committee. 06:54:30
 18 Q. What is the work of the technical correlating 06:54:31
 19 committee? 06:54:35
 20 A. The technical correlating committee is 06:54:37
 21 responsible for correlation across the entire 06:54:42
 22 document to ensure that the code-making 06:54:45
 23 panels are aware of potential conflicting 06:54:49
 24 requirements between their portions of the 06:54:52
 25 document and also consistency. It's 06:54:53
 Page 239

1 correlation across the entire standard 06:54:56
 2 itself. 06:54:59
 3 Q. And these pages identify various code-making 06:55:05
 4 panels and then they indicate which portions 06:55:12
 5 of the National Electrical Code they were 06:55:16
 6 responsible for; is that correct? 06:55:18
 7 MR. REHN: Object to the form of the 06:55:25
 8 question. 06:55:26
 9 A. That is my understanding. 06:55:27
 10 Q. And it indicates the -- and this list 06:55:29
 11 indicates both the names and the affiliations 06:55:34
 12 of those persons who participated in the work 06:55:41
 13 that's reflected in this edition; is that 06:55:45
 14 correct? 06:55:50
 15 MR. REHN: Object to the form. 06:55:50
 16 A. Our committee lists indicate the name of the 06:55:51
 17 individual who holds the seat, whether 06:55:56
 18 they're a principal or alternate, what 06:55:59
 19 company they work for and, if any, 06:56:01
 20 representation if they do have a 06:56:03
 21 representation. 06:56:05
 22 Q. So let's say in the case of Page 17551 -- 06:56:08
 23 A. 551. 06:56:20
 24 Q. There's a reference to John Ray of Duke 06:56:22
 25 Energy Corporation and it says, "Rep, 06:56:28
 Page 240

1 Electric Light and Power Group." What does 06:56:29
 2 that mean? 06:56:33
 3 A. Before I answer the question, I'm just having 06:56:38
 4 trouble finding John's name. Is he on the 06:56:41
 5 one on Code-Making Panel 7? 06:56:43
 6 Q. Panel 7, left column, four from the bottom. 06:56:46
 7 A. So in that case it appears Mr. Ray, the 06:56:55
 8 company he works for is Duke Engineering 06:57:00
 9 Corporation. He represents a utility, and 06:57:02
 10 his representation of the committee is 06:57:04
 11 Electrical Light and Power Group, EEI. 06:57:06
 12 Q. And the letters in brackets after the names, 06:57:13
 13 employers and states indicate the -- what do 06:57:23
 14 you call it? Not the interest group. The 06:57:29
 15 interest section? 06:57:32
 16 A. It's the interest category. 06:57:34
 17 Q. The interest category. So the letters within 06:57:37
 18 brackets at the end of the line on which the 06:57:39
 19 names of the individuals are found is a code 06:57:43
 20 for the interest category; is that correct? 06:57:45
 21 A. That is correct. 06:57:47
 22 Q. M is manufacturer; is that right? M stands 06:57:48
 23 for manufacturer? 06:58:00
 24 A. Yes, M is for manufacturer. 06:58:00
 25 Q. E stands for enforcer; is that correct? 06:58:02
 Page 241

<p>1 A. Correct. The Es could represent federal 06:58:05 2 government, state and local government as 06:58:14 3 well as state fire officials, local fire 06:58:17 4 officials. 06:58:20 5 Q. I notice on the front page of this there's a 06:58:21 6 section near the bottom right of the page 06:58:42 7 that says "Order redline PDF." Do you see 06:58:45 8 that? 06:58:48 9 A. Yes. 06:58:48 10 Q. That redline PDF is a different document. 06:58:49 11 This is not the redline, correct? 06:58:52 12 A. Based upon my review here, it appears to be 06:58:57 13 the, quote, unquote, normal version with the 06:59:01 14 shading to track changes and not a full track 06:59:04 15 changes redline version. 06:59:07 16 Q. And if one orders the redline PDF, does that 06:59:08 17 show the text that was deleted which might 06:59:11 18 not appear in this version? 06:59:14 19 A. That is my understanding, but I have not seen 06:59:17 20 the redline version of this document. 06:59:21 21 Q. Let me ask you to turn to Page 17538. 06:59:23 22 A. 17538. 06:59:53 23 Q. Does the language on that page appear 06:59:57 24 correct, to your knowledge? 07:00:02 25 MR. REHN: You're referring to the 07:00:11 Page 242</p>	<p>1 Vague and ambiguous. 07:01:33 2 A. Yes. We had a major rewrite of our 07:01:36 3 regulations in approximately 2007, 2008 time 07:01:40 4 frame we started that process. 07:01:48 5 Q. Has there been any significant change 07:01:50 6 since -- strike that. 07:01:53 7 You said that's when the process 07:01:54 8 started. When did that process end? 07:01:56 9 A. The rewrite to our regulations ended, to the 07:01:57 10 best of my knowledge, in approximately 2009, 07:02:06 11 2010. 07:02:09 12 Q. Have there been any other, in your mind, 07:02:13 13 significant changes to the standards 07:02:16 14 development process since 2010? 07:02:18 15 A. No. 07:02:22 16 Q. Do you, in preparing and overseeing the 07:02:22 17 development of codes and standards, strive to 07:02:48 18 make them suitable for governments to adopt 07:02:53 19 for purposes of enforcement? 07:02:59 20 MR. REHN: Object to the form. It's 07:03:05 21 vague. May call for a legal opinion. 07:03:07 22 A. Part of our committee officers guide is a 07:03:15 23 guidance document that is to address 07:03:19 24 usability, adoptability and enforceability. 07:03:22 25 It's guidance to our committees to 07:03:27 Page 244</p>
<p>1 whole language on the page? 07:00:13 2 MR. BRIDGES: Right. 07:00:15 3 MR. REHN: Objection as to form. 07:00:15 4 A. To the best of my knowledge, it appears like 07:00:21 5 our opening issuing statement, our history 07:00:23 6 and development of the National Electrical 07:00:27 7 Code as well as our copyright statements, to 07:00:29 8 the best of my knowledge. 07:00:34 9 Q. So it's correct, to the best of your 07:00:34 10 knowledge? 07:00:37 11 A. It appears correct. 07:00:37 12 Q. What about the language on Page 17536? 07:00:40 13 A. 536. 07:00:45 14 MR. REHN: Object to the form and 07:00:52 15 to the extent the question calls for the 07:00:53 16 witness to render a legal opinion. 07:00:55 17 MR. BRIDGES: I'm just asking if 07:01:01 18 it's correct to the best of his knowledge. 07:01:03 19 A. To the best of my knowledge, this appears 07:01:08 20 correct and typical of our front matter 07:01:11 21 within our standards. 07:01:14 22 Q. A couple broad questions: Has the standards 07:01:20 23 development process changed in any material 07:01:23 24 way since you arrived at NFPA? 07:01:25 25 MR. REHN: Object to the form. 07:01:33 Page 243</p>	<p>1 ensure that they write clear and not vague 07:03:29 2 requirements that are understandable and 07:03:31 3 concise. 07:03:33 4 Q. You said usability, adoptability and 07:03:34 5 enforceability; is that right? 07:03:38 6 A. Yes. 07:03:40 7 Q. Does adoptability include within that concept 07:03:41 8 the ease of adoption by governments of codes 07:03:50 9 as enforceable law? 07:04:01 10 MR. REHN: Object to the form. May 07:04:03 11 call for a legal opinion. 07:04:07 12 A. I can't comment on the ease of the adoption. 07:04:11 13 What I can comment on is my view of that is 07:04:15 14 that our standards need to contain, for 07:04:19 15 example, mandatory language if they're going 07:04:22 16 to be a standard and enforceable and, I would 07:04:26 17 assume, adoptable. 07:04:29 18 Q. That makes -- the mandatory language makes 07:04:31 19 them suitable for a government to adopt the 07:04:34 20 codes and standards as law? 07:04:35 21 MR. REHN: Object to the form. 07:04:37 22 Assumes facts. May call for a legal opinion. 07:04:40 23 A. That's partly my understanding but also the 07:04:45 24 mandatory language ensures that private 07:04:50 25 entities, private organizations can also 07:04:52 Page 245</p>

1 utilize them in their facilities and 07:04:54
 2 applications. 07:04:57
 3 VIDEOGRAPHER: We've reached the 07:04:59
 4 seven hours. 07:05:01
 5 MR. BRIDGES: Thank you very much. 07:05:01
 6 CROSS EXAMINATION 07:05:01
 7 BY MR. REHN: 07:05:01
 8 Q. Mr. Dubay, I have a couple of questions for 07:05:05
 9 you just to clear up some issues that arose 07:05:07
 10 earlier I think in response to my own perhaps 07:05:10
 11 confusing instruction. 07:05:14
 12 Do you recall being asked whether 07:05:17
 13 you reviewed any documents in preparation for 07:05:18
 14 this deposition? 07:05:20
 15 A. Yes. 07:05:21
 16 Q. Do you recall that before you answered 07:05:21
 17 that question, I instructed you to answer to 07:05:24
 18 the extent you remembered any specific 07:05:26
 19 documents? 07:05:27
 20 A. Yes. 07:05:29
 21 Q. And do you recall that your answer to that 07:05:29
 22 question was "no" after I've given you that 07:05:31
 23 instruction? 07:05:35
 24 A. Yes. 07:05:35
 25 Q. So I'd like to just ask that question again. 07:05:35
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1 In preparation for this deposition, did 07:05:38
 2 you review any documents, excluding 07:05:40
 3 identifying any specific documents, but 07:05:43
 4 did you review any documents in preparation 07:05:45
 5 for today? 07:05:45
 6 A. The only documents I reviewed were the 07:05:47
 7 several that I reviewed with counsel. 07:05:49
 8 Q. Thank you. 07:05:53
 9 MR. REHN: No further questions. 07:05:53
 10 MR. BRIDGES: I have a follow-up. 07:05:55
 11 What were the documents -- 07:05:55
 12 MR. FEE: Hold on. I have no 07:05:55
 13 questions. 07:05:59
 14 REDIRECT EXAMINATION 07:05:59
 15 BY MR. BRIDGES: 07:05:59
 16 Q. What were the documents that you reviewed 07:05:59
 17 with counsel? 07:06:00
 18 MR. REHN: I will instruct the 07:06:01
 19 witness not to answer that question on the 07:06:02
 20 ground of attorney-client privilege. 07:06:04
 21 Q. And do you intend to follow your counsel's 07:06:17
 22 instruction? 07:06:24
 23 A. Yes. 07:06:27
 24 Q. Okay. 07:06:29
 25 VIDEOGRAPHER: The time is 7:06. 07:06:31
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1 This is the end of Tape No. 4 as well as 07:06:35
 2 the deposition, and we are now off the 07:06:37
 3 record. 07:06:39
 4 (Whereupon the deposition was 07:06:39
 5 concluded at 7:06 p m.)
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1 I declare under penalty of perjury
 2 under the laws that the foregoing is
 3 true and correct.
 4
 5 Executed on _____, 20____,
 6 at _____, _____.
 7
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 9
 10
 11 _____
 12 Christian Dubay
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 Page 249

1 COMMONWEALTH OF MASSACHUSETTS)
2 SUFFOLK, SS)
3
4
5 I, Jeanette Maracas, Registered
6 Professional Reporter and Notary Public in
7 and for the Commonwealth of Massachusetts, do
8 hereby certify that there came before me on
9 the 1st day of April, 2015, at 10:00 a m ,
10 the person hereinbefore named, who was by me
11 duly sworn to testify to the truth and
12 nothing but the truth of his knowledge
13 touching and concerning the matters in
14 controversy in this cause; that he was
15 thereupon examined upon his oath, and his
16 examination reduced to typewriting under my
17 direction; and that the deposition is a true
18 record of the testimony given by the witness
19
20 I further certify that I am neither
21 attorney or counsel for, nor related to or
22 employed by, any attorney or counsel employed
23 by the parties hereto or financially
24 interested in the action
25
26 In witness whereof, I have hereunto
27 set my hand this 8th day of April, 2015
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EXHIBIT 8

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UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

 AMERICAN SOCIETY FOR TESTING AND) Case No.
 MATERIALS d/b/a ASTM INTERNATIONAL;) 1:13-cv-01215-EGS
)
 NATIONAL FIRE PROTECTION)
 ASSOCIATION, INC.; and)
)
 AMERICAN SOCIETY OF HEATING,)
 REFRIGERATING, AND)
 AIR-CONDITIONING ENGINEERS, INC.,)
)
 Plaintiffs,)
 vs.)
)
 PUBLIC.RESOURCE.ORG, INC.,)
)
 Defendant.)
 -----)
 AND RELATED COUNTERCLAIMS.)
 -----)

RULE 30(B)(6) VIDEOTAPED DEPOSITION OF AMERICAN
STANDARDS SOCIETY FOR TESTING AND MATERIALS, BY AND
THROUGH ITS DESIGNEE,
JEFFREY GROVE
WASHINGTON, D.C.
WEDNESDAY, MARCH 4, 2015

Reported by:
NANCY J. MARTIN, CSR No. 9504, RMR
Job No. 2010158
PAGES 1 - 284

1 Nancy Martin, please swear in the witness, and we can 09:22:25
 2 begin. 09:22:27
 3 JEFFREY GROVE, 09:22:36
 4 having been first duly sworn, 09:22:40
 5 and testified as follows: 09:22:40
 6 09:22:40
 7 EXAMINATION 09:22:40
 8 BY MR. BRIDGES: 09:22:40
 9 Q. Good morning, Mr. Grove. 09:22:40
 10 A. Good morning. 09:22:41
 11 Q. Have you ever been deposed before? 09:22:45
 12 A. I have not. 09:22:46
 13 Q. Have you had a chance to meet with ASTM 09:22:49
 14 attorneys to prepare you for this deposition? 09:22:51
 15 A. I did. 09:22:57
 16 Q. When did you meet with them? 09:22:57
 17 A. I met with our attorneys over a period of 09:22:58
 18 three days. The last two days, and once in December. 09:23:01
 19 A total of 15 hours. 09:23:06
 20 Q. With whom did you meet? 09:23:12
 21 A. I met with Kevin Fee and with Jordana Rubel, 09:23:13
 22 and with our corporate attorney, Tom O'Brien. 09:23:19
 23 Q. You understand that you are testifying today 09:23:32
 24 as a representative of ASTM? 09:23:34
 25 A. Yes. 09:23:38
 Page 14

1 Q. And you understand that you are testifying as 09:23:40
 2 a representative of ASTM with respect to certain 09:23:46
 3 subject matters? 09:23:48
 4 A. Yes. 09:23:49
 5 Q. What did you do to educate yourself about 09:23:49
 6 those subjects? 09:23:52
 7 A. In addition to the meetings, I reviewed a lot 09:23:53
 8 of documents. 09:23:56
 9 Q. And when did you review the documents? 09:24:01
 10 A. Over the last few days and in my own personal 09:24:03
 11 time before then. 09:24:07
 12 Q. How much time did you spend reviewing 09:24:11
 13 documents outside of meetings with attorneys? 09:24:13
 14 A. Probably 8 to 10 hours. 09:24:16
 15 Q. Did you select those documents, or did the 09:24:23
 16 lawyers select the documents? 09:24:25
 17 A. Personal knowledge, I selected them. 09:24:26
 18 Q. What determined which documents you selected 09:24:38
 19 to review? 09:24:41
 20 MR. FEE: Objection. To the extent that 09:24:42
 21 legal counsel or their guidance provided any basis for 09:24:43
 22 your determination, I'm going to instruct you not to 09:24:48
 23 disclose that. If you have some independent review 09:24:50
 24 criteria that you can share with the other side, 09:24:53
 25 that's fine. 09:24:55
 Page 15

1 THE WITNESS: I don't have any criteria. 09:24:56
 2 Just I thought it would be a good idea to review 09:24:58
 3 annual reports and that type of publicly available 09:25:02
 4 information about ASTM. 09:25:04
 5 BY MR. BRIDGES: 09:25:08
 6 Q. What else did you review among the documents? 09:25:08
 7 MR. FEE: Objection. Are you asking about 09:25:11
 8 the ones he selected on his own or the ones -- 09:25:12
 9 MR. BRIDGES: No -- 09:25:14
 10 MR. FEE: Well, I'm going to instruct you not 09:25:14
 11 to disclose the documents that you reviewed at the 09:25:16
 12 request or direction of counsel. You can disclose any 09:25:18
 13 other documents you reviewed. 09:25:21
 14 MR. BRIDGES: I think I'm entitled to know 09:25:22
 15 what documents he reviewed to prepare for the 09:25:23
 16 deposition. It might reveal attorney work product if 09:25:27
 17 he told us what documents were discussed with counsel, 09:25:31
 18 but I'm entitled to know which documents he reviewed 09:25:36
 19 in general. 09:25:39
 20 MR. FEE: I disagree. 09:25:41
 21 You should follow my instruction. 09:25:43
 22 THE WITNESS: I have no other documents that 09:25:44
 23 I can recall to disclose. 09:25:46
 24 BY MR. BRIDGES: 09:25:47
 25 Q. So you're saying that all the documents -- of 09:25:47
 Page 16

1 all the documents you reviewed, only annual reports 09:25:52
 2 are those that you thought to review on your own? 09:25:55
 3 A. Right. I think the exception to that would 09:25:56
 4 be standardization news. I contributed some articles 09:26:01
 5 that I thought I should refresh my memory with. 09:26:03
 6 Q. What did those articles concern? 09:26:08
 7 A. Discussed generally ASTM's mission and work 09:26:13
 8 we do to promote ASTM's mission and its important role 09:26:20
 9 in protecting everyday citizens due to the development 09:26:24
 10 of standards that protect the environment, health, and 09:26:26
 11 safety. 09:26:31
 12 MR. BRIDGES: One thing occurred to me. We 09:26:35
 13 may need a short break. I forgot, you know, I was 09:26:37
 14 supposed to have real time. Can we get real time? 09:26:39
 15 REPORTER MARTIN: Yes, sir. I'm working on 09:26:43
 16 it right now. 09:26:43
 17 MR. BRIDGES: Thanks. 09:26:43
 18 MR. BECKER: We also have an email from Thane 09:26:48
 19 stating he'd like to listen in. So perhaps we should 09:26:49
 20 take a break and set up real-time. 09:26:51
 21 MR. BRIDGES: I think we've got a separate 09:26:55
 22 bridge. I think Carl dialed in directly. So we're 09:26:57
 23 going to have to drop him and set up a bridge. 09:26:59
 24 Sorry about this, but let's go off the record 09:27:01
 25 for a few minutes. 09:27:03
 Page 17

1 THE VIDEOGRAPHER: We're now going off the 09:27:05
 2 record at 9:26 09:27:05
 3 (A recess was taken from 9:26 a m 09:34:30
 4 to 9:37 a m) 09:38:32
 5 THE VIDEOGRAPHER: And we're back on the 09:38:33
 6 record at 9:37 09:38:34
 7 BY MR BRIDGES: 09:38:48
 8 Q Do you recall any other documents that you 09:38:48
 9 reviewed on your own initiative apart from annual 09:38:50
 10 reports and standardization news? 09:38:53
 11 A I do not 09:38:59
 12 Q Apart from conversations specifically with 09:39:01
 13 attorneys, did you discuss the topics of today's 09:39:06
 14 conversation -- of today's deposition with anyone else 09:39:12
 15 in preparation for your deposition today? 09:39:18
 16 A I made a phone call to our vice president of 09:39:21
 17 sales and publications 09:39:24
 18 Q Who is that? 09:39:28
 19 A John Pace 09:39:31
 20 Q What did you discuss with him? 09:39:31
 21 A Wanted to review ASTM's financials and 09:39:38
 22 revenues so I was prepared 09:39:42
 23 Q What did you learn from him? 09:39:46
 24 A Not much To be honest, I think I have a 09:39:47
 25 good understanding 09:39:52
 Page 18

1 Q. What did you ask him about? 09:39:55
 2 A. I wanted to review with him what I knew about 09:39:59
 3 sources of ASTM's revenue from the sale publications. 09:40:07
 4 Q. What else did you ask him about? 09:40:12
 5 A. That's all I recall. 09:40:15
 6 Q. Did you review -- did you discuss with him 09:40:20
 7 any changes in revenue to ASTM from publications? 09:40:25
 8 MR. FEE: Objection. Form. 09:40:30
 9 THE WITNESS: Not that I recall. 09:40:34
 10 BY MR. BRIDGES: 09:40:37
 11 Q. And did you discuss with him any trends with 09:40:37
 12 respect to revenue that ASTM gains from publications? 09:40:42
 13 MR. FEE: Objection to form. 09:40:45
 14 Go ahead. 09:40:47
 15 THE WITNESS: I did ask -- I wanted to learn 09:40:48
 16 over the last couple of years, roughly, what increase 09:40:53
 17 in sales we've been experiencing. 09:40:56
 18 BY MR. BRIDGES: 09:41:01
 19 Q. What else? 09:41:01
 20 A. That's all I recall. 09:41:02
 21 Q. What did you learn about the increase in 09:41:05
 22 sales that ASTM has been experiencing? 09:41:07
 23 A. That there has been a very slight 2 to 3 to 5 09:41:10
 24 percent increase over the last two to three years. 09:41:15
 25 Revenue from sales of publications. 09:41:18
 Page 19

1 Q. Did you attach any significance to that 09:41:21
 2 figure? 09:41:23
 3 MR. FEE: Objection. Vague. 09:41:25
 4 THE WITNESS: No. 09:41:28
 5 BY MR. BRIDGES: 09:41:30
 6 Q. Did it strike you as unusual or unexpected in 09:41:30
 7 any -- 09:41:33
 8 MR. FEE: Objection. Vague and compound. 09:41:34
 9 THE WITNESS: It did not. 09:41:40
 10 BY MR. BRIDGES: 09:41:43
 11 Q. Did those figures he gave you accord with 09:41:43
 12 your expectations? 09:41:45
 13 A. Generally, yes. 09:41:51
 14 Q. Did that revenue trend -- strike that. 09:41:56
 15 Was that revenue trend consistent with 09:42:03
 16 revenue trends over previous years? 09:42:05
 17 MR. FEE: Objection. Vague. 09:42:09
 18 THE WITNESS: I don't know. 09:42:14
 19 BY MR. BRIDGES: 09:42:15
 20 Q. Do you know anything about revenue trends 09:42:15
 21 before three years ago? 09:42:17
 22 MR. FEE: Same objection. 09:42:19
 23 THE WITNESS: Not that I can produce or 09:42:26
 24 recall. 09:42:27
 25 BY MR. BRIDGES: 09:42:32
 Page 20

1 Q. What else did you discuss with Mr. Pace? 09:42:32
 2 A. That's all I recall. 09:42:39
 3 Q. Did you have conversations with anyone else 09:42:40
 4 to prepare for your testimony today? 09:42:43
 5 MR. FEE: I assume you're excluding 09:42:49
 6 conversations with counsel for purposes -- 09:42:50
 7 MR. BRIDGES: Yes. 09:42:52
 8 MR. FEE: -- of that question? 09:42:52
 9 MR. BRIDGES: Yes. 09:42:54
 10 THE WITNESS: Not that I recall. 09:42:55
 11 BY MR. BRIDGES: 09:43:04
 12 Q. How long have you worked for ASTM? 09:43:04
 13 A. Just over 10 years. 09:43:07
 14 Q. What have your job titles been? 09:43:11
 15 A. My original job title was Washington 09:43:13
 16 representative. My second title was director of 09:43:15
 17 government and industry affairs, and my current title 09:43:21
 18 is vice president of global policy and industry 09:43:25
 19 affairs. 09:43:29
 20 Q. In that job title, what does the word 09:43:39
 21 "industry" refer to? 09:43:41
 22 MR. FEE: Objection. Vague. 09:43:43
 23 THE WITNESS: Well, the majority of ASTM 09:43:48
 24 members under our system of private sector led 09:43:51
 25 public/private collaboration come from industry. So I 09:43:56
 Page 21

<p>1 something that I would speak about. 12:06:06</p> <p>2 BY MR. BRIDGES: 12:06:08</p> <p>3 Q. So what factors should government agencies 12:06:08</p> <p>4 take into consideration when examining industry 12:06:08</p> <p>5 standards for regulatory purposes? 12:06:10</p> <p>6 A. Well, one of the most important factors that 12:06:13</p> <p>7 we believe is important to maintain the robust, viable 12:06:15</p> <p>8 system of standardization that we have in the U.S. is 12:06:24</p> <p>9 looking to see if standards development organizations 12:06:26</p> <p>10 meet the world trade organizations, technical barriers 12:06:28</p> <p>11 to trade agreement principles for international 12:06:31</p> <p>12 standardization. It's a message that we believe 12:06:34</p> <p>13 strongly in at ASTM, we've invested heavily in, and we 12:06:37</p> <p>14 promote it as widely as possible. 12:06:41</p> <p>15 Q. What regulatory purposes do you anticipate 12:06:49</p> <p>16 government agencies have that causes them to examine 12:06:54</p> <p>17 industry standards? 12:07:01</p> <p>18 MR. FEE: Read that back, please. 12:07:03</p> <p>19 (Record read.) 12:07:13</p> <p>20 MR. FEE: Objection. Calls for speculation. 12:07:14</p> <p>21 It's beyond the scope of his designation. 12:07:15</p> <p>22 THE WITNESS: I don't have an answer for 12:07:23</p> <p>23 that. I think you could assume that government 12:07:24</p> <p>24 participants in the standardization process bring 12:07:30</p> <p>25 knowledge of regulatory agendas and regulatory needs 12:07:32</p> <p style="text-align: right;">Page 94</p>	<p>1 when they're looking at participating in standards 12:08:53</p> <p>2 development activities and utilizing voluntary 12:08:57</p> <p>3 consensus standards in support of their agency's 12:09:01</p> <p>4 mission. 12:09:03</p> <p>5 BY MR. BRIDGES: 12:09:11</p> <p>6 Q. So my question is what are the regulatory 12:09:11</p> <p>7 purposes that in your interactions with government on 12:09:16</p> <p>8 behalf of ASTM, you believe government agencies have 12:09:20</p> <p>9 when they examine industry standards? So I'm asking 12:09:25</p> <p>10 what do you think the regulatory purposes are. 12:09:29</p> <p>11 MR. FEE: Same objections, plus compound. 12:09:31</p> <p>12 THE WITNESS: Yeah. And I don't believe 12:09:33</p> <p>13 there's any one answer to that. Each agency that 12:09:34</p> <p>14 we're aware of that we interact with or that 12:09:38</p> <p>15 participate in our committees have different needs and 12:09:40</p> <p>16 different expectations and different motivations for 12:09:42</p> <p>17 participating in our process. 12:09:46</p> <p>18 BY MR. BRIDGES: 12:09:48</p> <p>19 Q. So beyond that, you can't give your testimony 12:09:48</p> <p>20 as to what you think the government regulatory 12:09:51</p> <p>21 purposes are on a general basis? 12:09:54</p> <p>22 MR. FEE: Same objections. 12:09:57</p> <p>23 BY MR. BRIDGES: 12:10:00</p> <p>24 Q. In using or in examining ASTM's standards. 12:10:00</p> <p>25 MR. FEE: Same objections. 12:10:05</p> <p style="text-align: right;">Page 96</p>
<p>1 of agencies to the voluntary consensus standards 12:07:37</p> <p>2 community of which ASTM is one member amongst 225 12:07:40</p> <p>3 others 12:07:45</p> <p>4 BY MR BRIDGES: 12:07:50</p> <p>5 Q This agenda item referred to government 12:07:50</p> <p>6 agencies examining industry standards for regulatory 12:07:52</p> <p>7 purposes 12:07:56</p> <p>8 MR FEE: Objection Vague What agenda -- 12:07:57</p> <p>9 I'm unclear as to what agenda you're referring 12:08:00</p> <p>10 There's no agenda in front of him 12:08:04</p> <p>11 MR BRIDGES: That's all right It's so 12:08:07</p> <p>12 short, I can read it to him 12:08:08</p> <p>13 Q So my question is what regulatory purposes do 12:08:10</p> <p>14 you understand government agencies to have when they 12:08:16</p> <p>15 examine industry standards? 12:08:20</p> <p>16 MR FEE: Objection He's not been 12:08:22</p> <p>17 designated as to speculation as to government 12:08:24</p> <p>18 regulatory motivations, but to the extent you have an 12:08:26</p> <p>19 understanding individually, you can try to answer 12:08:31</p> <p>20 that 12:08:34</p> <p>21 THE WITNESS: Sure And I'm not an attorney, 12:08:35</p> <p>22 but my understanding is the National Technology 12:08:36</p> <p>23 Transfer and Advancement Act of 1995 combined with the 12:08:38</p> <p>24 OMB circular A119 lays out criteria or further 12:08:41</p> <p>25 guidance for federal agencies for them to consider 12:08:50</p> <p style="text-align: right;">Page 95</p>	<p>1 THE WITNESS: Yeah. I think we discussed 12:10:09</p> <p>2 earlier federal agencies do incorporate, by reference, 12:10:11</p> <p>3 standards from voluntary consensus standards bodies 12:10:16</p> <p>4 like ASTM. So that could be one potential -- one 12:10:19</p> <p>5 potential factor. 12:10:24</p> <p>6 BY MR. BRIDGES: 12:10:28</p> <p>7 Q. Do you understand what regulatory purposes 12:10:28</p> <p>8 federal agencies may have in incorporating ASTM 12:10:33</p> <p>9 standards by reference into CFR? 12:10:36</p> <p>10 MR. FEE: Objection. Calls for speculation. 12:10:41</p> <p>11 It's also beyond the scope of his designation. 12:10:42</p> <p>12 You can answer if you know. 12:10:44</p> <p>13 THE WITNESS: Generally, I believe the EPA 12:10:46</p> <p>14 would look to -- has a mission of helping to keep the 12:10:48</p> <p>15 air we breathe, the water we drink and the ground that 12:10:53</p> <p>16 we habitate on as safe and as clean and sustainable as 12:10:56</p> <p>17 possible. So they might look to organizations like 12:11:02</p> <p>18 ASTM and many others to see what work we're doing in 12:11:05</p> <p>19 many of these areas and ensure that their employees 12:11:08</p> <p>20 are participating in our standards development process 12:11:10</p> <p>21 to reflect the agency's mission. 12:11:12</p> <p>22 BY MR. BRIDGES: 12:11:17</p> <p>23 Q. How would the government employees affect -- 12:11:17</p> <p>24 strike that. 12:11:22</p> <p>25 What effect does the presence of government 12:11:26</p> <p style="text-align: right;">Page 97</p>

<p>1 employees have in the standards development process at 12:11:30 2 ASTM? 12:11:36 3 MR. FEE: Objection. Vague. 12:11:37 4 THE WITNESS: In my experience, federal 12:11:43 5 government participation in standards development 12:11:45 6 helps to make a more effective public/private 12:11:47 7 collaboration in our process. 12:11:50 8 BY MR. BRIDGES: 12:11:51 9 Q. How does it help in the drafting of 12:11:52 10 standards? 12:11:53 11 MR. FEE: Objection. Lack of foundation. 12:11:54 12 THE WITNESS: In the area of drafting 12:11:58 13 standards, I wouldn't have specific knowledge. 12:11:59 14 BY MR. BRIDGES: 12:12:03 15 Q. Who would? 12:12:03 16 MR. FEE: Objection. Calls for speculation. 12:12:04 17 THE WITNESS: Right. We have 140 different 12:12:07 18 technical committees and over 1,000 individual 12:12:09 19 subcommittees. So each agency's participation and 12:12:12 20 what role they play in the drafting of standards, I 12:12:15 21 believe was your term, that would vary significantly. 12:12:20 22 BY MR. BRIDGES: 12:12:23 23 Q. Who are two or three people at ASTM you think 12:12:23 24 would be in a best position to answer the question of 12:12:25 25 what effect the presence of government employees has 12:12:32 Page 98</p>	<p>1 Q. Have you seen Exhibit 1038 before? 12:14:55 2 (The witness reviewed Exhibit 1038.) 12:15:20 3 THE WITNESS: Yes, I have. 12:15:20 4 BY MR. BRIDGES: 12:15:21 5 Q. Is this an organizational chart as of 12:15:22 6 July 21, 2014? 12:15:23 7 A. I believe it is, yes. 12:15:25 8 Q. Have you seen a more recent organizational 12:15:27 9 chart of ASTM? 12:15:29 10 A. I have not, but I believe that this is just 12:15:31 11 slightly out of date. 12:15:35 12 Q. What changes are necessary to make it 12:15:36 13 current? 12:15:40 14 A. Under the direct line from Jim Thomas, that 12:15:46 15 would be a new box that would say, "Kathie Morgan, 12:15:51 16 Executive Vice President," and then a number of 12:15:57 17 departments would be reporting up through Kathie. 12:16:01 18 This is as of just a few weeks ago. 12:16:04 19 Q. I see that she is almost directly under 12:16:10 20 Mr. Thomas in what looks like a direct report as vice 12:16:11 21 president of Technical Committee Operations. Would 12:16:16 22 that be simply changing the title in that box? 12:16:18 23 A. It would be expanding her responsibilities. 12:16:23 24 For instance, now I report to Kathie Morgan, as does 12:16:25 25 Phil Lively, as does Teresa Cendrowska, as does Tim 12:16:30 Page 100</p>
<p>1 in the creation of standards? 12:12:38 2 MR. FEE: Objection. Calls for speculation. 12:12:43 3 Vague. 12:12:44 4 THE WITNESS: Well, other than me, I would 12:12:49 5 say I'm one. Beyond that, you know, ASTM, it's a 12:12:50 6 decentralized process. So it would really vary again 12:13:01 7 by the individual committees and the actions by the 12:13:05 8 committee officers. So if I had to give you another 12:13:08 9 name, I would say probably Katherine Morgan, who 12:13:14 10 formerly led our Technical Committee Operations. 12:13:17 11 BY MR. BRIDGES: 12:13:23 12 Q. What is her current post? 12:13:23 13 A. She's the executive vice president. 12:13:25 14 Q. What are her duties? 12:13:27 15 MR. FEE: Objection. Calls for speculation. 12:13:28 16 Beyond the scope of his designation. 12:13:31 17 THE WITNESS: Actually, I'm not certain what 12:13:35 18 her new duties are. She just assumed them in 12:13:36 19 February. But I would assume she's serving as our -- 12:13:39 20 she'll be serving as our president within the next two 12:13:48 21 to three years. So she's broad supervisory 12:13:51 22 responsibility. 12:13:54 23 (Deposition Exhibit 1038 was marked for 12:14:54 24 identification.) 12:14:54 25 BY MR. BRIDGES: 12:14:55 Page 99</p>	<p>1 Brooke, and a new box would need to be created -- or 12:16:38 2 in the old box that said Kathie Morgan, I would put 12:16:48 3 Daniel G. Smith. 12:16:51 4 Q. That's on Page 5 of 11 of the document? 12:16:53 5 A. Page 6 of 11. So Kathie has been promoted, 12:16:56 6 and Dan has taken Kathie's old job, if that helps. 12:17:12 7 Q. All right. In the standards development but 12:17:16 8 not Technical Committee Operations? Page 5 of 11 is 12:17:17 9 Technical Committee Operations. Page 6 of 11 is 12:17:24 10 standards development? 12:17:29 11 A. Yeah. I actually wouldn't be able to explain 12:17:30 12 the difference between Technical Committee Operations 12:17:32 13 and standards development, and in fact -- I would be 12:17:34 14 able to tell you why we have it displayed that way. 12:17:48 15 We think of them together. 12:17:48 16 Q. Where is Ms. Morgan's office? 12:17:57 17 A. Kathie is based at our corporate headquarters 12:17:59 18 in Conshohocken, Pennsylvania. 12:18:02 19 Q. What offices does ASTM have apart from the 12:18:11 20 Pennsylvania office you just referred to and 12:18:14 21 Washington, D.C.? 12:18:18 22 A. Well, we have an office in Ottawa, Canada, 12:18:24 23 but I believe the person that works for us there is a 12:18:26 24 contractor. 12:18:32 25 Q. Any other offices? 12:18:33 Page 101</p>

1 BY MR BRIDGES: 12:48:17
 2 Q How many ASTM standards do you understand are 12:48:17
 3 listed at that location? 12:48:21
 4 MR FEE: Objection Vague as to time 12:48:23
 5 THE WITNESS: So there's -- if I'm answering 12:48:34
 6 your question exactly as you phrased it to me, how 12:48:35
 7 many standards, I believe there's 885 or so ASTM 12:48:38
 8 standards that are incorporated in the NIST database 12:48:41
 9 BY MR BRIDGES: 12:48:50
 10 Q How many of those standards are currently 12:48:50
 11 available at ASTM's reading room? 12:48:52
 12 A Well, if it's in the NIST database, we built 12:48:55
 13 the ASTM reading room using the NIST database as a 12:49:02
 14 baseline, and we added in other versions of those same 12:49:06
 15 885 ASTM standards that have been also incorporated by 12:49:10
 16 reference, just an agency, for instance, might 12:49:17
 17 reference the same ASTM standard but reference two 12:49:21
 18 different versions of the standard 12:49:25
 19 So we counted them in the reading room as 12:49:27
 20 well, and I believe our reading room has a volume of 12:49:30
 21 13- to 1,400 ASTM standards that are available to the 12:49:32
 22 public at no cost on our website for their review 12:49:36
 23 Q Are every one of the 885 standards from the 12:49:41
 24 NIST database available in the reading room? 12:49:45
 25 A I wouldn't be able to answer that 12:49:51
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1 of working with agencies during the notice of proposed 12:51:41
 2 rule-making process 12:51:45
 3 Any agency that comes to us and asks us to 12:51:46
 4 put a standard up for public review during the public 12:51:50
 5 review period of a rule, we work with them to make 12:51:53
 6 that possible So at times we know that a certain 12:51:57
 7 number of ASTM standards have been in a notice to 12:52:01
 8 proposed rulemaking and that the new rule's expected 12:52:04
 9 to come out, so we can look for it 12:52:08
 10 Q Does ASTM provide assistance to the 12:52:16
 11 government in any way when the government is 12:52:18
 12 considering whether to incorporate an ASTM standard by 12:52:20
 13 reference? 12:52:23
 14 MR FEE: Objection Vague 12:52:24
 15 THE WITNESS: So we do -- I'm familiar with a 12:52:29
 16 couple things that either I do or a member of my staff 12:52:31
 17 does We look to see -- when we're aware that an ASTM 12:52:34
 18 standard is going to be used and incorporated by 12:52:39
 19 reference in some type of an action, we look to see 12:52:43
 20 what version of the standard and what designation of 12:52:46
 21 the standard is being used, and I believe on occasion 12:52:50
 22 if they're using -- proposing to use an outdated 12:52:54
 23 version of a standard, or, quite frankly, we've seen 12:52:59
 24 errors where they've attempted to use an ASTM biofuel 12:53:02
 25 standard, and rather than referencing D6751 they've 12:53:06
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1 specifically. Using the NIST database as a guideline, 12:49:53
 2 we've incorporated, you know, as much of that as 12:50:02
 3 possible in the reading room. At times I believe we 12:50:04
 4 also tried to add a little bit more intelligence to it 12:50:06
 5 to determine if an agency was undertaking a subsequent 12:50:09
 6 rule-making, and we became aware that the agency had 12:50:18
 7 published a new final rule which either changed the 12:50:24
 8 reference to an ASTM standard that we had placed in 12:50:27
 9 the reading room or added a new ASTM standard to the 12:50:31
 10 reading room. 12:50:38
 11 Then we took steps to add that to the reading 12:50:39
 12 room. It's not an exact science. We don't pay a 12:50:42
 13 vendor to perform the service for us. We rely either 12:50:48
 14 exclusively on the NIST database or we -- it's based 12:50:55
 15 on intelligence that we've gathered about new 12:50:58
 16 rulemakings. 12:51:01
 17 Q. How do you gather intelligence about 12:51:03
 18 incorporations of ASTM standards by reference? 12:51:08
 19 A. Well, as much as possible we read the federal 12:51:14
 20 register. I'd like to think we read it on a regular 12:51:17
 21 basis, but sometimes it's more infrequent than that. 12:51:20
 22 So we will search key terms in the federal register to 12:51:24
 23 see if it's mentioning ASTM and if there's a rule that 12:51:30
 24 has resulted in the publication of standards. And 12:51:34
 25 sometimes we're ahead of it because ASTM has a policy 12:51:38
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1 referenced D56571, gotten the numbers wrong, we will 12:53:09
 2 engage with an agency and either make them aware 12:53:14
 3 there's a more recent version or make them aware that 12:53:16
 4 what they are trying to reference doesn't make a lot 12:53:20
 5 of sense 12:53:22
 6 BY MR BRIDGES: 12:53:23
 7 Q Does ASTM bring standards to the attention of 12:53:26
 8 the federal government with some sort of 12:53:36
 9 recommendation that the federal government incorporate 12:53:38
 10 the standard by reference? 12:53:41
 11 MR FEE: Objection Vague 12:53:43
 12 THE WITNESS: That's not part of what we call 12:53:45
 13 engaging federal agencies in Congress What we will 12:53:49
 14 do is work with agencies and work with Congress to 12:53:53
 15 make them aware of the voluntary consensus standards 12:53:56
 16 that we're developing in any given area that they 12:53:59
 17 might have an interest But the ultimate decision of 12:54:02
 18 whether or not to utilize and reference those 12:54:07
 19 standards we rarely take positions on, and I can't 12:54:08
 20 give you a specific example of a time that we have 12:54:14
 21 taken an example on -- taken a position on 12:54:17
 22 BY MR BRIDGES: 12:54:23
 23 Q Do any state governments or municipal 12:54:23
 24 governments incorporate ASTM standards by reference? 12:54:26
 25 MR FEE: Objection to form 12:54:30
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1 I won't disclose privileged communications. 14:24:48
 2 THE WITNESS: I mean, once again, I'm not in 14:24:52
 3 this communication chain between Jim and the executive 14:24:52
 4 committee, and it's not a government relations issue 14:24:56
 5 I'm working on. 14:24:59
 6 BY MR. BRIDGES: 14:25:00
 7 Q. So you did not interpret the ASTM strategy 14:25:00
 8 that's mentioned in that E-mail to be a government 14:25:03
 9 relations strategy? 14:25:06
 10 MR. FEE: Objection. Calls for speculation. 14:25:08
 11 THE WITNESS: I don't. 14:25:10
 12 (Deposition Exhibit 1046 was marked for 14:25:58
 13 identification.) 14:25:58
 14 MR. BRIDGES: I'll show you Exhibit 1046. 14:25:59
 15 Q. Have you seen this document before? 14:26:03
 16 (The witness reviewed Exhibit 1046.) 14:26:25
 17 THE WITNESS: So the world justice project, 14:26:25
 18 the origination of the E-mail, which I received, yes, 14:26:27
 19 I believe I reviewed that document. But from beyond 14:26:30
 20 that point in the E-mail chain, I do not have 14:26:35
 21 recollection of being involved in this. 14:26:38
 22 BY MR. BRIDGES: 14:26:41
 23 Q. Did you review this document in preparation 14:26:41
 24 to testify today? 14:26:44
 25 A. I did not. 14:26:50
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1 Q. Who at ASTM would have the most knowledge 14:26:53
 2 about the content on the front page of Exhibit 1046? 14:26:56
 3 MR. FEE: Objection. Vague. Calls for 14:27:01
 4 speculation. 14:27:04
 5 THE WITNESS: Well, my understanding is that 14:27:13
 6 this mentions litigation and copyright. I would think 14:27:15
 7 it would be legal counsel, Tom O'Brien. 14:27:19
 8 BY MR. BRIDGES: 14:27:26
 9 Q. Who is the Steele, S-t-e-e-l-e, that the 14:27:26
 10 first line refers to? 14:27:30
 11 MR. FEE: Objection. Calls for speculation. 14:27:32
 12 THE WITNESS: I would speculate that it would 14:27:35
 13 be Rob Steele, who's the secretary general of ISO at 14:27:37
 14 this time. 14:27:42
 15 BY MR. BRIDGES: 14:27:50
 16 Q. On the third line of Mr. Thomas' E-mail is 14:27:50
 17 the sentence, "To date, all of Carl's posting have not 14:27:54
 18 had a measurable impact on our finances." Do you see 14:27:58
 19 that? 14:28:04
 20 A. I do see that. 14:28:04
 21 Q. Was that your understanding at the time? 14:28:05
 22 A. January 2013. I'm not aware that we did an 14:28:14
 23 analysis that I would be able to comment on based at 14:28:20
 24 that point of time. 14:28:26
 25 Q. What do you understand to have been the basis 14:28:30
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1 of Mr. Thomas' statement in that sentence? 14:28:32
 2 MR. FEE: Objection. Calls for speculation. 14:28:35
 3 THE WITNESS: I understand that there's been 14:28:37
 4 an impact and a drag on ASTM's revenues due to 14:28:39
 5 confusion in business execution issues due to the fact 14:28:44
 6 that some of our standards are now available outside 14:28:49
 7 of our licensed distributors and outside of being 14:28:53
 8 directly available from ASTM. 14:28:58
 9 Q. So Mr. Thomas was lying in that statement? 14:29:02
 10 MR. FEE: Objection. Mischaracterizes his 14:29:07
 11 testimony. 14:29:07
 12 MR. BRIDGES: I'll withdraw it. 14:29:08
 13 Q. You didn't answer my question, Mr. Grove. 14:29:08
 14 A. Okay. 14:29:10
 15 Q. My question is what do you understand to have 14:29:11
 16 been the basis of Mr. Thomas' statement in that 14:29:14
 17 sentence? 14:29:17
 18 MR. FEE: Objection. Calls for speculation. 14:29:17
 19 THE WITNESS: I wouldn't be able to answer 14:29:20
 20 that. I apologize. 14:29:20
 21 BY MR. BRIDGES: 14:29:24
 22 Q. When did ASTM first notice a measurable 14:29:24
 23 impact on its finances from the activities of 14:29:27
 24 Mr. Malamud and Public Resource? 14:29:30
 25 MR. FEE: Objection. Vague. 14:29:32
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1 THE WITNESS: Again, I don't have direct 14:29:39
 2 knowledge of such impact 14:29:42
 3 BY MR BRIDGES: 14:29:48
 4 Q What other knowledge do you have other than 14:29:48
 5 direct knowledge? 14:29:51
 6 MR FEE: Same objection 14:29:52
 7 THE WITNESS: So to date, I'm aware, based on 14:29:53
 8 conversations with our vice president for sales and 14:29:57
 9 publications, that the act of putting our standards 14:29:59
 10 into the public domain has caused a drag on revenue 14:30:04
 11 for ASTM, which has complicated business execution, 14:30:08
 12 which has produced some harm to ASTM 14:30:14
 13 BY MR BRIDGES: 14:30:25
 14 Q The vice president of sales and publications 14:30:25
 15 is John Pace; is that correct? 14:30:26
 16 A That's correct 14:30:28
 17 Q Tell me everything you remember about those 14:30:28
 18 conversations When did you have those conversations? 14:30:31
 19 A Yesterday 14:30:37
 20 Q Did you have any conversations before 14:30:43
 21 yesterday on that topic? 14:30:45
 22 A Not that I recall 14:30:49
 23 Q When is the first time you learned of a drag 14:30:54
 24 on revenue for ASTM caused by either Mr Malamud or a 14:30:58
 25 Public Resource? Was it yesterday? 14:31:05
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<p>1 THE WITNESS: I don't have anything 14:36:33 2 additional. 14:36:35 3 BY MR. BRIDGES: 14:36:36 4 Q. And you're here as a corporate representative 14:36:36 5 of ASTM to provide the information available to ASTM 14:36:37 6 on that topic; correct? 14:36:37 7 MR. FEE: Objection. He's here to provide 14:36:39 8 testimony regarding all the topics we identified 14:36:42 9 earlier today. Of course, we'll have expert testimony 14:36:42 10 on this subject as well. 14:36:45 11 You can answer. 14:36:47 12 THE WITNESS: Yes. 14:36:50 13 BY MR. BRIDGES: 14:36:55 14 Q. So I need to know every other fact you're 14:36:55 15 aware of that pertains to harms that ASTM has suffered 14:36:57 16 from the defendants. So, please, I'll take as much 14:37:06 17 time as we need. Tell me every other fact that you're 14:37:08 18 aware of that pertains to the harm that ASTM has 14:37:11 19 suffered as a consequence of the defendants. 14:37:15 20 MR. FEE: Objection to form. Objection. 14:37:18 21 Calls for expert testimony. Objection to the extent 14:37:19 22 it calls for a narrative. Objection as to vague. 14:37:21 23 Now, we're talking about harms as opposed to financial 14:37:28 24 harms? That's how I understand the question. 14:37:30 25 Can you read that back just to make sure I 14:37:34 Page 150</p>	<p>1 failed to perform the way that they expected them to. 14:39:04 2 BY MR. BRIDGES: 14:39:12 3 Q. What other harms? 14:39:12 4 MR. FEE: Same objections. 14:39:15 5 THE WITNESS: Well, I would be concerned -- I 14:39:19 6 know the important role our standards play in health, 14:39:21 7 life, and safety. I would certainly be concerned if 14:39:23 8 some of these documents that contain factual and other 14:39:25 9 errors contributed in any way to property damage, 14:39:30 10 injury or loss of life because of the sensitive, 14:39:33 11 important role that our standards play in protecting 14:39:37 12 people in society. 14:39:40 13 BY MR. BRIDGES: 14:39:45 14 Q. What other harms to ASTM? 14:39:45 15 MR. FEE: Same objections. 14:39:47 16 THE WITNESS: I can't think of additional 14:39:58 17 harms at this time. 14:40:00 18 BY MR. BRIDGES: 14:40:05 19 Q. Has ASTM heard from any customers that said, 14:40:05 20 "I didn't buy the standard I was planning to buy 14:40:08 21 because I could find it for free on the Internet from 14:40:10 22 Public Resource or the Internet archive"? 14:40:13 23 MR. FEE: Objection to form. 14:40:16 24 THE WITNESS: I don't have knowledge of that. 14:40:20 25 BY MR. BRIDGES: 14:40:22 Page 152</p>
<p>1 don't miss anything? 14:37:34 2 (Record read.) 14:37:34 3 MR. BRIDGES: I'm sorry. Why do we need 14:38:01 4 to -- just if you got objections, go ahead and state 14:38:02 5 them. 14:38:02 6 MR. FEE: Oh, I don't want to hear the 14:38:02 7 objections. 14:38:02 8 (Record read.) 14:38:02 9 MR. FEE: I think that's it. Okay. 14:38:02 10 THE WITNESS: Well, ASTM is known globally 14:38:03 11 for the quality and technical excellence of its 14:38:05 12 documents because we have a very robust standards 14:38:08 13 development and quality control process. My 14:38:14 14 understanding, and based on my direct knowledge of 14:38:19 15 viewing certain documents that have been put in the 14:38:21 16 public domain, these documents contain errors. I've 14:38:22 17 seen standards where tables have been upside down. 14:38:29 18 I've seen tables and columns and rows that don't align 14:38:34 19 properly. 14:38:39 20 So if there's a real risk to ASTM's 14:38:41 21 reputation and to ASTM's standing in the global 14:38:44 22 economy, if customers or the public or other 14:38:48 23 stakeholders utilize these documents with the 14:38:52 24 expectation and understanding that these were the 14:38:58 25 official ASTM documents, and products and materials 14:39:00 Page 151</p>	<p>1 Q. Does anybody at ASTM have knowledge of that 14:40:22 2 type of communication? 14:40:24 3 MR. FEE: Objection. Calls for speculation. 14:40:27 4 MR. BRIDGES: I'm asking him as a corporate 14:40:31 5 representative. 14:40:32 6 MR. FEE: Same objection. 14:40:34 7 THE WITNESS: So based on my conversations 14:40:35 8 with John Pace, he -- it's my understanding that there 14:40:36 9 is this confusion with certain customers and certain 14:40:43 10 members of the public that has caused this inability 14:40:47 11 to execute sales on a timely basis. 14:40:51 12 BY MR. BRIDGES: 14:40:54 13 Q. Well, what customers? 14:40:54 14 A. I'm not able to answer that at this time. 14:40:59 15 Q. What members of the public? 14:41:06 16 A. I'm not able to answer that at this time. 14:41:09 17 Q. Did Mr. Pace put a dollar amount on his 14:41:17 18 estimate of lost revenues to ASTM as a consequence of 14:41:19 19 the defendants' actions? 14:41:23 20 MR. FEE: Objection to the extent that calls 14:41:25 21 for expert testimony. 14:41:26 22 THE WITNESS: In my communications with him, 14:41:29 23 no. 14:41:31 24 BY MR. BRIDGES: 14:41:33 25 Q. As a representative of ASTM at this 14:41:33 Page 153</p>

1 deposition, does ASTM have any estimate of the dollar 14:41:37
 2 amount of lost revenues to it as a consequence of the 14:41:42
 3 defendants' actions? 14:41:45
 4 MR. FEE: Objection. Calls for expert 14:41:46
 5 testimony. Let me see if that's really a topic that 14:41:48
 6 he's been designated on. 14:41:52
 7 MR. BRIDGES: He may answer. 14:41:59
 8 MR. FEE: Hold on. I'm waiting to see if 14:42:00
 9 that's actually a topic he's been designated on. 14:42:01
 10 MR. BRIDGES: Make the objections, and if 14:42:08
 11 it's superfluous and he hasn't been designated on. 14:42:11
 12 I'd like to go ahead and get an answer. 14:42:11
 13 MR. FEE: No. If you want to take off the 14:42:12
 14 prelude to your question there, then I'm happy to have 14:42:14
 15 his answer without the prelude, but if you're going to 14:42:16
 16 have -- 14:42:16
 17 MR. BRIDGES: Okay. Sure. 14:42:16
 18 Q. Does ASTM have any estimate of the dollar 14:42:17
 19 amount of lost revenues to it as a consequence of 14:42:20
 20 defendants' actions? 14:42:23
 21 MR. FEE: Objection. Calls for expert 14:42:25
 22 testimony. 14:42:26
 23 THE WITNESS: Not to my knowledge. 14:42:27
 24 BY MR. BRIDGES: 14:42:30
 25 Q. Does ASTM have any facts in its possession 14:42:30
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1 that suggest to ASTM that it has lost money as a 14:42:39
 2 consequence of defendants' actions? 14:42:46
 3 MR. FEE: Objection. Asked and answered. 14:42:50
 4 Calls for expert testimony. Vague. 14:42:51
 5 THE WITNESS: Not that I'm aware of. 14:42:57
 6 BY MR. BRIDGES: 14:43:05
 7 Q. Is ASTM aware of any property damage, injury, 14:43:05
 8 or loss of life that has occurred because of the 14:43:10
 9 defendants' actions? 14:43:15
 10 MR. FEE: Objection. Calls for expert 14:43:17
 11 testimony and speculation. 14:43:19
 12 THE WITNESS: Fortunately, not at this time. 14:43:22
 13 BY MR. BRIDGES: 14:43:26
 14 Q. When did you first -- sorry. 14:43:26
 15 When did ASTM first become aware of any 14:43:27
 16 errors in connection with the posting of ASTM 14:43:31
 17 standards by the defendant? 14:43:36
 18 A. I'm just not able to give you a time line. 14:43:51
 19 I'm not certain. 14:43:53
 20 Q. How long ago was it, to your best estimate? 14:43:55
 21 MR. FEE: Objection. Asked and answered. 14:43:57
 22 Calls for speculation. 14:43:58
 23 THE WITNESS: I'm not certain. 14:44:00
 24 BY MR. BRIDGES: 14:44:02
 25 Q. Was it more than a year ago? 14:44:02
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1 MR FEE: Same objections 14:44:04
 2 THE WITNESS: I'm not sure 14:44:08
 3 MR FEE: It's beyond the scope his 14:44:08
 4 designation as well 14:44:10
 5 Go ahead 14:44:11
 6 THE WITNESS: I'm not sure, no 14:44:12
 7 BY MR BRIDGES: 14:44:13
 8 Q Was it more than three years ago? 14:44:13
 9 MR FEE: Same objections 14:44:16
 10 THE WITNESS: I'm not sure 14:44:17
 11 BY MR BRIDGES: 14:44:18
 12 Q Was it more than two weeks ago? 14:44:18
 13 MR FEE: Same objection 14:44:21
 14 THE WITNESS: I'm not sure 14:44:22
 15 BY MR BRIDGES: 14:44:23
 16 Q Do you know whether ASTM had any knowledge of 14:44:23
 17 errors in connection with defendants posting of ASTM 14:44:26
 18 standards more than a week ago? 14:44:31
 19 MR FEE: Same objection -- objections, I 14:44:35
 20 should say 14:44:36
 21 THE WITNESS: More than a week ago, I believe 14:44:38
 22 so, yes 14:44:39
 23 BY MR BRIDGES: 14:44:40
 24 Q When did you first learn of any errors in 14:44:40
 25 defendants' posting of ASTM standards? 14:44:46
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1 A. I first learned of it by hearing of it in the 14:44:51
 2 last year. I first viewed it yesterday. 14:44:53
 3 Q. How many standards posted by defendants 14:44:56
 4 contain errors? 14:45:00
 5 MR. FEE: Objection. Beyond the scope of his 14:45:01
 6 designation. Calls for speculation. 14:45:03
 7 THE WITNESS: My understanding is that it 14:45:08
 8 would be extremely difficult to do a complete 14:45:10
 9 analysis, but based on quick analysis, we found 14:45:14
 10 significant errors. 14:45:21
 11 BY MR. BRIDGES: 14:45:28
 12 Q. What are the significant ones? 14:45:28
 13 A. To industries that rely on quality 14:45:30
 14 information, yes, I would say so. 14:45:32
 15 Q. Tell me some of the most significant ones. 14:45:34
 16 A. Well, if a table and a chart don't align 14:45:38
 17 correctly, the variables, it is displaying false 14:45:42
 18 information. That seems like that could be an error. 14:45:44
 19 Q. What other errors are really significant in 14:45:49
 20 your mind? 14:45:52
 21 A. I'm not certain. 14:45:53
 22 Q. Can you think of any other significant errors 14:45:54
 23 in defendants posting of standards? 14:45:56
 24 MR. FEE: Objection. This is beyond the 14:45:58
 25 scope of his designation. 14:45:59
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1 more than one error in the ASTM standards? 14:50:24
 2 MR. FEE: Same objections. 14:50:28
 3 THE WITNESS: I'd be speculating. 14:50:31
 4 BY MR. BRIDGES: 14:50:34
 5 Q. Well, you have testified as to what would 14:50:34
 6 surprise you. I'd like to know what would surprise 14:50:34
 7 you. 14:50:35
 8 MR. FEE: Same objections. 14:50:37
 9 THE WITNESS: I'm aware of ASTM's rigorous 14:50:37
 10 quality control process and the value of bringing 14:50:40
 11 people together under an open, transparent process and 14:50:42
 12 the important role that ASTM staff plays in helping to 14:50:47
 13 ensure the quality of our documents. And I would be 14:50:49
 14 skeptical that that could be replicated if any steps 14:50:54
 15 were bypassed. So -- 14:50:59
 16 BY MR. BRIDGES: 14:51:03
 17 Q. Would it surprise you for an ASTM standard to 14:51:03
 18 have three or more errors in it? 14:51:05
 19 MR. FEE: Same objections. 14:51:08
 20 THE WITNESS: Would it surprise me? Yes. 14:51:13
 21 BY MR. BRIDGES: 14:51:16
 22 Q. Are you aware of any ASTM standards with 14:51:16
 23 three or more errors? 14:51:19
 24 MR. FEE: Same objections. Just give me a 14:51:21
 25 second to object. 14:51:23
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1 THE WITNESS: I'm not familiar with the term 14:53:06
 2 "errata." 14:53:07
 3 BY MR. BRIDGES: 14:53:08
 4 Q. Does ASTM ever issue corrigenda to its 14:53:08
 5 standards? 14:53:13
 6 MR. FEE: Objection. Vague. Beyond the 14:53:14
 7 scope of his designation. 14:53:15
 8 THE WITNESS: I'm not certain. 14:53:20
 9 BY MR. BRIDGES: 14:53:21
 10 Q. Does ASTM ever issue a notice of errors in 14:53:21
 11 any of its standards? 14:53:28
 12 MR. FEE: Same objections. 14:53:31
 13 THE WITNESS: I'm not certain. 14:53:32
 14 BY MR. BRIDGES: 14:53:34
 15 Q. What happens if ASTM publishes and 14:53:34
 16 distributes a standard that's widely held by persons 14:53:37
 17 and then discovers that there is a mistake in the 14:53:40
 18 standard? How does ASTM notify the public? 14:53:42
 19 MR. FEE: Objection. Calls for speculation. 14:53:45
 20 It's beyond the scope of his designation, and 14:53:47
 21 compound. 14:53:50
 22 THE WITNESS: I'm not able to explain that 14:53:52
 23 process. 14:53:53
 24 BY MR. BRIDGES: 14:53:55
 25 Q. Would it harm ASTM's reputation to issue a 14:53:55
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1 THE WITNESS: I'm not personally, no 14:51:25
 2 BY MR BRIDGES: 14:51:27
 3 Q Are you aware of how ASTM standards are 14:51:27
 4 proofread? 14:51:44
 5 MR FEE: Objection Vague 14:51:47
 6 THE WITNESS: Yes, generally 14:51:51
 7 BY MR BRIDGES: 14:51:53
 8 Q How? 14:51:53
 9 A There's a rigorous process under which at 14:51:54
 10 every point in the standards development process 14:51:58
 11 there's peer review of the standard and of the 14:52:00
 12 document, and as it goes through the process, as it 14:52:05
 13 works through the ASTM process, which involves many 14:52:09
 14 steps, at the end there's an editor, an ASTM staff 14:52:13
 15 that reviews the standard and insures that the 14:52:21
 16 document purports to be what the committee intended it 14:52:26
 17 for -- for it to be 14:52:29
 18 Q And do ASTM editors catch every mistake? 14:52:32
 19 MR FEE: Objection Calls for speculation 14:52:36
 20 THE WITNESS: I'm not aware of errors, but it 14:52:44
 21 wouldn't surprise me if there were some 14:52:47
 22 BY MR BRIDGES: 14:52:49
 23 Q Does ASTM ever issue errata to its standards? 14:52:49
 24 MR FEE: Objection Vague I think that's 14:52:55
 25 also beyond the scope of his designation 14:52:59
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1 standard with mistakes? 14:53:58
 2 MR FEE: Objection Calls for expert 14:53:59
 3 testimony It's beyond the scope of his designation 14:54:01
 4 THE WITNESS: I'm not certain 14:54:07
 5 BY MR BRIDGES: 14:54:09
 6 Q How has ASTM's reputation suffered from the 14:54:09
 7 activities of the defendants? 14:54:15
 8 MR FEE: Objection Calls for expert 14:54:24
 9 testimony 14:54:25
 10 THE WITNESS: I'm not certain 14:54:28
 11 BY MR BRIDGES: 14:54:29
 12 Q Have you noticed an effect on ASTM's 14:54:29
 13 reputation as a consequence of the defendants' 14:54:32
 14 activities? 14:54:35
 15 A I have not 14:54:37
 16 Q What instances is ASTM aware of, of people 14:54:44
 17 being confused about the relationship between ASTM and 14:54:50
 18 the defendant? 14:54:57
 19 MR FEE: Objection Vague Asked and 14:54:59
 20 answered 14:55:02
 21 THE WITNESS: Based on communications with 14:55:04
 22 our sales and publications vice president 14:55:06
 23 BY MR BRIDGES: 14:55:09
 24 Q What did those communications convey to you? 14:55:09
 25 A That there was some level of confusion in the 14:55:14
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<p>1 by reference? 15:01:47</p> <p>2 MR. FEE: Objection. Vague as to whether or 15:01:48</p> <p>3 not that older version is authentic. 15:01:51</p> <p>4 THE WITNESS: Yeah. I'm sorry. Could you 15:01:54</p> <p>5 just repeat that? 15:01:55</p> <p>6 BY MR. BRIDGES: 15:01:57</p> <p>7 Q. Is it misleading, in your view, to have the 15:01:57</p> <p>8 ASTM logo on an older version of an ASTM standard 15:02:01</p> <p>9 where the older version has been incorporated by 15:02:07</p> <p>10 reference? 15:02:09</p> <p>11 MR. FEE: Same objection as to the vagueness. 15:02:11</p> <p>12 THE WITNESS: My concern would be that to get 15:02:16</p> <p>13 the most recent version of any document, you more than 15:02:19</p> <p>14 likely need to come to ASTM or one of our licensed 15:02:27</p> <p>15 distributors. 15:02:31</p> <p>16 BY MR. BRIDGES: 15:02:32</p> <p>17 Q. But if somebody is interested in, let's say, 15:02:32</p> <p>18 a 2008 standard because the 2008 standard has been 15:02:39</p> <p>19 incorporated by reference but a more recent standard 15:02:42</p> <p>20 has not been, what is the harm to ASTM from the 15:02:44</p> <p>21 inclusion of the ASTM logo on that 2008 standard 15:02:49</p> <p>22 posted by Public Resource? 15:02:55</p> <p>23 MR. FEE: Objection. Calls for speculation. 15:02:58</p> <p>24 THE WITNESS: Since I'm not an attorney and 15:03:01</p> <p>25 I'm not familiar with the regulatory -- the connection 15:03:04</p> <p style="text-align: right;">Page 170</p>	<p>1 than the dated issue. 15:04:36</p> <p>2 BY MR. BRIDGES: 15:04:38</p> <p>3 Q. The authenticity of the standard didn't come 15:04:38</p> <p>4 into your answer until you heard counsel's objection. 15:04:41</p> <p>5 MR. FEE: That's absolutely false. You 15:04:41</p> <p>6 should read the transcript when you get done with 15:04:43</p> <p>7 this. 15:04:47</p> <p>8 BY MR. BRIDGES: 15:04:49</p> <p>9 Q. Would it harm ASTM less if defendant took the 15:04:49</p> <p>10 ASTM logo off the standards that it -- sorry, that it 15:04:53</p> <p>11 posts? 15:04:58</p> <p>12 MR. FEE: Objection. Calls for speculation, 15:04:59</p> <p>13 and a hypothetical. 15:05:01</p> <p>14 MR. BRIDGES: I'd like to know what ASTM -- 15:05:05</p> <p>15 MR. FEE: Calls for an expert opinion, 15:05:08</p> <p>16 perhaps, as well. 15:05:09</p> <p>17 THE WITNESS: I'm not able to answer that 15:05:10</p> <p>18 question. 15:05:12</p> <p>19 BY MR. BRIDGES: 15:05:14</p> <p>20 Q. Would ASTM -- well, would you find it 15:05:14</p> <p>21 problematic -- I'm just curious. Which would you find 15:05:18</p> <p>22 to be more of a problem to ASTM, for Public Resource 15:05:21</p> <p>23 to public -- strike that. 15:05:27</p> <p>24 What would ASTM, in your view, find to be 15:05:37</p> <p>25 more of a problem, for Public Resource to post the 15:05:41</p> <p style="text-align: right;">Page 172</p>
<p>1 between regulations and law, I will share my 15:03:09</p> <p>2 observation -- 15:03:12</p> <p>3 BY MR. BRIDGES: 15:03:14</p> <p>4 Q. Please do. 15:03:14</p> <p>5 A. -- that just because a version of a standard 15:03:15</p> <p>6 that's in the law might be outdated, that doesn't seem 15:03:18</p> <p>7 to stop industry from wanting to use the most recent 15:03:26</p> <p>8 version of the standard. 15:03:30</p> <p>9 Q. And is it ASTM's view that it's misleading to 15:03:35</p> <p>10 have the ASTM logo on anything that's currently 15:03:39</p> <p>11 available -- strike that. 15:03:43</p> <p>12 Is it ASTM's view that it is misleading to 15:03:48</p> <p>13 display the ASTM logo on standards currently available 15:03:54</p> <p>14 on the Internet when the standards are not the most 15:04:03</p> <p>15 recent versions? 15:04:09</p> <p>16 MR. FEE: Objection. To the extent you're 15:04:11</p> <p>17 using "misleading" as a legal term, I object on that 15:04:13</p> <p>18 ground. I also object to the vagueness of that 15:04:15</p> <p>19 because it's not clear whether or not the standards 15:04:18</p> <p>20 you're referencing are authentic or not. 15:04:21</p> <p>21 MR. BRIDGES: That's coaching the witness, 15:04:23</p> <p>22 Mr. Fee. 15:04:24</p> <p>23 THE WITNESS: Well, that's exactly the point 15:04:25</p> <p>24 I thought I was making. I don't -- it's the 15:04:26</p> <p>25 authenticity of the standard as much as the -- more 15:04:31</p> <p style="text-align: right;">Page 171</p>	<p>1 ASTM standards it posts with the ASTM logo or for 15:05:49</p> <p>2 Public Resource to publish them without the ASTM logo? 15:05:56</p> <p>3 MR FEE: Objection To the extent that 15:06:02</p> <p>4 you're asking for what would be more problematic from 15:06:03</p> <p>5 a legal perspective -- 15:06:06</p> <p>6 MR BRIDGES: Just please state the basis for 15:06:08</p> <p>7 your objection instead of -- 15:06:10</p> <p>8 MR FEE: Andrew, do you forget how your 15:06:11</p> <p>9 deposition objections went? Do you remember your 15:06:12</p> <p>10 deposition objections the other day? They were much 15:06:14</p> <p>11 more talkative than this 15:06:16</p> <p>12 MR BRIDGES: Not so 15:06:18</p> <p>13 MR FEE: I'm going to make my objections 15:06:19</p> <p>14 To the extent you're asking for a legal 15:06:21</p> <p>15 conclusion with respect to "problematic," I object on 15:06:22</p> <p>16 that basis I object because it calls for 15:06:25</p> <p>17 speculation, and it's a hypothetical question 15:06:28</p> <p>18 BY MR BRIDGES: 15:06:35</p> <p>19 Q You may answer 15:06:35</p> <p>20 MR FEE: Hold on I'm not done objecting 15:06:36</p> <p>21 yet And objection to form 15:06:38</p> <p>22 THE WITNESS: And I'm not able to answer that 15:06:49</p> <p>23 question 15:06:50</p> <p>24 BY MR BRIDGES: 15:06:53</p> <p>25 Q In your position at ASTM, does it make a 15:06:53</p> <p style="text-align: right;">Page 173</p>

1 THE WITNESS: It's a little out of context. 16:32:42
 2 BY MR. BRIDGES: 16:32:45
 3 Q. What would be necessary to add to that 16:32:45
 4 statement in order to supply the context? 16:32:50
 5 MR. FEE: Same objections. 16:32:55
 6 THE WITNESS: Looking at standards on an 16:33:12
 7 individual basis devalues the real value that ASTM 16:33:14
 8 standards have as a collection of a whole. 16:33:14
 9 BY MR. BRIDGES: 16:33:17
 10 Q. What is the real value that ASTM standards 16:33:17
 11 have as a collection? 16:33:19
 12 A. Customers in the public benefit from getting 16:33:25
 13 a collection of standards at a very affordable price 16:33:27
 14 point, which allows them to access numerous standards 16:33:32
 15 rather than looking at them as individual standards 16:33:39
 16 purchased separately. 16:33:42
 17 Q. Is there anything else about the context -- 16:33:48
 18 sorry. Anything else necessary to supply an 16:33:52
 19 appropriate context for that statement? 16:33:54
 20 MR. FEE: Objection. Lack of foundation. 16:33:56
 21 Calls for speculation. It's beyond the scope of his 16:33:59
 22 designation. 16:34:01
 23 THE WITNESS: No. 16:34:14
 24 (Deposition Exhibit 1056 was marked for 16:34:40
 25 identification.) 16:34:40
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1 BY MR. BRIDGES: 16:34:41
 2 Q. Exhibit 1056 consists of a series of E-mails 16:34:41
 3 in which you and John Pace were either authors or 16:34:54
 4 recipients; correct? 16:35:04
 5 (The witness reviewed Exhibit 1056.) 16:35:28
 6 THE WITNESS: Yes, that's correct. 16:35:28
 7 BY MR. BRIDGES: 16:35:29
 8 Q. What did you understand Mr. Pace to mean in 16:35:29
 9 the first sentence about "sticking to our guns and 16:35:34
 10 doing the reading room exactly as how we have all 16:35:39
 11 agreed to date"? 16:35:43
 12 A. I'd be speculating. 16:35:48
 13 Q. Well, you were a recipient -- the sole 16:35:52
 14 recipient of that E-mail. So please tell me what your 16:35:56
 15 understanding was. 16:35:58
 16 MR. FEE: Objection. Lack of foundation. 16:35:59
 17 Beyond the scope of his designation as well. 16:36:07
 18 THE WITNESS: I'd infer from this that John 16:36:10
 19 Pace was raising concerns that we had already 16:36:12
 20 committed to building a reading room and committed 16:36:15
 21 extensive resources of his employees' time to help in 16:36:21
 22 compiling the reading room, and now I was suggesting 16:36:26
 23 that, in addition to the reading room, we might want 16:36:28
 24 to consider other things as well. 16:36:32
 25 BY MR. BRIDGES: 16:36:38
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1 Q. What were you suggesting in addition to a 16:36:38
 2 reading room? 16:36:40
 3 A. I see that I was recommending that we 16:36:41
 4 consider beefing up -- excuse me -- making our 16:36:42
 5 summaries, which the abstracts which we provide to our 16:36:47
 6 standards, considering whether those abstracts could 16:36:53
 7 be converted to something that's more of a summary. 16:36:57
 8 Q. Was that in addition to doing a reading room 16:37:08
 9 or instead of doing a reading room? 16:37:10
 10 A. Obviously, John was thinking I was suggesting 16:37:20
 11 it as an addition, and I'm not sure if I was or not. 16:37:21
 12 I was explaining I'm not the IT guy. So I didn't know 16:37:40
 13 how difficult this task would be. 16:37:45
 14 Q. Did you have in mind providing summaries as 16:37:48
 15 opposed to the standards themselves in the reading 16:37:53
 16 room? 16:37:55
 17 MR. FEE: Objection. Are you asking him his 16:37:56
 18 personal opinion in this question? 16:37:59
 19 MR. BRIDGES: I'm asking him what his state 16:38:02
 20 of mind was at the time. 16:38:03
 21 MR. FEE: It's beyond the scope of his 16:38:04
 22 designation. 16:38:06
 23 But you can answer. 16:38:07
 24 THE WITNESS: In our efforts to strike the 16:38:08
 25 right balance between providing the public with public 16:38:10
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1 access to standards incorporated by reference and 16:38:12
 2 maintaining our viability of our standards development 16:38:14
 3 enterprise, I was recommending that we review a lot of 16:38:18
 4 options. One of which was this summaries idea. 16:38:22
 5 BY MR. BRIDGES: 16:38:26
 6 Q. Was it the idea of providing summaries as 16:38:26
 7 opposed to the text of the standards themselves? 16:38:29
 8 MR. FEE: Same objection. 16:38:33
 9 THE WITNESS: I don't recall. 16:38:36
 10 BY MR. BRIDGES: 16:38:41
 11 Q. Does someone -- are you familiar with the 16:38:41
 12 operation of the reading room for ASTM today? 16:38:44
 13 A. Yes. 16:38:47
 14 Q. Does one have to register to gain access to 16:38:47
 15 the reading room? 16:38:50
 16 A. Yes. 16:38:51
 17 Q. What does one have to do to register to get 16:38:52
 18 access to the reading room? 16:38:55
 19 A. Enter a name and E-mail address. 16:38:56
 20 Q. What's the purpose of that? 16:39:00
 21 A. Well, to ensure that it wasn't -- again, I'm 16:39:02
 22 not an IT person, but I believe there's some concerns 16:39:08
 23 that bots and other types of automatic -- that perhaps 16:39:10
 24 machines could access our system and pull information 16:39:19
 25 in ways that perhaps we weren't intending by providing 16:39:22
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1 that they must be -- they have to be referred to as 17:24:32
 2 "musts," and this would have the voluntary consensus 17:24:35
 3 standards process This isn't the intention when 17:24:39
 4 people come together to work in a voluntary consensus 17:24:43
 5 standard environment They want the words to mean 17:24:47
 6 what they carefully craft them to mean in the process, 17:24:49
 7 and when -- so I believe that's what I was referring 17:24:52
 8 to in this 17:24:55
 9 BY MR BRIDGES: 17:25:00
 10 Q Well, Mr Miller was not saying that the 17:25:00
 11 government was changing the standard The government 17:25:02
 12 was proposing to change the law; correct? 17:25:07
 13 MR FEE: Objection The document speaks for 17:25:11
 14 itself Calls for speculation 17:25:13
 15 THE WITNESS: I guess I would be speculating, 17:25:22
 16 but that was my interpretation of what this means 17:25:24
 17 BY MR BRIDGES: 17:25:29
 18 Q That the government would be changing the law 17:25:29
 19 as the law interprets the standard? 17:25:31
 20 MR FEE: Same objections And vague 17:25:36
 21 THE WITNESS: Yeah That the government was 17:25:41
 22 interpreting a standard in a way that the voluntary 17:25:43
 23 consensus standard group didn't necessarily intend it 17:25:46
 24 to without coming back to the organization and working 17:25:50
 25 with them 17:25:57
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1 BY MR BRIDGES: 17:27:38
 2 Q Mr Grove, does ASTM encourage any 17:27:38
 3 governments to incorporate its standards by reference? 17:27:46
 4 MR FEE: Objection Vague 17:27:49
 5 THE WITNESS: As a matter of policy, we make 17:27:54
 6 organizations -- sorry -- governments aware of our 17:27:58
 7 standards and point out and connect with agency 17:28:04
 8 missions But in the end, we respect that agencies 17:28:07
 9 should be the ones that determine whether or not our 17:28:09
 10 standards are incorporated or not 17:28:12
 11 BY MR BRIDGES: 17:28:13
 12 Q Is ASTM generally pleased when governments 17:28:13
 13 incorporate its standards by reference? 17:28:20
 14 MR FEE: Objection Vague 17:28:22
 15 THE WITNESS: So I think it speaks to the 17:28:28
 16 significance of ASTM and to the breadth of ASTM when 17:28:29
 17 you see ASTM standards become incorporated by 17:28:34
 18 reference because it does signify that they are widely 17:28:37
 19 respected for their technical excellence I believe 17:28:42
 20 that it signifies that the government -- it couldn't 17:28:46
 21 do what we've done with the same effectiveness So 17:28:52
 22 they're looking to a voluntary consensus standards 17:28:54
 23 group in utilizing those standards 17:28:57
 24 So in some ways I might take pride in the 17:29:00
 25 fact that ASTM standards are relied upon by all of our 17:29:04
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1 stakeholders because the government is a very 17:29:07
 2 important member. 17:29:09
 3 BY MR. BRIDGES: 17:29:11
 4 Q. So is the answer to my question "yes"? 17:29:11
 5 MR. FEE: Objection. 17:29:13
 6 You can answer it however you'd like. 17:29:14
 7 MR. BRIDGES: He already has. 17:29:17
 8 Q. I'm now asking him is the answer to my 17:29:18
 9 question "yes." 17:29:20
 10 MR. FEE: Same objection. Asked and 17:29:21
 11 answered. 17:29:22
 12 THE WITNESS: Speaking for Jeff Grove, yes. 17:29:23
 13 BY MR. BRIDGES: 17:29:26
 14 Q. What about speaking for ASTM? 17:29:26
 15 MR. FEE: Objection. Asked and answered. 17:29:28
 16 THE WITNESS: I don't believe ASTM would have 17:29:29
 17 an official position. 17:29:31
 18 BY MR. BRIDGES: 17:29:35
 19 Q. You don't think that ASTM has a view as to 17:29:35
 20 whether it is pleased when governments incorporate its 17:29:39
 21 standards by reference? 17:29:43
 22 MR. FEE: Objection. Vague and asked and 17:29:44
 23 answered. 17:29:46
 24 THE WITNESS: It's never been a performance 17:29:49
 25 metric for me. So no. 17:29:50
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1 BY MR. BRIDGES: 17:29:58
 2 Q. Does ASTM have views about things that are 17:29:58
 3 not performance metrics? 17:30:01
 4 MR. FEE: Objection. Beyond the scope of his 17:30:05
 5 designation. Vague. 17:30:06
 6 THE WITNESS: It could. 17:30:11
 7 BY MR. BRIDGES: 17:30:14
 8 Q. What performance metrics do you have? 17:30:14
 9 MR. FEE: Objection. Beyond the scope of his 17:30:16
 10 designation. 17:30:20
 11 THE WITNESS: Generally, my performance is 17:30:23
 12 based on the job I've done in removing worldwide 17:30:24
 13 barriers to the acceptance and use of ASTM standards. 17:30:27
 14 BY MR. BRIDGES: 17:30:36
 15 Q. Is your -- do your performance reviews ever 17:30:36
 16 mention the degree of adoption of ASTM standards by 17:30:39
 17 reference -- strike that. 17:30:44
 18 Do your performance reviews ever mention the 17:30:46
 19 degree of incorporation of ASTM standards by 17:30:48
 20 reference? 17:30:50
 21 MR. FEE: Objection. Beyond the scope of his 17:30:51
 22 designation. 17:30:55
 23 THE WITNESS: I believe over the years I 17:30:56
 24 might have pointed out to my superiors that a standard 17:30:57
 25 has become incorporated as something significant. 17:31:00
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1 A. Kathe Hooper is responsible for permissions 18:16:38
 2 at ASTM. 18:16:47
 3 Q. Who is Joe Koury? 18:16:49
 4 A. Joe Koury is a staff manager that works with 18:16:51
 5 technical committees. 18:16:53
 6 (Deposition Exhibit 1070 was marked for 18:17:06
 7 identification.) 18:17:06
 8 MR. BRIDGES: I'm showing you Exhibit 1070. 18:17:06
 9 Q. This is an E-mail from Ms. Hooper responding 18:17:12
 10 to a permission request; is that correct? 18:17:17
 11 (The witness reviewed Exhibit 1070.) 18:17:58
 12 THE WITNESS: Yes. 18:17:59
 13 (Deposition Exhibit 1071 was marked for 18:18:11
 14 identification.) 18:18:11
 15 BY MR. BRIDGES: 18:18:12
 16 Q. Exhibit 1071 is an E-mail from Sarah Petre to 18:18:12
 17 you and others; is that correct? 18:18:16
 18 (The witness reviewed Exhibit 1071.) 18:18:26
 19 MR. FEE: Objection. Lack of foundation -- 18:18:26
 20 strike that. No objection. 18:18:27
 21 THE WITNESS: So it's an E-mail between ASTM 18:18:42
 22 and Congressional staff and then ASTM staff, correct. 18:18:44
 23 BY MR. BRIDGES: 18:18:48
 24 Q. And within the ASTM -- 18:18:48
 25 A. Correct. 18:18:51
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1 Q. And it's discussing Congressional 18:18:51
 2 legislation; is that correct? 18:18:54
 3 MR. FEE: Objection. The document speaks for 18:18:56
 4 itself. 18:18:57
 5 THE WITNESS: Legislation passed the House 18:19:10
 6 and now it's being referred to the Senate, and Sarah 18:19:11
 7 Petre recognized that there's references to ASTM 18:19:16
 8 standards which are out of date, and she wanted to 18:19:18
 9 contact the staffer to make him aware of that fact. 18:19:22
 10 BY MR. BRIDGES: 18:19:26
 11 Q. Was this a discussion about incorporation by 18:19:26
 12 reference? 18:19:28
 13 MR. FEE: Same objection. 18:19:29
 14 THE WITNESS: It's a discussion about 18:19:35
 15 Congressional intent to use the most recent standard, 18:19:37
 16 I believe. 18:19:40
 17 BY MR. BRIDGES: 18:19:41
 18 Q. Is that for Congress's use in making an 18:19:41
 19 incorporation by reference into a federal law of an 18:19:48
 20 ASTM standard? 18:19:52
 21 MR. FEE: Same objection. 18:19:54
 22 THE WITNESS: It appears, yes. 18:19:55
 23 BY MR. BRIDGES: 18:20:01
 24 Q. Does ASTM have a view as to which versions of 18:20:01
 25 its standard Congress should include in its 18:20:07
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1 legislation that causes an incorporation by reference? 18:20:11
 2 MR. FEE: Can you read that back to me, 18:20:19
 3 please. 18:20:20
 4 (Record read.) 18:20:38
 5 MR. FEE: Objection to form. Beyond the 18:20:39
 6 scope of his designation. Calls for speculation. 18:20:40
 7 BY MR. BRIDGES: 18:20:48
 8 Q. You may answer. 18:20:48
 9 MR. FEE: Hold on. 18:20:49
 10 Lack of foundation. 18:20:53
 11 Go ahead. 18:20:55
 12 THE WITNESS: Yeah. So I think we think -- 18:20:55
 13 we want to make sure that Congress is aware of the 18:20:59
 14 fact there may be a more recent version because 18:21:02
 15 oftentimes it may be unintended that they're not using 18:21:05
 16 the most recent version. 18:21:08
 17 BY MR. BRIDGES: 18:21:12
 18 Q. Ms. Petre asked you whether ASTM should 18:21:12
 19 request that Congress use the language. Does ASTM 18:21:17
 20 ever request Congress to use particular language 18:21:21
 21 regarding ASTM standards? 18:21:25
 22 MR. FEE: Objection. Beyond the scope of his 18:21:32
 23 designation. 18:21:36
 24 You can answer. 18:21:36
 25 THE WITNESS: Okay. I can think of instances 18:21:38
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1 like this where Congress -- what's happening here is 18:21:40
 2 this is incorporation by reference by Congress and not 18:21:45
 3 by an agency, and the concern that's expressed at 18:21:48
 4 times by our committee members is if Congress acts to 18:21:52
 5 designate a specific standard in legislation that 18:21:57
 6 freezes that piece of -- that reference in statute for 18:22:02
 7 years to come and agencies -- since it's something 18:22:06
 8 that Congress said, agencies will simply say, "Hey, 18:22:12
 9 talk to Congress, not to agencies about it." 18:22:16
 10 So that's a concern that I'm familiar with, 18:22:19
 11 and I can't tell if that -- I don't recall the 18:22:21
 12 circumstances of this here, but that's the most 18:22:26
 13 current version language. That's why we're interested 18:22:29
 14 in making sure Congress is aware as a more current 18:22:32
 15 version. 18:22:36
 16 BY MR. BRIDGES: 18:22:38
 17 Q. Mr. Grove, again, you didn't answer my 18:22:38
 18 question. My question is does ASTM ever request 18:22:40
 19 Congress to use particular language regarding ASTM 18:22:43
 20 standards? 18:22:46
 21 MR. FEE: Same objections. Plus asked and 18:22:47
 22 answered. 18:22:50
 23 THE WITNESS: Yes. 18:22:52
 24 BY MR. BRIDGES: 18:22:55
 25 Q. To your knowledge, has ASTM ever asked 18:22:55
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1 Congress or a federal agency not to incorporate any of 18:23:00
 2 its standards by reference? 18:23:04
 3 MR FEE: Objection Beyond the scope of his 18:23:07
 4 designation 18:23:09
 5 THE WITNESS: To my knowledge, no I believe 18:23:15
 6 it's possible that there's been reasons why committees 18:23:21
 7 haven't wanted to see standards incorporated by 18:23:24
 8 reference, but I can't recall an instance 18:23:26
 9 BY MR BRIDGES: 18:23:31
 10 Q Has ASTM ever imposed conditions on whether 18:23:31
 11 the federal government may incorporate its standards 18:23:37
 12 by reference? 18:23:42
 13 MR FEE: Same objection Vague as well 18:23:44
 14 THE WITNESS: I don't have direct knowledge 18:23:52
 15 It was before my time at ASTM, but I understand at one 18:23:54
 16 point in time there was a concern that Congress was 18:23:58
 17 perhaps taking ASTM -- taking key content from an ASTM 18:24:03
 18 standard and placing it in a piece of legislation and 18:24:09
 19 that ASTM would be concerned about that 18:24:13
 20 BY MR BRIDGES: 18:24:16
 21 Q Why would ASTM be concerned about that? 18:24:16
 22 MR FEE: Objection Beyond the scope of his 18:24:20
 23 designation Calls for speculation Lack of 18:24:22
 24 foundation 18:24:24
 25 THE WITNESS: It would be taking the standard 18:24:26
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1 out of context from what the voluntary consensus 18:24:27
 2 process encompassed in ASTM standards development 18:24:31
 3 enterprises wanted to see represented in the standard 18:24:35
 4 BY MR BRIDGES: 18:24:43
 5 Q Has ASTM ever asked an agency to use specific 18:24:43
 6 language in a regulation? 18:24:47
 7 MR FEE: Objection Beyond the scope of his 18:24:50
 8 designation 18:24:52
 9 THE WITNESS: It's possible that we have 18:24:54
 10 BY MR BRIDGES: 18:24:55
 11 Q Do you recall a particular -- any instance? 18:24:55
 12 MR FEE: Same objection 18:24:57
 13 THE WITNESS: I don't recall a particular 18:24:59
 14 time 18:24:59
 15 BY MR BRIDGES: 18:25:01
 16 Q Do you have an estimate as to the number of 18:25:01
 17 times it's occurred? 18:25:06
 18 MR FEE: Objection Lack of foundation 18:25:08
 19 Beyond the scope of his designation Calls for 18:25:09
 20 speculation 18:25:11
 21 THE WITNESS: It's -- there's a process that 18:25:13
 22 our committees would have to follow They would have 18:25:17
 23 to -- the executive committee of a committee would 18:25:19
 24 have to reach a consensus that they want to see an 18:25:24
 25 ASTM standard included in a regulation And so I 18:25:28
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1 I don't think it happens very often, but I believe it 18:25:33
 2 has happened in the last 10 years since I've been at 18:25:35
 3 ASTM 18:25:38
 4 BY MR BRIDGES: 18:25:40
 5 Q Are you saying that there has to be a 18:25:40
 6 consensus process in order to cooperate with a federal 18:25:42
 7 government in incorporating standards by reference? 18:25:46
 8 MR FEE: Objection Mischaracterizes his 18:25:52
 9 testimony Vague 18:25:54
 10 You can answer 18:25:58
 11 THE WITNESS: No, that's not what I'm saying 18:26:00
 12 BY MR BRIDGES: 18:26:14
 13 Q Do you know whether any federal official has 18:26:14
 14 taken advantage of the reading room that ASTM provides 18:26:17
 15 the public? 18:26:22
 16 MR FEE: Objection Vague 18:26:23
 17 THE WITNESS: I don't know specifically 18:26:30
 18 whether they have I do know I've received accolades 18:26:31
 19 from federal agencies, the fact that it exists So I 18:26:34
 20 would presume that they have 18:26:40
 21 BY MR BRIDGES: 18:26:44
 22 Q How much money has ASTM received from the 18:26:44
 23 federal government in each of the last five years? 18:26:49
 24 MR FEE: Objection Vague 18:26:58
 25 THE WITNESS: Well, I believe we've received 18:27:00
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1 anywhere from \$650,000 to \$900,000 per year over the 18:27:04
 2 last five years from the federal government. 18:27:11
 3 BY MR. BRIDGES: 18:27:17
 4 Q. Were some of that money provided by the 18:27:17
 5 federal government in order to facilitate the 18:27:22
 6 standards development process? 18:27:25
 7 MR. FEE: Objection. Calls for speculation. 18:27:27
 8 Vague. 18:27:29
 9 THE WITNESS: To my knowledge, none of it 18:27:31
 10 was. 18:27:32
 11 BY MR. BRIDGES: 18:27:37
 12 Q. What were the main categories of payments by 18:27:37
 13 the federal government to ASTM over the last five 18:27:41
 14 years? 18:27:46
 15 MR. FEE: Objection. Vague. 18:27:47
 16 BY MR. BRIDGES: 18:27:48
 17 Q. In other words, what were the payments for 18:27:48
 18 ASTM to do? 18:27:50
 19 MR. FEE: Same objection, plus form. 18:27:52
 20 THE WITNESS: I can think of -- that we would 18:27:53
 21 sell standards to federal agencies. That would be one 18:27:56
 22 source of revenue. 18:28:00
 23 BY MR. BRIDGES: 18:28:01
 24 Q. What other sources of revenue? 18:28:01
 25 A. I believe that we have a number of federal 18:28:03
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1 employees that participate in ASTM as full voting 18:28:06
 2 members. So they would pay a \$75-per-year fee to be a 18:28:09
 3 member of ASTM. 18:28:14
 4 Q. And you're counting that in the figures that 18:28:16
 5 you gave me earlier? 18:28:18
 6 A. Yes. 18:28:19
 7 Q. What other sources of funds from the federal 18:28:20
 8 government have there been for ASTM? 18:28:23
 9 A. Right. That's all I'm aware of. That's all 18:28:27
 10 I'm aware of. We also have certification and training 18:28:33
 11 programs, which I don't believe the federal government 18:28:41
 12 is too involved in, but we receive a small stipend 18:28:44
 13 from the U.S. Department of Agriculture to assist them 18:28:49
 14 in running a -- the U.S. bio preferred program. 18:28:53
 15 Q. Anything else? 18:29:00
 16 A. We run a proficiency testing program, which 18:29:06
 17 the U.S. Department of Defense participates in. So 18:29:08
 18 it's not related to standards, but it's another source 18:29:14
 19 of revenue from the federal government. 18:29:18
 20 Q. Does ASTM have any means of identifying who 18:29:22
 21 the originator was of any particular language in its 18:29:26
 22 standards? 18:29:33
 23 MR. FEE: Objection. Vague. Compound. To 18:29:34
 24 the extent it calls for a legal conclusion, I'd also 18:29:43
 25 object on that basis. 18:29:46
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1 Go ahead. 18:29:47
 2 THE WITNESS: To the extent those are legal 18:29:51
 3 terms, I'm aware of an ASTM standards development 18:29:52
 4 process. I'm not aware of a way to trace origins back 18:29:56
 5 to a specific individual. 18:30:02
 6 BY MR. BRIDGES: 18:30:06
 7 Q. Is there any -- strike that. 18:30:06
 8 How many individuals provide language or 18:30:11
 9 edits to the ASTM standards that have been 18:30:19
 10 incorporated by reference? 18:30:24
 11 MR. FEE: Objection. Vague. Compound. 18:30:25
 12 THE WITNESS: That would be very difficult to 18:30:37
 13 calculate. I need to ask are you referring to 18:30:39
 14 standards that have already been incorporated by 18:30:41
 15 reference? 18:30:43
 16 BY MR. BRIDGES: 18:30:44
 17 Q. Yes. 18:30:44
 18 A. Presumably, if those standards are being 18:30:47
 19 revised by ASTM or re-approved for use, it will have 18:30:49
 20 to go through a technical committee. It has to. 18:30:55
 21 That's the process for re-approving or revising 18:30:58
 22 standards at ASTM. So it would depend on how many 18:31:01
 23 people are on that committee and what percentage 18:31:05
 24 voted. 18:31:07
 25 Q. How many individuals have provided language 18:31:11
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1 or edits to any version of ASTM standards where the 18:31:13
 2 current ASTM standards have been incorporated by 18:31:25
 3 reference? 18:31:33
 4 MR. FEE: Objection. It's beyond the scope 18:31:34
 5 of his designation. Compound. Vague. 18:31:35
 6 THE WITNESS: Because of the openness and 18:31:45
 7 transparency and iterative innovative process that 18:31:49
 8 ASTM encapsulates, I wouldn't know how to answer that 18:31:53
 9 question, give you a number 18:31:56
 10 MR. BRIDGES: There's one more exhibit I want 18:32:08
 11 to find 18:32:10
 12 (Deposition Exhibit 1072 was marked for 18:32:35
 13 identification.) 18:32:35
 14 MR. BRIDGES: Mr. Grove, I've handed you 18:32:35
 15 Exhibit 1072 18:32:37
 16 Q. What is this document? 18:32:39
 17 A. It appears as if this is the ASTM form and 18:32:53
 18 style book for how ASTM standards are displayed 18:32:57
 19 Q. Does that create standards that persons must 18:33:07
 20 follow in participating in the drafting and revision 18:33:15
 21 process of ASTM standards? 18:33:18
 22 MR. FEE: Objection. Vague. Compound. 18:33:22
 23 THE WITNESS: No. 18:33:31
 24 BY MR. BRIDGES: 18:33:34
 25 Q. Does that provide rules that persons must 18:33:34
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1 follow in participating in the drafting and revision 18:33:38
 2 process of ASTM standards? 18:33:40
 3 MR. FEE: Objection. Vague. 18:33:42
 4 THE WITNESS: Generally, yes. 18:33:44
 5 MR. BRIDGES: Where are we on time? 18:34:06
 6 THE VIDEOGRAPHER: 18 minutes left. 18:34:10
 7 MR. BRIDGES: 18 minutes left. 18:34:13
 8 (Deposition Exhibit 1073 was marked for 18:35:00
 9 identification.) 18:35:00
 10 BY MR. BRIDGES: 18:35:00
 11 Q. Mr. Grove, do you recognize Exhibit 1073? 18:35:00
 12 A. I do. 18:35:13
 13 Q. Does it represent the views of both ASTM and 18:35:16
 14 ANSI? 18:35:20
 15 MR. FEE: Objection. Compound. Calls for 18:35:23
 16 speculation. Beyond the scope of his designation. 18:35:25
 17 THE WITNESS: I believe this is an error. 18:35:30
 18 No. I'm not familiar why this page would be stapled 18:35:32
 19 to a presentation. This is a speaker that came before 18:35:36
 20 me on a panel followed by -- who probably didn't 18:35:39
 21 provide a written presentation, which happens to be 18:35:44
 22 stapled to a presentation which begins with the title 18:35:47
 23 page on a presentation that I gave. 18:35:51
 24 BY MR. BRIDGES: 18:35:54
 25 Q. Okay. So starting -- okay. So there's a 18:35:54
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1 general workshop That's reflected on the first page 18:35:56
 2 And then there's a listing of Scott Cooper Then 18:36:00
 3 there's your name, and then what follows in the 18:36:03
 4 exhibit is a presentation solely by you and not by 18:36:03
 5 Mr Cooper; is that correct? 18:36:11
 6 A That would be my recollection of events, yes 18:36:13
 7 Q And then does that remaining portion starting 18:36:17
 8 after your name reflect the views of ASTM at the time 18:36:20
 9 of your presentation? 18:36:22
 10 MR FEE: Objection Calls for speculation 18:36:24
 11 Beyond the scope of his designation Compound as 18:36:26
 12 well 18:36:29
 13 You should read the whole thing if he's 18:36:38
 14 asking you to verify all the use of ASTM 18:36:39
 15 (The witness reviewed Exhibit 1073) 18:37:01
 16 THE WITNESS: Yes I believe this, to the 18:37:01
 17 best of my recollection, was the general views that 18:37:05
 18 ASTM would have on this issue at the time of this 18:37:07
 19 presentation 18:37:09
 20 (Deposition Exhibit 1074 was marked for 18:38:01
 21 identification) 18:38:01
 22 BY MR BRIDGES: 18:38:01
 23 Q Mr Grove, Exhibit 1074 is a series of 18:38:01
 24 E-mails among you and Katherine Morgan, Len Morrissey 18:38:07
 25 and John Pace; is that correct? 18:38:15
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1 A. Yes, it is. 18:38:26
 2 MR. FEE: While I'm thinking of it, I'm going 18:39:08
 3 to reserve the right to read and sign. 18:39:12
 4 (Deposition Exhibit 1075 was marked for 18:39:29
 5 identification.) 18:39:29
 6 MR. BRIDGES: I'm handing you an exhibit 18:39:29
 7 marked 1075 that consists of pages ASTM003314 to 18:39:31
 8 ASTM003315. 18:39:37
 9 (The witness reviewed Exhibit 1075.) 18:40:02
 10 BY MR. BRIDGES: 18:40:02
 11 Q. Do you recognize this document? 18:40:02
 12 A. I do, yes. 18:40:22
 13 Q. This is an E-mail from Maureen Houck to a 18:40:29
 14 number of senior staff at ASTM; is that correct? 18:40:32
 15 A. It is correct. 18:40:37
 16 Q. What does ITC -- sorry. "ITMC" mean? 18:40:39
 17 A. I believe it's short for the Information 18:40:45
 18 Technology Management Committee. 18:40:50
 19 Q. And -- 18:40:54
 20 MR. FEE: I'm going to object. This appears 18:40:56
 21 to be just one of many attachments to Exhibit 1075. 18:40:58
 22 MR. BRIDGES: You know, I'm glad you 18:41:01
 23 mentioned that because I don't think we got the other 18:41:02
 24 attachments, and I'd like to get them, please. 18:41:04
 25 MR. FEE: I don't know if that's true or not. 18:41:06
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1 MR. BRIDGES: I will check, but if we don't 18:41:09
 2 have them, we expect to get them. 18:41:10
 3 Q. Can you please explain to me what the purpose 18:41:16
 4 was or what you understood to be the purpose of the 18:41:20
 5 page with the Bates number ending in -3315? 18:41:23
 6 MR. FEE: Objection. It's beyond the scope 18:41:33
 7 of the designation. Calls for speculation. 18:41:34
 8 THE WITNESS: This represents a project that 18:41:39
 9 ASTM staff is undertaking throughout the course of 18:41:42
 10 2015 and -- I'm sorry. 2014 and 2015. These would be 18:41:47
 11 the items that are contained in the project. 18:41:53
 12 BY MR. BRIDGES: 18:41:58
 13 Q. Has the project been approved? 18:41:58
 14 MR. FEE: Objection. Vague. Beyond the 18:41:59
 15 scope of his designation. 18:42:03
 16 THE WITNESS: Project been approved? 18:42:06
 17 MR. BRIDGES: Strike that. 18:42:08
 18 Q. Is the project underway? 18:42:09
 19 MR. FEE: Objection. Beyond the scope of his 18:42:11
 20 designation. 18:42:13
 21 THE WITNESS: So some of these activities may 18:42:16
 22 be underway, but we don't believe that we are actively 18:42:18
 23 pursuing all of them. 18:42:21
 24 BY MR. BRIDGES: 18:42:23
 25 Q. Which ones is ASTM not actively pursuing? 18:42:26
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1 MR. FEE: Same objection. 18:42:31
 2 THE WITNESS: Well, we're taking an 18:42:38
 3 inventory. We don't have great information about the 18:42:40
 4 full extent of government participation. So we're 18:42:45
 5 taking an inventory of how many government reps are 18:42:50
 6 participating in ASTM technical committees and where. 18:42:52
 7 We're trying to find out more about how federal 18:42:56
 8 agencies use ASTM standards. 18:42:58
 9 MR. FEE: Can you read the question back. 18:43:03
 10 MR. BRIDGES: Not when he's in the middle of 18:43:10
 11 his answer, please. Afterwards, you can do that. 18:43:12
 12 MR. FEE: He's answering the wrong question. 18:43:14
 13 MR. BRIDGES: Well, let him finish. 18:43:16
 14 MR. FEE: Read the question back. 18:43:19
 15 MR. BRIDGES: No. No. 18:43:21
 16 MR. FEE: Yes. 18:43:21
 17 MR. BRIDGES: You stopped your witness from 18:43:22
 18 speaking. That's ridiculous. That's improper. 18:43:24
 19 MR. FEE: Wait until she reads the question 18:43:28
 20 back. 18:43:30
 21 (Record read.) 18:43:48
 22 THE WITNESS: It's really hard to say because 18:43:48
 23 we're very early in the process of working on this, 18:43:49
 24 but I can tell you it's been scaled back. This is a 18:43:53
 25 pretty ambitious activity. I believe the last two 18:43:55
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1 THE VIDEOGRAPHER: This is the end of the 18:53:06
 2 deposition of Mr. Jeffrey Grove. We are off the 18:53:08
 3 record at 18:52. 18:53:13
 4 (Witness excused.) 18:53:16
 5 (Deposition concluded at 6:52 p.m.) 18:53:16
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1 ACKNOWLEDGMENT OF DEPONENT
 2
 3 I, JEFFREY GROVE, do hereby certify that I
 4 have read the foregoing pages, _____ to _____,
 5 and that the same is a correct transcription of the
 6 answers given by me to the questions therein
 7 propounded, except for the corrections or changes in
 8 form or substance, if any, noted in the attached
 9 Errata Sheet.
 10
 11 _____
 12 DATE SIGNATURE
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1 CERTIFICATE
 2 I do hereby certify that the aforesaid
 3 testimony was taken before me, pursuant to
 4 notice, at the time and place indicated; that
 5 said deponent was by me duly sworn to tell
 6 the truth, the whole truth, and nothing but
 7 the truth; that the testimony of said
 8 deponent was correctly recorded in machine
 9 shorthand by me and thereafter transcribed
 10 under my supervision with computer-aided
 11 transcription; that the deposition is a true
 12 and correct record of the testimony given by
 13 the witness; and that I am neither of counsel
 14 nor kin to any party in said action, nor
 15 interested in the outcome thereof.
 16
 17
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 19 
 Nancy J. Martin, RMR, CSR
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 22 Dated: March 18, 2015
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 24
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EXHIBIT 9

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UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

AMERICAN SOCIETY FOR : NO.
TESTING AND MATERIALS : 1:13-cv-01215-TSC-
d/b/a ASTM : DAR
INTERNATIONAL; :
NATIONAL FIRE :
PROTECTION :
ASSOCIATION, INC.; :
and AMERICAN SOCIETY :
OF HEATING, :
REFRIGERATION, AND :
AIR CONDITIONING :
ENGINEERS, :
Plaintiffs :
vs. :
PUBLIC.RESOURCE.ORG, :
INC., :
Defendant :

Videotaped deposition of JOHN C.
JAROSZ taken at the law offices of Veritext
Legal Solutions, 1250 I Street NW,
Washington, DC, commencing at 10:09 a.m.
THURSDAY, AUGUST 27, 2015, before Debbie
Leonard, Registered Diplomate Reporter,
Certified Realtime Reporter.

PAGES 1 - 260

1 consulting career.
2 BY MR. BRIDGES:
3 Q. In what context?
4 A. There have been several matters
5 I've had, litigations, that have involved
6 standard setting organizations and the
7 outputs from those organizations.
8 Q. What organizations?
9 A. Well, some that come to mind
10 are ETSI, IEEE, the Blu-ray Association,
11 MPEG, MPEG L.A., the Philips 6C and Philips
12 3C organizations. Those are among the ones
13 that come to mind.
14 Q. And what types of litigation
15 did your work relating to those standard
16 setting organizations involve?
17 MR. FEE: Objection to form.
18 THE WITNESS: It was almost all
19 intellectual property litigation, with
20 probably the bulk of the analyses
21 undertaken with regard to patent
22 rights.
23 BY MR. BRIDGES:
24 Q. Do you recall --
25 A. I guess I should -- there were

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1 probably some breach of contract matters as
2 well.
3 Q. Did you work on any matters
4 involving copyright law where you became
5 familiar with the work and outputs of
6 standards setting organizations before this
7 case?
8 A. Probably, but I cannot say that
9 with absolute certainty. I've been involved
10 in several matters over a course of many
11 years.
12 Q. Can you name any copyright
13 matter involving a standards development
14 organization that you recall?
15 A. Not now, without going back and
16 looking at my records.
17 Q. Would they be listed in the
18 cases attached to Exhibit 1?
19 A. That would summarize some of my
20 records. The cases that are embodied in my
21 tab 1 are those that led to deposition or
22 trial testimony. I've been involved in many
23 matters beyond those.
24 Q. But sitting here, you cannot
25 recall any copyright case involving a

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1 standards development organization that
2 you've worked on?
3 A. Again, I'd have to go back and
4 look at my records. I can't right now recite
5 any, but there very well could be one or
6 more.
7 Q. Did you review any of your work
8 in -- from earlier copyright cases involving
9 standards development organizations in
10 connection with your work in this case?
11 A. Not to the best of my memory,
12 no.
13 Q. What background do you have in
14 the creation of standards by standard
15 development organizations?
16 MR. FEE: Objection to form.
17 THE WITNESS: In the context of
18 some of my consulting assignments, I
19 have examined processes undertaken by
20 SDOs.
21 BY MR. BRIDGES:
22 Q. Anything else?
23 A. Nothing else comes to mind.
24 I've certainly looked at the output
25 associated with those processes, but there's

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1 nothing else that comes to mind.
2 Q. What processes undertaken by
3 standards development organizations did you
4 examine?
5 MR. FEE: Objection. Are you
6 asking prior to the report still?
7 MR. BRIDGES: Yes.
8 MR. FEE: Okay.
9 THE WITNESS: I'm not quite --
10 MR. BRIDGES: Or other than in
11 this case.
12 MR. FEE: Okay.
13 THE WITNESS: I'm not quite
14 sure what you're asking. I've seen
15 discussion of the some of the
16 processes of various organizations.
17 I'm not -- I'm not quite sure what
18 you're asking. Perhaps you could ask
19 it somewhat differently.
20 BY MR. BRIDGES:
21 Q. Well, no. You said, quote, "I
22 have examined processes undertaken by SDOs."
23 So my question is, what
24 processes undertaken by standards development
25 organizations did you examine?

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1 A. It sounds like the same
2 question to me.
3 Q. Specifically, what processes
4 did you examine?
5 A. That still sounds like the same
6 question, but let me try to answer it by
7 saying I've looked, for instance, at the
8 mechanisms that ETSI undertook in developing
9 standards. So I am familiar generally with
10 the processes that it follows. Similarly
11 with regard to other standard setting
12 organizations.
13 Q. What other standard setting
14 organizations?
15 A. Well, I think I identified
16 those a few moments ago. Do you want me to
17 repeat those?
18 Q. Well, if -- are you saying
19 that, for all of those organizations, you
20 examined their processes?
21 A. In some dimension, probably for
22 most of the organizations, I had at least
23 some knowledge of the process. I can't say
24 that I investigated in depth all of the
25 processes for all of the organizations that

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1 have been involved in my consulting
2 assignments that are standards oriented.
3 Q. What do you recall about your
4 investigation of the processes by which
5 standards development organizations create
6 their standards?
7 A. I should say I -- SDO is
8 probably not the right term to use. I should
9 probably say standards setting organizations.
10 There may be a distinction between an SSO and
11 an SDO.
12 But, generally, each SSO has a
13 process that's unique to its organization.
14 Some solicit input from a wide range of
15 constituents; some from a more narrow range.
16 The ones that I have examined
17 have all been fairly careful in the work that
18 they've done, seeking input at many steps
19 along the way.
20 Some organizations, like SDOs
21 at issue here, seek a broader array of inputs
22 than do others.
23 Some organizations, standards
24 setting organizations, include primarily or
25 only manufacturers and sometimes large

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1 manufacturers only. Others include a wider
2 array of companies.
3 In all instances, though, the
4 companies are trying to -- the standards
5 setting organizations are trying to develop
6 at least some form of consensus -- sometimes
7 it's very broad consensus; sometimes it's
8 more narrow consensus -- about what would be
9 good for that standards setting organization.
10 Sometimes the SSOs are
11 interested in what's best for the
12 manufacturers and the ability for them to
13 supply in an interoperable environment. In
14 some cases, the SSOs are very alert to the
15 needs of consumers and users of products and
16 services that comply with standards.
17 Q. You've distinguished between
18 standards setting organizations and standard
19 development organizations. What is the
20 distinction that you -- that you identify
21 between the two?
22 A. I think I said I didn't know if
23 there is for sure a distinction, but I think
24 an SSO is perhaps a broader concept than an
25 SDO, but I might be wrong on that.

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1 I know the companies -- I --
2 the plaintiffs here are SDOs. The
3 associations are, among other things, in the
4 business of creating and developing
5 standards.
6 There could be other SSOs that
7 have different constituents that are of
8 interest to them. I don't know for sure that
9 an SSO is a broader concept than an SDO, but
10 it could be.
11 Q. What do you understand to be
12 the constituents of the plaintiffs in this
13 case?
14 MR. FEE: Objection to form.
15 THE WITNESS: I laid that out
16 in my report. In summary, I believe
17 they try to include in the process
18 both those -- both supply-side
19 entities and demand-side entities.
20 BY MR. BRIDGES:
21 Q. Who else are plaintiffs'
22 constituents?
23 MR. FEE: Same objection.
24 THE WITNESS: I can't think of
25 anything that doesn't fall within

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1 any harms that the plaintiffs have actually
2 suffered to date as a consequence of the
3 defendant's activities?
4 MR. FEE: Objection to form.
5 THE WITNESS: To the extent I
6 have, it's embodied in my report.
7 You'll see there's a little bit of
8 evidence of actual tangible harm to
9 date, and there's certainly more
10 discussion of harm. The tangible
11 evidence I have is reflected in my
12 report.
13 BY MR. BRIDGES:
14 Q. And what do you understand that
15 evidence to be?
16 A. I believe the number of
17 downloads from the Public Resource
18 dissemination have been fairly substantial.
19 I believe that the purchase of publications
20 has declined some at the plaintiffs -- at the
21 various plaintiffs. It certainly has not
22 risen. Those are among the things that come
23 to mind.
24 I think I discuss the topic in
25 more depth in paragraph, among other thing --
Page 62

1 among other places, in paragraph 133 of my
2 report.
3 Q. Have you been able to quantify
4 any financial losses to plaintiffs as a
5 consequence of defendant's activities?
6 A. No.
7 Q. Why not?
8 A. Not with any great certainty.
9 Q. Why not?
10 A. Well, I don't have the records
11 that would allow me to do that. Moreover, I
12 am not sure that the impact from the past
13 will be close to the impact that will occur
14 in the future if the Court finds that there
15 has been no copyright or trademark
16 infringement.
17 Q. Why do you make the statement
18 you just did? What's your basis for it?
19 MR. FEE: Objection to form.
20 THE WITNESS: I think there
21 were a few things in my statement.
22 Which would you like me to expound on?
23 BY MR. BRIDGES:
24 Q. Just that sentence. I'd like
25 to know what the basis is for the sentence
Page 63

1 you just said, quote, "I am not sure that the
2 impact from the past would be close to the
3 impact that will occur in the future if the
4 Court finds that there has been no copyright
5 or trademark infringement."
6 A. It's everything laid out in my
7 report. I -- it's really the -- at the heart
8 of what I did.
9 Q. And please summarize for me
10 what data you base that statement on.
11 A. That's identified in my report.
12 Q. Okay. Show me, please, in the
13 report.
14 A. It's all of what's in
15 Exhibit 1.
16 Q. No, I want -- I want the basis
17 for your statement that the impact from
18 conduct to date -- strike that -- that you're
19 not sure that the impact from the conduct to
20 date would be close to the impact that will
21 occur in the future if the Court find --
22 makes a certain finding, right?
23 A. Correct.
24 Q. So please identify for me
25 something specific that forms the basis of
Page 64

1 that statement.
2 MR. FEE: Objection. Asked and
3 answered.
4 THE WITNESS: Among other
5 things, paragraphs 112 through 155.
6 BY MR. BRIDGES:
7 Q. So these are the "Costs of
8 Losing Copyright Protection"; is that
9 correct?
10 A. That's the title of this
11 section, and then there's some discussion of
12 trademark protection as well.
13 Q. And those would be the harms
14 that you identify that would flow from a
15 decision by the Court that the plaintiffs
16 cannot enforce their copyrights against the
17 defendant, correct?
18 MR. FEE: Objection to form.
19 THE WITNESS: What I can say --
20 I'm sorry.
21 MR. FEE: I just objected to
22 form.
23 THE WITNESS: What I can say
24 with a reasonable degree of certainty.
25 BY MR. BRIDGES:
Page 65

1 that I've cited, and some of those
2 talk about the standard development
3 process and why participants are
4 active in the process. So in that
5 regard, I've considered incentives.
6 BY MR. BRIDGES:
7 Q. What do you understand the
8 incentives to be?
9 A. Well, for the supply side
10 constituents, they're interested in effective
11 manufacturing and selling of products that
12 will -- and services that will be well
13 received in the marketplace; and on the
14 demand side, the constituents are interested
15 in products and services that address certain
16 quality and compatibility issues or problems
17 and help resolve those.
18 Q. Do you know who actually
19 creates the text of the standards?
20 MR. FEE: Objection to form.
21 THE WITNESS: Are you talking
22 about who actually types in the words?
23 BY MR. BRIDGES:
24 Q. No.
25 A. Because I don't know what you

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1 mean by "creates the text."
2 Q. Who actually suggests the
3 words?
4 A. I think a number of
5 constituents do, typically.
6 Q. What types of constituents
7 suggest the words of the standards?
8 MR. FEE: Objection to form.
9 THE WITNESS: I think it's
10 sometimes SDO employees. I think,
11 more times than not, it's industry
12 participants, often supply-side
13 people, sometimes demand-side people.
14 Frequently those people are working
15 from preexisting standards or similar
16 standards and revising those as
17 appropriate.
18 So I think a number of people
19 have input to the words.
20 BY MR. BRIDGES:
21 Q. Do you actually know of
22 instances where SDO employees have proposed
23 text as opposed to editing text?
24 A. I can't --
25 MR. FEE: Objection --

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1 THE WITNESS: -- point to --
2 MR. FEE: -- form.
3 THE WITNESS: -- any particular
4 instances as I sit here now.
5 BY MR. BRIDGES:
6 Q. Can you think of any other
7 motivations that the participants in the
8 standards writing process have?
9 A. I'm sorry. Other than what?
10 Q. Other than the incentives you
11 referred to earlier of the supply-side
12 constituents and the demand-side
13 constituents.
14 A. Nothing else comes to mind,
15 although I'm certainly open to the fact that
16 I haven't thought of or expressed all the
17 incentives.
18 Q. Well, what other incentives can
19 you think of as you sit here?
20 A. As I just said, nothing else
21 comes to mind.
22 Q. What incentives do you
23 understand the plaintiffs to have in
24 developing standards?
25 MR. FEE: Objection to form.

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1 THE WITNESS: I think,
2 generally, they want consensus among
3 interested parties in how to address a
4 particular issue or problem that those
5 constituents face.
6 They are each non-profit
7 organizations, so they're not
8 intending to profit off their
9 activities, but they're certainly
10 intending to fund their activities
11 going forward.
12 BY MR. BRIDGES:
13 Q. What do you understand the
14 activities of the standards development
15 organizations to be in creating the standards
16 at issue in this case?
17 MR. FEE: Objection to form.
18 THE WITNESS: At the very
19 least, they facilitate the process
20 through arranging logistics. They do
21 other things, including participate in
22 discussions, and -- as I understand
23 it, and create versions of proposed
24 standards.
25 They also serve as a

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1 Web sites we gathered ourselves, and I think
2 the reports and articles, with the exception
3 of the Bremer articles, we gathered
4 ourselves.
5 Q. Do you know why you got no
6 documents from NFPA, no Bates range documents
7 from NFPA?
8 MR. REHN: Object to form --
9 THE WITNESS: I don't know why
10 we did not receive Bates documents --
11 THE REPORTER: Wait.
12 MR. REHN: Sorry. Object to
13 the form. Lacks foundation.
14 THE WITNESS: I don't know for
15 sure that we didn't receive
16 Bates-stamped documents, but I believe
17 some of the documents we received were
18 NFPA documents.
19 BY MR. BRIDGES:
20 Q. Do you recall seeing any NFPA
21 documents that -- in which NFPA personnel
22 stated that they could not show any harm from
23 the defendant's activities?
24 A. Received any documents that
25 said that?

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1 Q. Uh-huh.
2 A. Perhaps you would have
3 something that would refresh my memory. I
4 don't recall, sitting here right now, but
5 it's possible.
6 Are you talking about
7 historical -- historically no harm, or are
8 you talking about prospectively?
9 Q. Either one. Did you -- do you
10 recall seeing any internal NFPA documents
11 that call into question where NF -- whether
12 NFPA has suffered any harm from the
13 defendant's activities?
14 A. I don't recall documents on it.
15 There may have been some deposition testimony
16 about past activities, but I don't know if it
17 was activities prior to Public Resource
18 actions here or after.
19 Q. Do you recall learning about
20 any litigation that NFPA had engaged in
21 pertaining to standards and copyright?
22 A. I think I heard that there's
23 some overseas litigation involving Public
24 Resource. Whether that involves NFPA, I
25 don't know.

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1 Q. What did you hear about
2 overseas litigation involving Public
3 Resource?
4 A. I think I heard that there was
5 a German -- or a suit in Germany, but I'm not
6 sure that I learned much more than that. I
7 don't recall what status that suit -- what
8 the status of that suit is.
9 Q. Do you recall anyone disclosing
10 to you litigation involving NFPA in the
11 United States that pertained to standards and
12 copyright?
13 A. It's possible, but I don't
14 recall any, sitting here right now.
15 Q. Do you recall inquiring about
16 public statements of fact that NFPA has made
17 regarding copyright and standards in
18 litigation other than this litigation in the
19 United States?
20 MR. FEE: Objection to form.
21 THE WITNESS: I do not.
22 BY MR. BRIDGES:
23 Q. Are you familiar with a case
24 called Veeck, V-E-E-C-K?
25 A. I'm familiar with an opinion in

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1 the Veeck case.
2 Q. What do you know about that
3 opinion?
4 MR. FEE: Objection.
5 I would instruct you not to
6 disclose anything you know about that
7 opinion that was a result of
8 communications with counsel and that
9 did not form the basis of any of the
10 opinions in your report or any of the
11 assumptions that you relied upon in
12 reaching your conclusions.
13 THE WITNESS: I did talk with
14 counsel about that case, and that case
15 didn't form any basis for any of my
16 observations or conclusions here.
17 BY MR. BRIDGES:
18 Q. Why did the Veeck case not form
19 any basis for any of your observations or
20 conclusions here?
21 A. I don't know how to answer that
22 question. I -- it didn't present any facts
23 that were specific to this case, as far as I
24 recall.
25 Q. What do you recall of the facts

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1 answered.
2 THE WITNESS: Again, I read the
3 case. I didn't do any analysis beyond
4 that of that particular case.
5 BY MR. BRIDGES:
6 Q. What steps did you take to
7 ascertain what public harms flowed from the
8 Court's decision in the Veeck case?
9 A. Other than reading the case,
10 the opinion in the case, I didn't do anything
11 beyond that to understand the implications of
12 that holding.
13 Q. You didn't do any investigation
14 as to the economic consequences to any
15 entity, industry, or person as a consequence
16 of the decision in the Veeck case, correct?
17 MR. FEE: Objection to form.
18 THE WITNESS: I think that's
19 correct, yes.
20 BY MR. BRIDGES:
21 Q. How has the process of
22 standards development changed in the last 100
23 years, to your knowledge?
24 A. I don't know the specifics, and
25 I don't know that there is one standards

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1 development process. I think there are a
2 variety of processes pursued by a number of
3 SSOs or SDOs. I'm sure that there have been
4 changes on the margin. There may have been
5 larger changes. I just don't know. I have
6 not studied the trend in the standard
7 development process over time.
8 Q. What changes are you aware of
9 in the standards development process of NFPA
10 over the past 100 years?
11 A. I don't know. I've not studied
12 that topic.
13 Q. What changes are you aware of
14 in the standards development process of the
15 ASHRAE 90.1 standard?
16 A. I don't know. I've not studied
17 that.
18 Q. How did ASHRAE come to develop
19 the 90.1 standard?
20 A. I think, generally, a need was
21 identified and a group of constituents
22 convened to derive a standard, but I don't
23 know the specifics beyond that.
24 Q. Do you know who identified the
25 need?

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1 A. Not sitting here right now, I
2 don't.
3 Q. Do you know whether ASHRAE took
4 over development of what became standard 90.1
5 from any other group or entity?
6 A. No, I do not.
7 Q. Have you ever quantified the
8 value of the contributions made by the
9 volunteers of the various organizations to
10 the standards at issue in this case?
11 MR. FEE: Objection to form.
12 THE WITNESS: Not other than
13 having some sense of hours or a
14 limited sense of dollars, but not
15 beyond that, no.
16 BY MR. BRIDGES:
17 Q. Can you put a rough dollar
18 value on the time and expenses of the
19 volunteers with respect to any of the
20 standards in this case?
21 MR. FEE: Objection to form.
22 THE WITNESS: Not sitting here
23 right now. That would entail a little
24 bit of a study. I have not done that.
25 BY MR. BRIDGES:

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1 Q. What -- what would be required?
2 A. To understand basically the
3 out-of-pocket expenses incurred and the
4 opportunity costs incurred. So among other
5 things, one would want to look at time
6 records, have an understanding of
7 compensation, have an understanding of the
8 activities of those individuals. Those
9 are -- would be among the inputs.
10 Q. What changes are you aware of
11 in the distribution of standards in the past
12 100 years by the plaintiffs?
13 MR. FEE: Objection to form.
14 THE WITNESS: I haven't
15 investigated that particular issue,
16 but I understand that some of the
17 standards today are distributed
18 through the Internet that certainly
19 didn't exist 100 years ago.
20 Some of the standards are
21 distributed for free with limitations.
22 I don't know if that was true 100
23 years ago, but it might have been.
24 I would expect some of the
25 copying and dissemination capabilities

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1 are much greater today than they were
2 in 1915, but I don't know that the
3 general methods of -- I don't know how
4 the general methods of distribution
5 have changed.
6 BY MR. BRIDGES:
7 Q. What changes are you aware of
8 in sales trends over the past 20 years?
9 MR. FEE: Objection to form.
10 THE WITNESS: I don't have data
11 going back as far as 20 years ago. I
12 have some information on publication
13 sales, for instance, in tabs 3, 4, and
14 5. They only -- that information only
15 goes back a few years, however.
16 BY MR. BRIDGES:
17 Q. Did you review any information
18 earlier than the dates shown in the documents
19 at tabs 3, 4, and 5?
20 MR. FEE: Objection. Vague.
21 THE WITNESS: It's possible
22 that some of the source documents had
23 earlier information, but I don't
24 recall that. I would need to look at
25 those source documents.

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1 BY MR. BRIDGES:
2 Q. And those source documents
3 would be within the Bates ranges identified
4 in tab 2 of your report?
5 A. Within the Bates ranges or
6 identified elsewhere in tab 2. For instance,
7 the AS team -- ASTM audited -- audited
8 consolidated financial statements, I think,
9 may not all be Bates-stamped. I could be
10 wrong on that. But I would look in that set
11 of financial documents.
12 Q. What do you know about what you
13 said -- strike that.
14 You said earlier that some
15 standards are distributed for free with some
16 limitations; is that correct?
17 A. Yes, that's my understanding.
18 Q. What do you know about that?
19 MR. FEE: Objection. Vague.
20 THE WITNESS: I've written
21 about that in my report. I believe
22 that each one of the plaintiffs has
23 provided what is sometimes called a
24 "reading room" so that people can look
25 at those standards but are not given

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1 the right to reproduce, copy, or
2 disseminate those standards but can
3 look at them online.
4 BY MR. BRIDGES:
5 Q. Have you used the reading rooms
6 of any of the plaintiffs?
7 A. No, I have not.
8 Q. Have you reviewed the interface
9 that the -- have you reviewed the interfaces
10 that the plaintiffs offer to persons wishing
11 to view materials for free online?
12 A. No, I don't think so.
13 Q. Do you know what effect, if
14 any, the presence of those free materials on
15 the plaintiffs' Web sites has had on the
16 plaintiffs' revenues?
17 MR. FEE: Objection to form.
18 THE WITNESS: No, I don't.
19 BY MR. BRIDGES:
20 Q. Have you -- have you
21 investigated that?
22 MR. FEE: Same objection.
23 THE WITNESS: I've been
24 opening -- I've been open to learning
25 about that, but I haven't learned that

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1 there's a direct or indirect effect.
2 There might be, but I haven't seen
3 evidence of that.
4 BY MR. BRIDGES:
5 Q. My question was, have you
6 investigated that?
7 MR. FEE: Same objection.
8 THE WITNESS: Perhaps you could
9 read back my answer.
10 BY MR. BRIDGES:
11 Q. I've heard the answer. It was
12 not responsive to my question. The -- you
13 said you did not know what effect, if any,
14 the presence of those free materials on the
15 plaintiffs' Web sites has had on the
16 plaintiffs' revenues.
17 And my question is, have you
18 investigated that?
19 MR. FEE: Same objection.
20 THE WITNESS: No, I've not
21 undertaken a separate investigation.
22 I've been alert to that topic, but I
23 haven't assigned myself that
24 investigation.
25 BY MR. BRIDGES:

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1 counsel. And then we finalized the report,
2 submitting it to counsel on June 5th, 2015.
3 Q. Do you know how many standards
4 of each plaintiff are at issue in this case?
5 A. How many -- I'm sorry --
6 standards are at issue?
7 Q. Yes.
8 A. I have that number written
9 down. It's in the hundreds, and I forget, as
10 I sit here right now, precisely the number.
11 I will look it up. And I was giving you an
12 answer that was a cumulation across the three
13 plaintiffs.
14 I am not seeing that number
15 right now. I'll keep looking.
16 Q. Do you know what --
17 A. You may be able to point me
18 quicker than I recall where it was.
19 Q. Do you -- do you know what
20 proportion of plaintiffs -- of each
21 plaintiffs' standards is at issue in this
22 case?
23 A. Are you asking me the ratio of
24 the standards at issue versus the total
25 standards developed by the organizations?

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1 Q. Yes.
2 A. I think it's less than a
3 majority for each organization. I'm fairly
4 certain of that with regard to ASTM. I think
5 that's true with regard to NFPA. I think
6 it's true with regard to ASHRAE.
7 Q. Do you have any better
8 information than less than a majority --
9 A. Well, I --
10 Q. -- for each of them?
11 A. The precise numbers are in the
12 report. Let's see here. One can figure that
13 out. You may remember where I summarized the
14 number of standards. I just don't remember.
15 It's easy to determine because the data are
16 all here.
17 Q. Have you analyzed differences
18 in sales trends between standards that are at
19 issue in this case and plaintiffs' other
20 standards?
21 A. No, I don't think I have those
22 data at my disposal.
23 Q. Did you ever ask for those
24 data?
25 A. I don't recall.

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1 Q. Have you analyzed any
2 differences in sales trends between those of
3 plaintiffs' standards that have been
4 incorporated into law and those of
5 plaintiffs' standards that have not been
6 incorporated into law?
7 A. I don't think so. I don't
8 think I have those data, and I'm not sure
9 that each plaintiff knows precisely how many
10 have been incorporated into law.
11 Q. Did you ask for any data
12 regarding the distinction between standards
13 incorporated by reference and standards not
14 incorporated by reference in the law?
15 A. I don't --
16 MR. FEE: Objection to form.
17 THE WITNESS: I'm sorry. I
18 don't recall.
19 BY MR. BRIDGES:
20 Q. You made observations about
21 sales trends earlier in your deposition. I
22 think you said that there's been a reduction
23 in sales of certain of plaintiffs' standards;
24 is that correct?
25 A. I'm not quite sure what the

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1 earlier testimony was, but I think I was
2 pointing you to paragraph 133 with regard to
3 downloads of -- and other measures of
4 activity, as I had at my disposal.
5 Q. Well, I'm trying to find out
6 what changes you have studied in plaintiffs'
7 economics that you attribute to defendant's
8 activities.
9 A. I'm not quite sure what your
10 question is.
11 Q. Well, I'm trying to find out
12 what information you have studied to
13 determine what changes in the finances of
14 each of the plaintiffs have occurred as a
15 consequence of the defendant's activities.
16 MR. FEE: Objection to form.
17 THE WITNESS: I'm still not
18 sure that I'm hearing a question. But
19 to the extent that I had information
20 on changes in activity level, I
21 summarized that in paragraph 133.
22 BY MR. BRIDGES:
23 Q. My question is, what
24 information did you study to determine any
25 changes in finances of each of the

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1 plaintiffs?
2 MR. FEE: Same objection.
3 THE WITNESS: It's reflected in
4 paragraph 133 and in the tabs,
5 particularly 3, 4, and 5. But the
6 tabs are not at the granular level
7 that I think are of interest to you.
8 BY MR. BRIDGES:
9 Q. What do you mean by the
10 "granular level" that would be of interest to
11 me?
12 A. I don't think it breaks out
13 publications by standard, for instance.
14 Q. Does it break out publications
15 by whether a standard has been incorporated
16 by reference or not?
17 A. I don't think so.
18 Q. Does it break out by whether a
19 standard has been publicly made available by
20 defendant or not?
21 A. I don't think so. Not in
22 tabs 3, 4, and 5.
23 Q. How do you establish causation
24 between defendant's activities and any of the
25 data that you provide in section -- in

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1 paragraph 133?
2 MR. FEE: Objection. Calls for
3 a legal conclusion. Form.
4 THE WITNESS: One can and
5 should look at all evidence available,
6 including circumstantial evidence. I
7 don't have direct information about
8 the precise impact of defendant's
9 activities, but I have important
10 information that bears on that issue,
11 including information that's in
12 deposition transcripts.
13 BY MR. BRIDGES:
14 Q. So my question is, how do
15 you -- do you -- strike that.
16 Are your conclusion -- are you
17 making conclusions in paragraph 133 about the
18 cause of changes in sales of the plaintiffs'
19 products?
20 MR. FEE: Objection to form.
21 THE WITNESS: Not definitively.
22 I have observations about the
23 magnitude and trend of the downloads
24 of -- through defendant's sites. I
25 have some information on the downloads

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1 of certain of the standards. I've
2 presented that.
3 I don't have direct evidence of
4 the precise impact historically of
5 defendant's activities on plaintiffs'
6 financials.
7 BY MR. BRIDGES:
8 Q. What evidence of any kind do
9 you have of any kind of impact historically
10 of the defendant's activities on plaintiffs'
11 financials?
12 MR. FEE: Objection to form.
13 THE WITNESS: That which is
14 reported in paragraph 133, that of
15 which is contained in deposition
16 testimony, and that of which I
17 summarized in other parts of the
18 report.
19 BY MR. BRIDGES:
20 Q. So when you're referring to
21 deposition testimony, you're referring to the
22 citations to the footnotes in paragraph 133?
23 A. No, I don't think it's just
24 limited to that. I think there's some other
25 deposition transcripts that talk about the

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1 impact or potential impact of defendant's
2 activities on each one of the plaintiffs.
3 Q. Did you make any independent
4 assessment of causation of any financial
5 effects on plaintiffs by the defendant's
6 activities?
7 MR. FEE: Objection to form.
8 Calls for a legal conclusion.
9 THE WITNESS: What do you mean
10 by the term of "independent assessment
11 of causation"?
12 BY MR. BRIDGES:
13 Q. You, as an expert, not relying
14 just on what other people have said or
15 speculated or thought.
16 MR. FEE: Same objections.
17 Plus compound.
18 THE WITNESS: We experts rely
19 on other information to draw the
20 conclusions that we do, and then we
21 bring our training to it. So our
22 observations shouldn't be in a vacuum.
23 BY MR. BRIDGES:
24 Q. But they should be objective,
25 correct?

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1 A. Yes.
2 Q. And that means perhaps not
3 relying upon the views of the parties to the
4 lawsuit alone, but doing independent analysis
5 and research, correct?
6 MR. FEE: Objection to form.
7 THE WITNESS: I think one can
8 and should evaluate and consider the
9 views of the parties, but not limited
10 investigation to that.
11 BY MR. BRIDGES:
12 Q. So what independent analysis
13 and research did you do other than reviewing
14 the views and statements of the parties in
15 this case?
16 MR. FEE: Objection. Vague.
17 THE WITNESS: I reviewed and
18 summarized the data, as you see in
19 133, that I had at my disposal. I
20 reviewed writings about the impacts.
21 And I took important
22 information from the fact that the
23 plaintiffs have brought this lawsuit.
24 The plaintiffs don't want this
25 activity to continue. That is

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1 revealed preference information that's
2 quite important.
3 BY MR. BRIDGES:
4 Q. Tell me about what you mean by
5 repealed -- sorry. Strike that.
6 Tell me what you mean by
7 "revealed preference."
8 A. What people do often provides
9 information on what their preferences are.
10 Q. And so the fact that plaintiffs
11 brought this lawsuit has revealed to you that
12 they prefer to bring the lawsuit, correct?
13 MR. FEE: Objection. Vague.
14 THE WITNESS: Given the cost,
15 they prefer to bring the lawsuit
16 rather than not bring it, yes.
17 BY MR. BRIDGES:
18 Q. What else -- strike that.
19 What are the data you're
20 referring to in page -- strike that.
21 What are the data you're
22 referring to in paragraph 133 that you took
23 into account in discussing or analyzing
24 effects of defendant's activities on
25 plaintiffs?

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1 A. I took all the data --
2 MR. FEE: Objection. Form.
3 Objection to form.
4 THE WITNESS: I took all this
5 data into account. That's why I
6 reported it here.
7 BY MR. BRIDGES:
8 Q. And the data that you
9 identified in the footnotes in
10 paragraph 134 -- sorry -- 133?
11 A. Yes, I considered that
12 information.
13 Q. Do you know in what year the
14 defendant posted the 2008 version of the
15 National Electrical Code on its Web site?
16 A. I don't know with absolute
17 certainty. I do know a number of the alleged
18 activities occurred in late 2012. I don't
19 know if it's specific to that code or not.
20 Q. Does it matter to your analysis
21 exactly when the defendant posted the 2008
22 National Electrical Code on its Web site or
23 to Internet Archive?
24 A. I would --
25 MR. FEE: Objection to form.

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1 THE WITNESS: I would consider
2 that information if I had it, but I
3 don't have any reason to think that it
4 would change any of the conclusions
5 that I drew.
6 BY MR. BRIDGES:
7 Q. The timing of when the
8 defendant posted certain matters wouldn't
9 change your conclusions?
10 A. Not based on what I know right
11 now. My understanding is that much of the
12 activity occurred in 2012, the later half of
13 2012, and I still have the whole body of
14 evidence that I have considered. So I'm not
15 sure if the precise timing would change, but
16 I certainly would consider that.
17 Q. Do you know in what year
18 Public.Resource.Org posted the 2011 version
19 of the National Electrical Code?
20 A. Same answer to the question
21 that you had with regard to the 2008 code.
22 Q. Can you look at the data in
23 your -- the tables attached to your report
24 and see if that helps refresh your memory as
25 to when the defendant posted NEC 2008 and

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1 A. I can't be any more specific
2 than that.
3 Q. What aspect of your training
4 regarding aspects of industrial organization
5 have you brought to bear on this case?
6 A. I can't be any more specific
7 than that.
8 Q. But you did bring the theory of
9 reveal -- revealed preferences to bear on
10 this case, correct?
11 A. Yes.
12 Q. What other economic theories do
13 you recall bringing to bear on this case?
14 MR. FEE: Objection. Asked and
15 answered.
16 THE WITNESS: Everything that
17 I've --
18 MR. FEE: And vague.
19 Go ahead.
20 THE WITNESS: -- I've learned
21 in my training, both educational
22 training and career training.
23 BY MR. BRIDGES:
24 Q. Can you be more specific than
25 that?

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1 A. No.
2 * * *
3 (Jarosz Exhibit 4 marked for
4 identification.)
5 * * *
6 BY MR. BRIDGES:
7 Q. Mr. Jarosz, do you recognize
8 Exhibit 4 as a document that you produced in
9 response to a subpoena in this case?
10 A. Yes.
11 Q. What is this document?
12 A. It appears to be a summary over
13 the years 2009 through 2013 of dollars and
14 quantity of NFPA standards that were sold in
15 the marketplace.
16 Q. Based upon the trends that you
17 see in this exhibit, can you estimate when
18 you believe it is most likely that the
19 defendant first published -- strike that.
20 Based upon the trends that you
21 see in this Exhibit 4, can you estimate when
22 you believe it is most likely that the
23 defendant first posted each of the standards
24 identified here?
25 A. I don't think so, not based

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1 just on this information.
2 Q. What else would you need?
3 A. I don't know, because I think
4 it's probably a very easy factual question to
5 determine when the downloading first
6 occurred, so I don't know why one would need
7 to back into it.
8 Q. Well, when -- would one be able
9 to use sales trends as a way of identifying
10 likely effects of a posting of each standard
11 by the defendant?
12 MR. FEE: Objection. Vague.
13 Compound.
14 THE WITNESS: Maybe; maybe not.
15 BY MR. BRIDGES:
16 Q. Why do you say "maybe; maybe
17 not"?
18 A. I just wouldn't think to do it
19 that way, so I don't know what you exactly
20 have in mind.
21 Q. Do you associate the posting of
22 standards by defendant with changes in sales
23 volume of the standards that the defendant
24 has posted?
25 MR. FEE: Objection to form.

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1 THE WITNESS: I don't know what
2 you mean by that question.
3 BY MR. BRIDGES:
4 Q. You don't understand the
5 question?
6 A. I do not.
7 Q. Can you correlate the posting
8 of standards by defendant with any changes in
9 sales volumes of the standards that the
10 defendant has posted?
11 MR. FEE: Objection to form.
12 THE WITNESS: I don't think
13 I've attempted to compute the
14 correlation coefficient here
15 associated with postings.
16 BY MR. BRIDGES:
17 Q. I'm not asking for a specific
18 correlation coefficient. I'm just asking,
19 generally, can you correlate the posting of
20 standards by defendant with any changes in
21 sales volumes of the standards that
22 defendants has -- that the defendant has
23 posted with reference to Exhibit 4?
24 A. I don't know --
25 MR. FEE: Objection. Form.

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1 THE WITNESS: I don't recall
2 attempting to do that. And I wouldn't
3 necessarily think that the historical
4 impact would -- is the end of the
5 story as to the harm here.
6 BY MR. BRIDGES:
7 Q. Is historical impact part of
8 the story as to the harm here?
9 A. Yes.
10 Q. What -- what can you say by
11 looking at Exhibit 4 about the historical
12 impact of the posting of the defendant -- of
13 the plaintiffs' standards by the defendant?
14 A. I don't know that I can say
15 much, because I believe the postings largely
16 occurred in late 2012, and I only have one
17 period after that.
18 Q. If it turns out that
19 defendant's postings were well before 2012,
20 would that affect your analysis of the trends
21 in sales data of the plaintiffs'
22 publications?
23 MR. FEE: Objection to form.
24 Compound. Vague.
25 THE WITNESS: Maybe. I would

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1 consider that information in
2 conjunction with these data if you
3 wanted me to.
4 BY MR. BRIDGES:
5 Q. How -- what -- what would
6 change?
7 A. I don't know. I haven't done
8 that analysis.
9 Q. Have you verified the dates on
10 which plaintiffs -- strike that.
11 Have you verified the dates at
12 which defendant posted the various standards
13 to its Web site or to Internet Archive?
14 A. I don't --
15 MR. FEE: Objection. Vague.
16 THE WITNESS: I don't recall
17 verifying it.
18 And are you asking did I
19 separately go out and determine what
20 that date is and see if that was the
21 same as what was represented in the
22 Complaint, for instance?
23 BY MR. BRIDGES:
24 Q. Yes.
25 A. No, I don't recall doing that.

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1 Q. Have you determined in any way
2 the dates at which defendant posted various
3 standards to its Web site or to the Internet
4 Archive?
5 A. I don't recall doing a separate
6 analysis of that, no.
7 Q. How did you learn about the
8 dates at which defendant posted various
9 standards to its Web site or to Internet
10 Archive?
11 A. I had conversations with
12 counsel on that topic, and I may have seen
13 that information contained in certain
14 documents like the Complaint, but I don't
15 recall.
16 Q. Did you rely upon information
17 regarding those dates from conversations with
18 counsel?
19 MR. FEE: In arriving at his
20 opinions, you're asking?
21 MR. BRIDGES: Arriving at his
22 understanding of the facts.
23 THE WITNESS: I don't know that
24 I did, because I don't recall
25 reporting those specific dates

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1 anywhere in my report.
2 BY MR. BRIDGES:
3 Q. Do you recall taking specific
4 dates into account in analyzing the effect of
5 defendant's actions?
6 MR. FEE: Objection to form.
7 Vague.
8 THE WITNESS: I don't recall
9 one way or the other.
10 BY MR. BRIDGES:
11 Q. Do you know how -- strike that.
12 Do you know how much revenue
13 each plaintiff derives from the standards at
14 issue in this case?
15 A. I don't think I know that
16 precise number.
17 Q. Did you -- did you ever know
18 that number?
19 A. I don't think so.
20 Q. Did you ever know how much
21 revenue each plaintiff derives from standards
22 that have been incorporated into law?
23 A. As opposed to those that have
24 not been incorporated? Is that --
25 Q. Well, I'm -- I'm asking about

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1 those standards that have been incorporated
2 in the law. I'm asking if you know how much
3 revenue each plaintiffs derives -- each
4 plaintiff derives from those standards.
5 A. I don't --
6 MR. FEE: Objection. Form.
7 THE WITNESS: -- think I know
8 that number, and I'm not sure the
9 plaintiffs know that number.
10 BY MR. BRIDGES:
11 Q. Do you know the percentage of
12 revenue that each plaintiff derives from
13 standards that have been incorporated into
14 law?
15 MR. FEE: Objection to form.
16 THE WITNESS: I don't think I
17 do, and I don't believe the plaintiffs
18 do.
19 BY MR. BRIDGES:
20 Q. Are you aware of any difference
21 in profitability to plaintiffs between those
22 standards that have been incorporated into
23 law and those standards that have not been
24 incorporated into law?
25 MR. FEE: Objection to form.

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1 THE WITNESS: I don't believe
2 so.
3 BY MR. BRIDGES:
4 Q. Do you know -- strike that.
5 Are you aware of any difference
6 in profitability to plaintiffs between those
7 standards that defendant has posted to the
8 Internet and those standards that defendant
9 has not posted to the Internet?
10 MR. FEE: Objection to form.
11 THE WITNESS: I don't believe
12 so. And as with the previous
13 question, I don't think the plaintiffs
14 have that information at their
15 disposal.
16 BY MR. BRIDGES:
17 Q. For each plaintiff, what do you
18 understand to be the percentage of gross
19 revenue from the sale of standards?
20 MR. FEE: Objection to form.
21 THE WITNESS: I -- I've
22 reported that in my report. My memory
23 is that it's something on the order of
24 66 percent for ASTM and for NFPA. And
25 if you add in memberships, it's

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1 something just north of 50 percent for
2 ASHRAE.
3 BY MR. BRIDGES:
4 Q. What do you mean by "if you add
5 in memberships"?
6 A. I'm not -- I'm not quite sure
7 what you're asking me to define.
8 Q. I'm asking you to explain the
9 phrase that you just used, "if you add in
10 memberships." What did that mean?
11 A. I talked about that in my
12 report. Membership fees are a fairly good
13 recollect -- a fairly good reflection of
14 amount that would have been paid for
15 publications. In other words, publication
16 fees -- it -- let me start this over again.
17 It makes about as much sense to
18 become a member of ASHRAE as it is to buy
19 some of the individual publications. As a
20 result, many people choose to become members
21 rather than just buying the publication, as I
22 understand it.
23 Q. How did you learn that?
24 A. Having knowledge of the -- of
25 the price difference and through discussions

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1 with people at ASHRAE.
2 Q. How did you learn about the
3 price difference?
4 A. I don't recall how I learned
5 it, but I report it in my report based on
6 certain documents I've seen. Perhaps I
7 learned it from their Web site.
8 Q. Did you do any surveys of
9 ASHRAE members to validate that assumption?
10 A. I'm sorry. Validate what
11 assumption?
12 Q. About purchase of a membership
13 instead of buying the publication.
14 A. I'm not sure that there's an
15 assumption in there. My understanding is
16 that ASHRAE people are of the belief that
17 many people buy membership rather than
18 individual publications.
19 Q. And in your work, did you
20 assume that?
21 A. I didn't assume that. I worked
22 on that -- under that understanding.
23 Q. Oh, it's an understanding, but
24 not an assumption?
25 A. Yes.

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1 A. I don't think I know that
2 number.
3 Q. What percentage of plaintiffs'
4 operating expenses do you associate with the
5 plaintiffs' development of standards
6 generally?
7 A. I don't think I know that
8 number.
9 Q. Do you have any estimates of
10 any of those numbers that you just said you
11 don't think you know?
12 MR. FEE: Objection to form.
13 THE WITNESS: Not sitting here
14 right now.
15 BY MR. BRIDGES:
16 Q. Did you at one point ever
17 determine those numbers?
18 A. Not that I recall.
19 Q. Do you know what percentage of
20 the staff or employees of each plaintiff has
21 worked on the development of standards at
22 issue in this case?
23 MR. FEE: Objection to form.
24 THE WITNESS: I don't think I
25 know that number.

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1 BY MR. BRIDGES:
2 Q. Do you know what percentage --
3 do you have an estimate?
4 A. No.
5 MR. FEE: Objection to form.
6 THE WITNESS: Not as I sit
7 here, no.
8 BY MR. BRIDGES:
9 Q. Do you know what percentage of
10 the staff or employees of each plaintiff has
11 worked on the development of standards
12 incorporated into law?
13 MR. FEE: Objection to form.
14 THE WITNESS: Not as I sit here
15 right now.
16 BY MR. BRIDGES:
17 Q. Do you have an estimate?
18 A. Not as I sit here right now.
19 Q. Do you know what percentage of
20 the staff or employees of each plaintiff has
21 worked on the development of standards in
22 general?
23 A. Not as I sit here right now.
24 Q. Do you have an estimate?
25 A. Not as I sit here right now.

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1 Q. Have you ever had access to any
2 information that I've asked in the last
3 several questions?
4 MR. FEE: Objection to form.
5 THE WITNESS: I don't believe
6 so.
7 BY MR. BRIDGES:
8 Q. Do you know whether plaintiffs
9 prepare standards through joint sponsorship
10 with any other organizations?
11 MR. FEE: Objection. Vague.
12 THE WITNESS: I think I may
13 have seen a reference to that. I
14 don't know the extent to which it
15 occurs, but I wouldn't be surprised to
16 be reminded that it does occur.
17 BY MR. BRIDGES:
18 Q. Are you aware of any, as you
19 sit here?
20 A. Not as I sit here right now,
21 but I think I'm aware that it has occurred.
22 Q. Do you know whether plaintiffs
23 receive grants, revenue, or stipends from
24 governments that use, reference, or adopt
25 their standards?

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1 MR. FEE: Objection to form.
2 THE WITNESS: There are grant
3 monies that go to NFPA. I don't know
4 the source of those grants. I don't
5 see a line for grant revenues for the
6 other two organizations.
7 BY MR. BRIDGES:
8 Q. Did you ask any of the
9 plaintiffs about the revenues or expenses
10 they have specifically attributable to the
11 standards that defendant has posted to the
12 Internet?
13 MR. FEE: Objection to form.
14 THE WITNESS: We generally
15 talked about that topic with each
16 plaintiff, and I don't think the
17 plaintiffs know that amount. They
18 undertake activities that are
19 standards oriented. They don't know
20 which of those standards will be
21 incorporated by reference.
22 BY MR. BRIDGES:
23 Q. Did you --
24 A. Or which have been. I don't
25 think they systematically track those.

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1 foundation.
2 THE WITNESS: I would like to
3 understand the facts that you're
4 positing right now.
5 BY MR. BRIDGES:
6 Q. Well, we're not going to take
7 time to go look at a Web site right now, so
8 I'm asking you based on what you know.
9 Do you have an explanation as
10 to why the resource cited in footnote 95
11 actually shows that 44 state -- the 44 states
12 adopted the International Energy Conservation
13 Code?
14 MR. FEE: Objection. Lack of
15 foundation.
16 THE WITNESS: I don't know if
17 your factual representation is
18 accurate or not, and I don't recall
19 investigating that particular issue.
20 BY MR. BRIDGES:
21 Q. Have you made any effort to
22 determine what resources were expended,
23 incurred, or contributed by parties other
24 than ASHRAE in the development of standard
25 90.1?

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1 MR. FEE: Objection to form.
2 THE WITNESS: I generally
3 understand that there were many
4 members who participated in that. I
5 think I reported earlier in the report
6 the number of hours and other
7 indications of activity undertaken by
8 members.
9 BY MR. BRIDGES:
10 Q. My question is, have you made
11 any effort to determine what resources were
12 expended, incurred, or contributed by parties
13 other than ASHRAE and ASHRAE members in the
14 development of standard 90.1?
15 MR. FEE: Same objection.
16 THE WITNESS: I didn't realize
17 that you had in your original question
18 "and other than ASHRAE members."
19 BY MR. BRIDGES:
20 Q. I didn't. Now I -- now my
21 question does.
22 A. Beyond that, I don't recall
23 undertaking that investigation, meaning
24 beyond ASHRAE and its members.
25 Q. Have -- are you aware of any

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1 change in membership sales by ASHRAE over the
2 past ten years?
3 A. I don't think I have data that
4 goes as far as ten years ago. I do have
5 information on ASHRAE membership revenue back
6 to 2012. That's summarized in tab 5.
7 Q. And that membership figure has
8 risen each year since 2012, correct?
9 A. Yes. Slightly each year, it
10 has risen.
11 Q. Do you draw any conclusions
12 with respect to this case from that trend?
13 A. I don't think so.
14 Q. Have you calculated the
15 effects -- the financial effect on the
16 plaintiffs of the incorporation into law of
17 their standards?
18 MR. FEE: Objection to form.
19 THE WITNESS: No, I don't think
20 I've independently -- I don't think
21 I've separately done that.
22 BY MR. BRIDGES:
23 Q. Are you aware of any data
24 regarding the financial effect on the
25 plaintiffs of the incorporation into law of

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1 their standards?
2 MR. FEE: Same objection.
3 THE WITNESS: I'm aware that
4 the plaintiffs benefit greatly by
5 incorporation by reference, but I
6 don't know that I've seen a
7 quantitative study of that topic.
8 BY MR. BRIDGES:
9 Q. What do you understand about
10 the benefits that accrue to plaintiffs by
11 incorporation by reference?
12 A. Some of those are laid out in
13 my report on pages 19 through 26. I have a
14 particular section called "Benefits of
15 Incorporation" that starts at page 20.
16 Q. Well, I'm asking you, what
17 benefits accrue to the plaintiffs from
18 incorporation by reference?
19 A. Generally, it allows each one
20 to satisfy its mandate of providing services
21 to the entirety of the industry that it
22 focuses its attention on. And so it allows
23 for the collection and then dissemination of
24 standards that allow and achieve outcomes
25 that are good for the industry.

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1 Q. What other benefits do
2 plaintiffs gain from incorporation by
3 reference of their standards?
4 A. I think that generally covers
5 it. I may be forgetting things that are laid
6 out in my report, but that's what covers it,
7 to the best of my memory right now.
8 Are we at a good point for a
9 break?
10 Q. If you want. Sure.
11 A. Thanks.
12 THE VIDEOGRAPHER: Off the
13 record at 3:12. This is the end of
14 media unit number 2.
15 * * *
16 (Recess from 3:12 p.m. to
17 3:41 p.m.)
18 * * *
19 THE VIDEOGRAPHER: On the
20 record at 3:41. This is the beginning
21 of media unit number 3 in the
22 deposition of John Jarosz.
23 * * *
24 (Jarosz Exhibit 5 marked for
25 identification.)

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1 * * *
2 BY MR. BRIDGES:
3 Q. Mr. Jarosz, I've handed you
4 Exhibit 5. This is an article that you cited
5 in your report, correct?
6 A. Yes, I believe so.
7 Q. Do you recall how this article
8 came to your attention?
9 A. I do not.
10 Q. Is this an article that you
11 understand to have been published by
12 plaintiff ASHRAE in its journal?
13 A. Yes, that's my understanding.
14 Q. And this is an article you
15 relied upon with respect to the development
16 of standard 90, which became standard 90.1,
17 correct?
18 A. Yes.
19 Q. In paragraph 133 of your
20 report, you talk about a number of
21 downloads -- strike that -- you talk about a
22 number of documents accessed through Public
23 Resource's Web site. Do you see that?
24 A. I talk about the number of ASTM
25 documents that are -- that were accessed over

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1 a particular period.
2 Q. And then you do the same for
3 NFPA documents, correct?
4 A. Yes.
5 Q. What do you calculate as the
6 dollar value of harm to the -- to ASTM from
7 the accesses and downloads that you refer to
8 in paragraph 133?
9 A. I haven't calculated that harm.
10 Q. Why not?
11 A. I'm not sure if I can at this
12 stage. One estimate would be those number of
13 downloads times the -- well, actually, no,
14 let me take that back. I just don't know how
15 to do it.
16 Q. Can you be certain that these
17 accesses or down -- and downloads referred to
18 in paragraph 133, in fact, resulted in
19 economic loss to ASTM?
20 MR. FEE: Objection to form.
21 THE WITNESS: Not with absolute
22 certainty, but with reasonable
23 certainty I can say some -- in some
24 number of these instances, it's likely
25 the case that the -- that the

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1 information would have been obtained
2 from ASHRAE in -- or ASTM, rather,
3 in -- through legal means.
4 BY MR. BRIDGES:
5 Q. Would that -- in those
6 instances where you say that the information
7 would have been obtained from ASTM through
8 legal means, can you put a dollar value on --
9 or even an estimate of the increased revenue
10 that ASTM would have gotten from those
11 instances where people obtained the
12 information from ASHRAE -- sorry -- from
13 AST --
14 MR. FEE: Object --
15 BY MR. BRIDGES:
16 Q. -- from ASTM?
17 MR. FEE: Objection to form.
18 THE WITNESS: No, not based on
19 the information I have. I don't think
20 I have any indication of who was doing
21 the downloading and why.
22 BY MR. BRIDGES:
23 Q. And do you know what
24 alternatives persons who were doing the
25 downloading may have had for obtaining the

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1 information?
2 A. Not with certainty, because I
3 don't know who those persons were, but I
4 would expect one alternative would be to
5 obtain it properly, directly from ASTM.
6 Q. Would that have resulted in
7 more revenue to ASTM?
8 A. It may have. If they're
9 materials that were taken improperly that
10 would have been paid for, then that would
11 represent a loss of revenue to ASTM.
12 Q. Do you know whether any of the
13 persons who obtained this information from
14 defendant would have paid for the information
15 from ASTM?
16 A. No, not with certainty, because
17 I don't know the identity of the downloaders
18 or the reasons for their downloading.
19 Q. Moreover, those persons might
20 have accessed the standards from ASTM's
21 reading room for free and with no revenue to
22 ASTM, correct?
23 A. You mean in a but-for world?
24 Had they not done what they actually did,
25 alternatively they could have gone to the

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1 free reading room?
2 Q. Right.
3 A. That's a possibility, yes.
4 Q. Do you have an understanding as
5 to why persons would want to download a file
6 of a standard instead of viewing it at one of
7 the plaintiffs' reading rooms?
8 A. Not with absolute certainty,
9 but I would imagine downloading would allow
10 more flexibility in referring to the standard
11 and using it and sharing that information
12 with others, whereas reading it in -- through
13 an Internet site is somewhat less flexible,
14 provides less flexibility for the use of that
15 information.
16 Q. What did -- what do you
17 understand to be the difference in
18 flexibility between possession of a download
19 and access to a standard through a reading
20 room?
21 A. Well, I think that a download
22 typically has a document that's in hard-copy
23 form. Copies can made -- be made of that and
24 distributed. Reading things just online
25 doesn't allow for the wide distribution and

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1 more extended use of that document.
2 Q. Do you have any evidence about
3 wide distribution of plaintiffs' standards as
4 a consequence of defendant's actions?
5 A. I do not.
6 Q. Have you reviewed any studies
7 that would allow you to establish any
8 connection between the number of accesses or
9 downloads that Public Resource made possible
10 and any financial harms to the plaintiffs?
11 MR. FEE: Objection to form.
12 THE WITNESS: I don't think
13 I've seen any study on that, no.
14 BY MR. BRIDGES:
15 Q. Have you conducted any studies
16 that would have allowed you to establish any
17 connection between the number of accesses or
18 downloads that Public Resource made possible
19 and any financial harms to the plaintiffs?
20 MR. FEE: Objection to form.
21 THE WITNESS: Not other than
22 what's contained in my report.
23 BY MR. BRIDGES:
24 Q. Please turn to page 45,
25 paragraph 107, which spills into page 108.

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1 MR. FEE: Page 108?
2 THE WITNESS: I'm sorry.
3 Page 108 or paragraph?
4 BY MR. BRIDGES:
5 Q. I'm sorry. Paragraph -- strike
6 that.
7 Let me ask you to turn
8 paragraph 107 on pages 45 to 46.
9 A. Okay. I'm there.
10 Q. I just want to make sure I
11 understand your language correctly at the
12 bottom of page 45 and the top of page 46.
13 Is it your opinion that the
14 copyright that the plaintiffs assert in their
15 standards drives sales of other publications
16 other than the standards themselves?
17 MR. FEE: Objection. Form.
18 Vague.
19 THE WITNESS: I think they're
20 important for driving sales of
21 publications that embody those
22 standards. I don't know that I've
23 drawn a conclusion that it drives the
24 sale of other products, but that makes
25 some sense.

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1 BY MR. BRIDGES:
2 Q. Well, doesn't that sentence at
3 the bottom of 45 and going on to 46 say that
4 copyright on plaintiffs' standards drive
5 sales of "handbooks that provide commentary
6 on the standards by referring to them"?
7 A. You haven't read --
8 MR. FEE: Objection.
9 Mischaracterizes the document.
10 THE WITNESS: You haven't read
11 the whole sentence. I see that
12 sentence to which you refer.
13 BY MR. BRIDGES:
14 Q. Right. I know I haven't read
15 the whole sentence, but didn't I fairly
16 capture one part of it, which is the sales
17 of -- strike that -- that copyright on
18 plaintiffs' standards drives sales of, among
19 other things, "handbooks that provide
20 commentary on standards by referring to
21 them"?
22 MR. FEE: Same objection.
23 THE WITNESS: I think you have
24 generally paraphrased it accurately,
25 yes.

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1 BY MR. BRIDGES:
2 Q. And that plaintiffs' copyright
3 protection -- this is the top of -- strike
4 that.
5 And turning to the top of
6 page 46, plaintiffs' copyright protection on
7 their standards provides plaintiff with a
8 competitive advantage with respect to what
9 you call value-added publications, correct?
10 A. You've read part of a sentence,
11 but I do see that sentence, yes.
12 Q. And I've fairly paraphrased it
13 correctly, correct?
14 MR. FEE: Objection to form.
15 THE WITNESS: I think,
16 generally, yes.
17 BY MR. BRIDGES:
18 Q. Do plaintiffs, to your
19 understanding, have separate copyrights in
20 those value-added publications, such as
21 commentaries and handbooks?
22 A. I don't know.
23 Q. You don't know?
24 A. Correct. I do not know.
25 Q. Is it important to you to know

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1 whether plaintiffs have copyright in --
2 rights in their value-added publications?
3 MR. FEE: Objection. Vague.
4 THE WITNESS: I would be
5 curious to know that, but I'm not sure
6 of the significance. I don't think it
7 would change my conclusions, but I
8 would be curious to know that.
9 BY MR. BRIDGES:
10 Q. Do you know whether
11 incorporation into law drives -- strike that.
12 Do you know whether
13 incorporation into law of plaintiffs'
14 standards drives sales of plaintiffs'
15 standards?
16 MR. FEE: Objection to form.
17 Vague.
18 THE WITNESS: I don't know with
19 absolute certainty, but it would make
20 some sense to me.
21 BY MR. BRIDGES:
22 Q. Is it your understanding that
23 it does?
24 MR. FEE: Same objection.
25 THE WITNESS: It would make

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1 some sense to me, yes.
2 BY MR. BRIDGES:
3 Q. Are you aware that, in some
4 instances, at least one plaintiff uses the
5 legal status of its code to promote the sale
6 of handbooks?
7 MR. FEE: Objection to form.
8 THE WITNESS: I don't know one
9 way or the other. I don't have reason
10 to dispute it, but there's not a
11 particular instance that comes to mind
12 right now. Maybe you have something
13 to refresh my memory.
14 BY MR. BRIDGES:
15 Q. Can you provide a dollar value
16 benefit that plaintiffs receive economically
17 from the incorporation of their standards by
18 reference?
19 MR. FEE: Objection. Vague.
20 Form.
21 THE WITNESS: I want to make
22 sure that I'm understanding. Could
23 you read that back, please?
24 BY MR. BRIDGES:
25 Q. I'll restate it.

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1 Can you provide a -- can you
2 put a dollar value, even an estimate, on the
3 economic benefit that plaintiffs receive from
4 incorporation of their standards into law?
5 MR. FEE: Objection to form.
6 THE WITNESS: I have not. And
7 I'm not sure how one would do that,
8 subject to thinking more about it.
9 BY MR. BRIDGES:
10 Q. At the top of page 46, you say,
11 "The Plaintiffs' copyright protection on
12 their privately-developed standards provides
13 a competitive advantage with regard to the
14 sale of these value-added publications as the
15 copyright protection limits the ability of
16 others to sell those publications unless they
17 are unwilling [sic] to compensate the
18 Plaintiffs for such use."
19 MR. FEE: Objection.
20 Mischaracterizes the statement.
21 BY MR. BRIDGES:
22 Q. Is there something unfair about
23 my characterization of that statement?
24 A. I think you read it wrong. You
25 read "willing" to read "unwilling" for some

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1 reason.
2 Q. Oh, I'm sorry. Thank you.
3 I'll restate the sentence.
4 "In particular, the Plaintiffs'
5 copyright protection on their
6 privately-developed standards provides a
7 competitive advantage with regard to the sale
8 of these value-added publications as the
9 copyright protection limits the ability of
10 others to sell those publications unless they
11 are willing to compensate the Plaintiffs for
12 such use."
13 Do you see that statement?
14 A. I do, yes.
15 Q. And the competitive advantage
16 you've identified there, whom do you
17 understand to be the competition?
18 A. Other potential providers of
19 these so-called value-added publications.
20 Q. And what -- when you say
21 "value-added publications," please give me
22 more examples of what types of things fall
23 into that category, as you use the term.
24 A. Examples would be handbooks
25 that provide commentary on the standards.

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1 Q. What else?
2 A. That's what comes to mind.
3 Q. Anything else?
4 A. Not this moment, no. I guess,
5 potentially, when I think some more about it,
6 training and seminars, for instance.
7 Q. Providers of training and
8 seminars?
9 A. Yes. So that's broader than
10 value-added publications, but there are
11 potentially alternative providers of training
12 and seminars.
13 Q. In paragraph 109, you say, "In
14 addition to direct sales of copyrighted
15 materials, the Plaintiffs' materials
16 associated with their privately-developed
17 standards provide a competitive advantage
18 with regard to the sale of downstream
19 ancillary/complementary services and
20 products."
21 Do you see that?
22 A. Yes. That's what I had in
23 mind.
24 Q. And who are the competitors you
25 have in mind in paragraph 109?

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1 A. I don't know particular names,
2 but -- at least I don't recall any sitting
3 right now -- sitting here right now, but I
4 think there are other providers of these
5 downstream services and products.
6 Q. And please give me examples of
7 what you're calling "downstream services and
8 products."
9 A. Again, seminars and training,
10 for instance.
11 Q. Anything else?
12 A. That's what comes to mind right
13 now.
14 Q. Turning to paragraph 110, you
15 state, "I understand that the ability to
16 control these downstream products and
17 services is particularly important to the
18 Plaintiffs here because the barriers to entry
19 in the marketplace for downstream products,
20 such as training and user manuals, are
21 relatively low. For example, according to
22 Mr. Comstock of ASHRAE, it is relatively easy
23 for unauthorized instructors to read a
24 standard and become (or think that they have
25 become) qualified to provide training or

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1 guidance on that standard."
2 Do you see that?
3 A. I do, yes.
4 Q. What do you understand -- what
5 did you mean by "unauthorized instructors"?
6 A. People that have provided or
7 trying to provide services to the marketplace
8 that have not been explicitly approved by,
9 for instance, ASHRAE.
10 Q. What do you understand the --
11 the nature of -- strike that.
12 You called them "instructors,"
13 correct?
14 A. Yes.
15 Q. Does that mean that you
16 envision that these persons are providing
17 some kind of instruction?
18 A. Yes.
19 Q. What instruction do you
20 understand -- what instruction did you have
21 in mind when you referred to "unauthorized
22 instructors"?
23 A. Generally, how best to
24 implement standards or provisions of certain
25 standards.

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1 Q. What else?
2 A. Nothing else comes to mind
3 right now.
4 Q. Would your understanding of
5 "unauthorized instructors" include persons
6 who were instructing the public as to what
7 the standards require?
8 MR. FEE: Objection to form.
9 Vague.
10 THE WITNESS: I didn't have
11 that in mind. I guess that's a
12 possibility.
13 BY MR. BRIDGES:
14 Q. And would it be relatively easy
15 for unauthorized persons like that to read a
16 standard and think that they have become
17 qualified to provide training or guidance on
18 that standard?
19 MR. FEE: Objection. Vague.
20 BY MR. BRIDGES:
21 Q. Is that your understanding?
22 A. According to Mr. Comstock, I
23 believe that's correct.
24 Q. What do you believe?
25 A. I have no reason to doubt him.

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1 Q. You're just parroting what
2 Mr. Comstock said, or did you have an
3 independent view?
4 A. No, I heard what he said, and
5 it made sense to me.
6 Q. So you put it in your report?
7 A. Yes.
8 Q. What independent thought or
9 investigation did you do before you put that
10 in your report?
11 MR. FEE: Objection. Vague.
12 Compound.
13 THE WITNESS: I can't point to
14 anything in particular.
15 BY MR. BRIDGES:
16 Q. Would a law-school course on
17 the law and regulation of building
18 construction provide instruction to law
19 students?
20 MR. FEE: Objection. Vague.
21 Calls for speculation.
22 THE WITNESS: I guess it could.
23 I have a hard time imagining there
24 would be much demand for such a
25 course, but I'm in general agreement

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1 that that, in concept, could occur.
2 BY MR. BRIDGES:
3 Q. Would it be possible to
4 envision that, in the course of such
5 teaching, a teacher may wish to analyze some
6 of plaintiffs' standards that have been
7 incorporated into law as law and as
8 regulation?
9 MR. FEE: Objection. Calls for
10 speculation. Vague. Form.
11 THE WITNESS: I guess that's
12 possible, but I would expect a law
13 professor would be talking about legal
14 implications, not the technical
15 aspects of a standard. I think they
16 might talk about the implication in a
17 business that's different from a
18 vendor business.
19 BY MR. BRIDGES:
20 Q. Well, what about the legal
21 implications of a code for contractors?
22 MR. FEE: Objection.
23 BY MR. BRIDGES:
24 Q. Is that -- is that fair ground
25 for a law professor to discuss with law

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1 likely?
2 A. I haven't quantified that, but
3 I would expect that it's -- more than
4 5 percent would be a reasonable definition of
5 "expected."
6 Q. More than 10 percent?
7 A. I don't know. I've not
8 quantified that number.
9 Q. And what amount of an effect on
10 plaintiffs' revenues have you identified as
11 "material"?
12 A. I haven't --
13 MR. FEE: Objection to form.
14 THE WITNESS: -- been able to
15 quantify the specific effects, so I
16 don't know the amount.
17 BY MR. BRIDGES:
18 Q. Well, what -- I'm not asking
19 for your quantification of a specific effect,
20 but how large would an effect have to be for
21 to you consider it "a material adverse effect
22 on Plaintiffs' remedies"?
23 MR. FEE: Objection to form.
24 THE WITNESS: I don't know that
25 I have a particular quantitative

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1 guideline in mind.
2 BY MR. BRIDGES:
3 Q. Have you ever -- are you
4 familiar with audit inquiry letters regarding
5 litigation?
6 A. Generally, yes.
7 Q. And you're familiar with the
8 fact that auditors will often specify to
9 those they send the letters to what amounts
10 would be material for purposes of the audit
11 response?
12 A. Yes.
13 Q. So you understand the concept
14 of certain amounts being material to certain
15 companies or entities?
16 A. Yes, for certain purposes.
17 Q. So I'd like to know what amount
18 you have identified as being material as an
19 adverse effect on plaintiffs' revenues for
20 each of the three plaintiffs, please.
21 MR. FEE: Objection. Compound.
22 Asked and answered.
23 THE WITNESS: I have not
24 considered a particular amount.
25 BY MR. BRIDGES:

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1 Q. Do you consider \$100,000 to be
2 material as an adverse effect on plaintiffs'
3 revenues?
4 MR. FEE: Objection to form.
5 Compound.
6 THE WITNESS: I haven't
7 considered that question. I don't
8 know the answer to it.
9 BY MR. BRIDGES:
10 Q. Have you considered whether
11 50,000 is a material amount as an adverse
12 effect on plaintiffs' revenues?
13 MR. FEE: Same objections.
14 THE WITNESS: Same answer.
15 BY MR. BRIDGES:
16 Q. Starting at page -- sorry.
17 Strike that.
18 Starting at paragraph 139, you
19 make several references to Mr. Malamud's
20 theory.
21 A. I'm sorry. To -- I missed a
22 word that you said. References to his what?
23 Q. To Mr. Malamud's theory --
24 A. Okay.
25 Q. -- T-H-E-O-R-Y. You refer to

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1 it in paragraph 139; 140; 144, with the word
2 "theorized"; 145, "theory"; 146, "theory."
3 What facts do you have that
4 have disproved the theory in paragraph 139?
5 A. Perhaps most important is the
6 revealed preference information. If the
7 plaintiffs believed they were better off by
8 lack of copyright protection, they would have
9 pursued such a model.
10 They don't believe they're
11 better off. Moreover, they're expending
12 tremendous resources in bringing and pursuing
13 this litigation to halt the activity at
14 issue.
15 Q. What other facts, if any, do
16 you have that have disproved Mr. Malamud's
17 theory in paragraph 139?
18 A. That's what comes to mind right
19 now.
20 Q. What facts do you have or are
21 you aware of that have disproved
22 Mr. Malamud's theory as you refer to it in
23 paragraph 140?
24 A. That's the same theory that's
25 being referenced in 139, so there's nothing

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1 new in terms of a theory.
2 Q. Do you have the same answer
3 with respect to -- strike that.
4 What facts do you have --
5 strike that.
6 What facts are you aware of to
7 disprove -- to disprove Mr. Malamud's theory
8 that you refer to in paragraph 144?
9 A. Again, it's the same theory
10 that's being referenced, but there's
11 additional facts; and that is, the downstream
12 products and services aren't particularly
13 substantial to these plaintiffs and don't
14 appear to be enhanced by a lack of copyright
15 protection; that is, the plaintiffs have had
16 copyright protection and have said -- had
17 some downstream products and services. It's
18 hard to imagine that elimination of that
19 copyright protection will enhance that
20 business.
21 Q. It's hard to imagine, but are
22 you aware of any studies to disprove
23 Mr. Malamud's theory?
24 A. No.
25 MR. FEE: Objection. Vague.

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1 THE WITNESS: I'm sorry.
2 BY MR. BRIDGES:
3 Q. Have you conducted any studies
4 to disprove Mr. Malamud's theory?
5 MR. FEE: Same objection.
6 THE WITNESS: Not other than
7 what's reflected here in Exhibit 1.
8 BY MR. BRIDGES:
9 Q. What academic literature have
10 you relied upon to criticize Mr. Malamud's
11 theory in paragraph 144?
12 A. Nothing specific comes to mind.
13 Q. In paragraph 145, you state
14 that, "Mr. Malamud's suggestion that the sale
15 of downstream products and services
16 represents an untapped and undeveloped
17 opportunity for the Plaintiffs is incorrect."
18 Do you see that?
19 A. Yes, I do.
20 Q. And then you go on and make
21 some statements for the rest of the
22 paragraph, correct?
23 A. Yes.
24 Q. What studies did you engage in
25 to determine the facts that you stated in the

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1 rest of that paragraph?
2 MR. FEE: Objection. Vague.
3 THE WITNESS: I looked at the
4 financial information, and I talked to
5 people at the various plaintiffs.
6 BY MR. BRIDGES:
7 Q. You talked to people at the
8 various plaintiffs?
9 A. Yes.
10 Q. What did you do to verify the
11 truth and accuracy of the things that various
12 plaintiffs said to you in their
13 conversations?
14 MR. FEE: Objection to form.
15 THE WITNESS: I looked at the
16 financial information, and I kept my
17 eyes and mind open to the information
18 in the rest of the record to determine
19 if it conflicted with what I learned
20 from the company personnel.
21 BY MR. BRIDGES:
22 Q. Whose financial information did
23 you look at?
24 A. All three of the plaintiffs.
25 It's summarized in tabs 3, 4, and 5.

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1 Q. Did you look at the financial
2 information of any entities other than the
3 plaintiffs?
4 A. I looked at Public Resource
5 financial information.
6 Q. Apart from Public Resource and
7 the plaintiffs, did you look at the financial
8 information of any other entities in making
9 the assertions that you made in
10 paragraph 145?
11 A. Not in undertaking my
12 assignment here.
13 Q. Did you consider the business
14 models of any entities other than the
15 plaintiffs and the defendant in making the
16 statements criticizing Mr. Malamud's theory
17 in paragraph 145?
18 A. Nothing in particular comes to
19 mind. I understand that there are
20 front-loaded business models, but -- at DIN,
21 for instance, but I don't recall undertaking
22 an investigation of the downstream activities
23 that they have.
24 Q. Did you undertake any
25 investigation of downstream activities of

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1 A. Yes. It's a different entity
2 than the SDOs here; but for its purposes, it
3 would appear that it's of the belief that
4 that's the optimal path to follow.
5 MR. BRIDGES: I think -- I
6 think we may pause things now and
7 reserve the remainder of our time.
8 Just a second. Oh, yes.
9 BY MR. BRIDGES:
10 Q. Do you believe that the
11 plaintiffs are harmed when the defendant
12 posts a standard that has been incorporated
13 by reference -- let me strike that.
14 Do you believe that plaintiffs
15 suffer harm from defendant posting a standard
16 that is not the latest version of the
17 standard?
18 MR. FEE: Objection. Form.
19 Compound.
20 THE WITNESS: Potentially, it
21 could cause confusion in the
22 marketplace as to what's the latest
23 standard, and there may be some
24 entities out there that are interested
25 in obtaining an earlier standard that

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1 would be obtaining it free rather than
2 through the legal routes established
3 by the plaintiffs.
4 BY MR. BRIDGES:
5 Q. Have you done any studies to
6 determine what confusion may be likely in the
7 marketplace in that regard?
8 MR. FEE: Objection to form.
9 THE WITNESS: I have not done a
10 likelihood of confusion study, no.
11 BY MR. BRIDGES:
12 Q. What research have you done as
13 to whether -- strike that.
14 What information do you have
15 about what market there is for earlier
16 versions of standards when there is a newer
17 version in the market?
18 MR. FEE: Objection to form.
19 THE WITNESS: I don't recall
20 undertaking specific research on that
21 topic.
22 BY MR. BRIDGES:
23 Q. What harm do you understand
24 plaintiffs would suffer if defendants post a
25 standard that is out of print?

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1 MR. FEE: Objection. Lack of
2 foundation. Vague.
3 THE WITNESS: I'm not -- I'm
4 not sure that I understand the concept
5 of a standard being out of print, so
6 maybe you could help me with that.
7 BY MR. BRIDGES:
8 Q. Do you know the term "out of
9 print"?
10 A. Generally, I do, yes.
11 Q. What do you understand it to
12 mean?
13 A. That it's no longer provided in
14 print form.
15 Q. All right. So what harm do you
16 understand plaintiffs would suffer if
17 defendants posted a standard that is out of
18 print?
19 MR. FEE: Objection to form.
20 THE WITNESS: Potentially, it
21 could be the harm similar to outdated
22 standards.
23 BY MR. BRIDGES:
24 Q. In other words, confusion in
25 the marketplace?

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1 A. Potential confusion in the
2 marketplace and potentially providing -- yes,
3 that -- that would be one form of it.
4 Q. What other harms do -- would
5 you identify from the defendants posting a
6 standard that is out of print?
7 A. Nothing else comes to mind this
8 moment, but there could be other things
9 that -- that I'm not thinking of right now.
10 Q. What harms do you understand
11 plaintiffs would suffer if a condition of a
12 standard being incorporated into law is that
13 plaintiffs could not forbid other entities
14 from making that law available widely and
15 freely to the public?
16 MR. FEE: Objection to form.
17 Incomplete hypothetical. Compound.
18 Calls for speculation.
19 THE WITNESS: I don't know.
20 I've not undertaken that assignment.
21 I've not given that particular
22 question any thought.
23 It seems economically to be
24 quite similar to the actions that have
25 occurred here, but I don't know. I've

Page 257

1 not thought about that particular
 2 topic.
 3 MR. BRIDGES: Okay. I think
 4 we'll pause here and reserve the rest
 5 of the time for a later visit with
 6 you, Mr. Jarosz.
 7 Kevin, this is in reliance on
 8 an exchange of correspondence between
 9 Matt and you, I believe. If, for some
 10 reason -- well, no. I think that's
 11 all.
 12 Anything else?
 13 MR. FEE: Well, I don't have
 14 any questions.
 15 Do you guys have any questions?
 16 MR. REHN: Not at this time.
 17 MR. CUNNINGHAM: No.
 18 MR. BRIDGES: Great. Thank
 19 you.
 20 THE WITNESS: Thank you.
 21 THE VIDEOGRAPHER: All right.
 22 Off the record at 4:31. This ends
 23 media unit number 3 and ends testimony
 24 for August 27th, 2015.
 25 * * *

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1 (Witness excused.)
 2 * * *
 3 (Off the record at 4:31 p.m.)
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1 CERTIFICATE
 2
 3 I do hereby certify that I am a Notary
 4 Public in good standing, that the aforesaid
 5 testimony was taken before me, pursuant to
 6 notice, at the time and place indicated; that
 7 said deponent was by me duly sworn to tell
 8 the truth, the whole truth, and nothing but
 9 the truth; that the testimony of said
 10 deponent was correctly recorded in machine
 11 shorthand by me and thereafter transcribed
 12 under my supervision with computer-aided
 13 transcription; that the deposition is a true
 14 and correct record of the testimony given by
 15 the witness; and that I am neither of counsel
 16 nor kin to any party in said action, nor
 17 interested in the outcome thereof
 18
 19 WITNESS my hand and official seal this
 20 11th day of September, 2015
 21
 22
 23
 24
 25

<%signature%>
Debbie Howard
 Debbie Howard, NDR, CRR
 Notary Public

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EXHIBIT 12

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UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

AMERICAN SOCIETY FOR TESTING AND) Case No.
MATERIALS d/b/a ASTM INTERNATIONAL;) 1:13-cv-01215-EGS
NATIONAL FIRE PROTECTION)
ASSOCIATION, INC.; and)
AMERICAN SOCIETY OF HEATING,)
REFRIGERATING, AND)
AIR-CONDITIONING ENGINEERS, INC.,)
Plaintiffs,)
vs.)
PUBLIC.RESOURCE.ORG, INC.,)
Defendant.)

AND RELATED COUNTERCLAIMS.)

RULE 30(B)(6) VIDEOTAPED DEPOSITION OF AMERICAN
SOCIETY OF HEATING, REFRIGERATING, AND AIR-CONDITIONING
ENGINEERS, INC.

BY AND THROUGH ITS DESIGNEE,

STEPHANIE REINICHE

MONDAY, MARCH 30, 2015
9:10 a.m.

VERITEXT LEGAL SOLUTIONS
1075 PEACHTREE STREET
SUITE 3625
ATLANTA, GEORGIA

Reported By:
SHARON A. GABRIELLI, CCR B-2002
Job No. 2035289

1 A I moved from Michigan to Georgia. 09:21
 2 Q And what was your first job that you took 09:29
 3 once you moved to Georgia? 09:23
 4 A ASHRAE. 09:25
 5 Q Okay. Did you move to Georgia to work at 09:26
 6 ASHRAE? 09:28
 7 A No. 09:29
 8 Q Okay. And when was it that you started 09:29
 9 working at ASHRAE? 09:21
 10 A November 2003. 09:23
 11 Q Okay. How was it that you came to start 09:23
 12 working at ASHRAE? 09:24
 13 A I applied online. I -- I saw a job posting, 09:27
 14 at that time it was for a procedures administrator, and 09:21
 15 I submitted a résumé. 09:23
 16 Q Had you ever heard of ASHRAE before that 09:21
 17 point? 09:23
 18 A No. 09:23
 19 Q Were you familiar with the air-conditioning, 09:24
 20 heating and cooling industry prior to that point? 09:26
 21 A No. 09:21
 22 Q What was it that made you qualified for the 09:22
 23 job at ASHRAE? 09:26
 24 A I suppose because it was -- at that time, it 09:20
 25 was about procedures and process, and so just legal 09:23
 Page 18

1 background and ability to -- to write and things like 09:27
 2 that. 09:29
 3 Q And what -- how long were you a procedures 09:24
 4 administrator at ASHRAE for? 09:20
 5 A I want to say until December 2004. 09:27
 6 Q And were you promoted at that time? 09:24
 7 A Yes. 09:25
 8 Q And what was -- what position were you 09:26
 9 promoted to? 09:29
 10 A Standards administrator. 09:20
 11 Q And how long did you hold the title of 09:26
 12 standards administrator for? 09:22
 13 A I think it was about three years. 09:24
 14 Q And were you promoted after three years? 09:21
 15 A Yes. 09:23
 16 Q And what title were you promoted to? 09:24
 17 A Assistant manager of standards 09:27
 18 administration. 09:28
 19 Q And how long did you hold that position for? 09:27
 20 A A year or two. 09:20
 21 Q And were you promoted again after that point? 09:26
 22 A Yes. 09:29
 23 Q And what title were you promoted to? 09:20
 24 A Manager of standards. 09:22
 25 Q And how long did you hold that position for? 09:29
 Page 19

1 A That title, till 2014. 09:21
 2 Q And so were you promoted once again in 2014? 09:27
 3 A Yes. 09:20
 4 Q And what is the title that you were promoted 09:21
 5 to? 09:23
 6 A Senior manager of standards. 09:24
 7 Q And is that the title that you hold today? 09:21
 8 A Yes. 09:24
 9 Q Okay. And do you have any other roles at 09:24
 10 ASHRAE, other than senior manager of standards? 09:24
 11 A No. 09:29
 12 Q Have you served on any of the committees in 09:29
 13 ASHRAE? 09:21
 14 A No. 09:23
 15 Q Have you -- what involvement in the design of 09:24
 16 standards have you played? 09:21
 17 A I oversee the development of all the 09:23
 18 standards at ASHRAE. 09:26
 19 Q And what does that involve? 09:26
 20 A It involves a lot of things. It involves 09:27
 21 reviewing all the documentation for membership, 09:22
 22 overseeing the documentation for public reviews, could 09:27
 23 be change proposals, could be minutes, the publication 09:24
 24 drafts, editing and reviewing those, working with the 09:20
 25 appeals. 09:27
 Page 20

1 Q And when you say you oversee the 09:25
 2 documentation for membership and for public reviews and 09:29
 3 change proposals and publication drafts, what does that 09:23
 4 entail? 09:26
 5 A It can entail -- well, making sure that the 09:28
 6 document for membership, that the documentation is all 09:22
 7 complete, meaning every -- all the, you know, parts are 09:25
 8 filled out, everything is properly signed. And it 09:29
 9 could involve talking with the chairs of project 09:23
 10 committees to help them make sure their committee is 09:29
 11 balanced. 09:24
 12 Q What do you mean by making sure the project 09:27
 13 committees are balanced? 09:20
 14 A Under our ANSI rules, our committees have to 09:22
 15 be balanced, meaning for nonsafety standards, no more 09:25
 16 than 50 percent of the people can be in any one 09:29
 17 interest category; and for safety standards, no more 09:23
 18 than one-third in each interest category. 09:26
 19 Q And what is an interest category? 09:22
 20 A It's -- it describes the -- the role a person 09:25
 21 plays typically in their job or their duties that 09:22
 22 they're doing, and that shows their bias for that 09:25
 23 particular standard that's being developed. 09:20
 24 Q Could you list for me the interest 09:27
 25 categories? 09:29
 Page 21

1 A For which standard? 09:21
 2 Q So the interest categories are different for 09:23
 3 particular standards? 09:25
 4 A They can be, yes. 09:26
 5 Q Okay. Do you know the -- off the top of your 09:27
 6 head the interest categories for the 90.1 standards? 09:20
 7 A I can list some of them, but I would have to 09:26
 8 look at a roster to verify they're all correct. 09:28
 9 Q Okay. 09:22
 10 A There's compliance, industry, utility, 09:22
 11 general, and I think user. 09:21
 12 Q And what does -- what are the -- those 09:27
 13 categories? Excuse me, let me rephrase. 09:25
 14 What -- what kind of a person would a -- 09:29
 15 would fall into the compliance category? 09:22
 16 A I would need to look at the application that 09:26
 17 shows the definition to give you an exact person, the 09:28
 18 exact definition; but for example, somebody that's 09:22
 19 involved in codes would be a compliance person. 09:26
 20 Q When you say someone who's involved in codes, 09:20
 21 like what -- what kind of role do you mean by that? 09:24
 22 A A code official. 09:27
 23 Q A code -- 09:29
 24 A A building code person; that type of person. 09:20
 25 Q Would that be something like a regulator? 09:23

Page 22

1 A Could be. 09:26
 2 Q Okay. So that would -- that would encompass 09:27
 3 somebody in a government position, then, would be under 09:21
 4 compliance? 09:27
 5 MR. CUNNINGHAM: Object to form. 09:28
 6 THE WITNESS: I would have to look at 09:29
 7 the roster to see how a government employee 09:20
 8 would be listed. It depends on where they 09:22
 9 work, what they do. Without looking at an 09:26
 10 individual, I can't tell you for sure that 09:20
 11 they would go under compliance. 09:21
 12 Q (BY MR. BECKER) Okay. What other categories 09:24
 13 could a government official go under, other than 09:25
 14 compliance? 09:28
 15 A Depending on the -- it depends on what the 09:29
 16 definition is. I really probably should look at the 09:21
 17 definitions to tell you for sure. 09:24
 18 Q And where would the definitions be found? 09:25
 19 A The definitions would be as part of the 09:28
 20 application. 09:20
 21 Q The membership application? 09:21
 22 A Yes, sir. 09:22
 23 Q You also said that one of your jobs is to 09:21
 24 make sure that documentation is complete. What does 09:24
 25 that involve? 09:27

Page 23

1 A For which part of the process? After 09:29
 2 membership? 09:22
 3 Q Let's talk about membership applications. 09:23
 4 A So for membership applications, there is an 09:27
 5 application form that would list the -- you know, what 09:20
 6 project committee they're applying for, their name, 09:24
 7 what interest category they believe they should be 09:27
 8 categorized. And then they would have -- then there is 09:33
 9 a signature at the bottom and their voting status, what 09:35
 10 they would like to be on that committee. 09:39
 11 There's a bias/conflict of interest form, 09:32
 12 which gives background on where they've worked for the 09:36
 13 last five years, other organizations that they've been 09:30
 14 involved with, who pays their way to participate, and 09:34
 15 any public statements they would have made in regards 09:38
 16 to the particular standard they're applying for, and 09:31
 17 that, too, is signed. 09:34
 18 And then there's a biographical record that 09:36
 19 is done through the ASHRAE website which gives their 09:38
 20 background, like where they -- you know, their degrees 09:33
 21 and things like that, whether -- other committees 09:38
 22 they've been involved in within ASHRAE, awards; things 09:31
 23 like that. 09:36
 24 Q Are you the person who makes sure that all of 09:36
 25 these fields are filled out? 09:39

Page 24

1 A I have a staff person that does that, but 09:31
 2 then they are reviewed by another committee. And when 09:32
 3 there's a question, then I'm the one that helps work 09:35
 4 with that. 09:39
 5 Q And what is the name of the staff person who 09:30
 6 checks these forms? 09:32
 7 A It's varied over the years. 09:35
 8 Q What is the name of the person today? 09:37
 9 A Katrina Shingles. 09:30
 10 Q And is there -- does Katrina Shingles have a 09:36
 11 specific position? 09:31
 12 A She's a secretary. 09:32
 13 Q Is there a specific position for the person 09:38
 14 who has always checked the -- the forms? 09:32
 15 A It's been a secretary or an administrative 09:37
 16 assistant. 09:30
 17 Q And you said there's also a committee that 09:37
 18 looks over that? 09:39
 19 A Yes. There's a staff liaison, and then there 09:30
 20 is -- in addition to that, and then there is -- 09:34
 21 depending -- the process has changed slightly. There 09:37
 22 could be up to two oversight committees. 09:30
 23 Q And you said that the process has changed. 09:33
 24 When did the process change? 09:37
 25 A This year. 09:30

Page 25

1 A Not exactly. A -- a standard could become a 10:03
 2 code, because 90.1 is a standard and it could be the 10:05
 3 code. It depends on whoever is wanting to make the 10:08
 4 code -- or make the rule. 10:01
 5 Q And what does the policy, procedures and 10:04
 6 interpretation subcommittee do? 10:08
 7 A They review proposals for new projects, new 10:09
 8 standards or guideline projects to be developed by 10:04
 9 ASHRAE. They are the body that reviews any proposed 10:07
 10 changes to any of the procedures related to standards 10:01
 11 and interprets the -- any of our rules. 10:05
 12 And then the other thing is they form 10:01
 13 interpretation sub -- interpretation committees when an 10:04
 14 interpretation request is submitted on a standard that 10:07
 15 we don't have a standing standard project committee 10:09
 16 for. 10:02
 17 Q I'm sorry, just to back up a moment. Do you 10:09
 18 know how it is that standards become codes? 10:03
 19 MR. CUNNINGHAM: Object to form. 10:00
 20 THE WITNESS: It -- either they're 10:02
 21 proposed into a code and the code accepts 10:05
 22 them, or a local jurisdiction decides to use 10:07
 23 a standard and that's -- and use that as 10:02
 24 their code. 10:04
 25 Q (BY MR. BECKER) And when you say "they're 10:08
 Page 46

1 proposed into a code and the code accepts them," do you 10:00
 2 mean that a -- that something like NFPA might make a 10:02
 3 code, and they're proposed into that code that NFPA has 10:08
 4 made? 10:02
 5 A So NFPA references 90.1, and that becomes 10:03
 6 part of whatever -- I can't remember the number of the 10:06
 7 NFPA code that references 90.1, but that becomes part 10:09
 8 of that code. If they -- through their process, it 10:02
 9 gets accepted. 10:08
 10 Q And what does the international liaison or 10:04
 11 intersociety subcommittee do? 10:08
 12 A They're dealing with relationships between us 10:00
 13 and sometimes other standards developers, but the 10:02
 14 majority of their work is in the -- is in the oversight 10:06
 15 of the development of international standards. 10:10
 16 Q What involvement does ASHRAE have in the 10:15
 17 development of international standards? 10:17
 18 A We are the secretariat for several of the 10:19
 19 international standards organization technical 10:15
 20 committees. We are also the secretariat for the U.S. 10:18
 21 TAG, which is the technical advisory groups within the 10:11
 22 U.S. 10:16
 23 Q And, finally, you mentioned the executive 10:11
 24 committee. What does the executive committee do? 10:13
 25 A That is the -- the chairs of each of the 10:15
 Page 47

1 subcommittees, the chair and the vice chair standards 10:18
 2 committee and the board -- the board ExO to standards. 10:12
 3 And then I'm the staff liaison for that group, other 10:18
 4 staff attend, but they -- they just talk about the 10:12
 5 issues about the subcommittees and then, you know, 10:15
 6 strategic planning; that type of thing. 10:18
 7 Q So the committee members that are part of the 10:14
 8 standards committee, are these all ASHRAE employees? 10:18
 9 A No. 10:11
 10 Q Are any of them ASHRAE employees? 10:13
 11 A No, just me as a staff liaison, and then 10:15
 12 another staff person that does the minutes. 10:18
 13 Q So these are -- are these members of 10:11
 14 industry? 10:16
 15 A They're -- they're balanced as well. The 10:19
 16 board has slightly different interest categories that 10:12
 17 they use. There are -- they're members -- they're -- 10:15
 18 they are members of ASHRAE, but they're from all over. 10:19
 19 MR. CUNNINGHAM: Could I just ask, are 10:13
 20 we talking about the project committee here? 10:14
 21 Are we talking about the executive committee? 10:16
 22 Are we talking about the previous questions? 10:18
 23 MR. BECKER: The standards committee as 10:19
 24 a whole. 10:10
 25 MR. CUNNINGHAM: The standards 10:11
 Page 48

1 committee 10:12
 2 MR BECKER: Yeah 10:13
 3 MR CUNNINGHAM: For a specific 10:13
 4 standard? I just wanted to make sure we're 10:14
 5 clear here 10:15
 6 Q (BY MR BECKER) How many standards 10:11
 7 committees are there? 10:12
 8 A There's project committees, and those overdo 10:13
 9 the standards, but the standards committee is one 10:17
 10 Q There's just one standards committee? 10:19
 11 A With the -- right, with the subcommittees 10:11
 12 Q And what's the difference between the 10:17
 13 projects committees and the standards committees? 10:19
 14 A A project committee is the one that is -- is 10:11
 15 the group that's responsible for writing the standard 10:13
 16 Standards committee is an over -- oversight committee 10:18
 17 THE COURT REPORTER: "Is an oversight"? 10:15
 18 THE WITNESS: Yes 10:19
 19 Q (BY MR BECKER) And are any ASHRAE employees 10:13
 20 members of the project committees? 10:16
 21 A No 10:18
 22 Q Are the members of the project committees 10:13
 23 people from various interest categories -- 10:19
 24 A Yes 10:13
 25 Q -- as you had defined previously? 10:13
 Page 49

1 A Yes. 10:16
 2 Q And are the project committee membership -- 10:16
 3 memberships balanced based off of those interest 10:11
 4 categories? 10:14
 5 A Yes. Whatever interest categories the 10:16
 6 project committee has, then they're balanced based on 10:18
 7 the number of project committees. That doesn't mean, 10:12
 8 you know, if there's 30 people and you have five 10:14
 9 interest categories, there's six in each. It means no 10:17
 10 more than 50 percent in one interest -- interest 10:14
 11 category. 10:17
 12 Q So why is it that these people who are not 10:13
 13 ASHRAE employees participate in the project committees? 10:10
 14 MR. CUNNINGHAM: Object to form. 10:16
 15 THE WITNESS: I would say because either 10:18
 16 they really like that topic, it may affect -- 10:10
 17 you know, it may be because it affects 10:14
 18 something that they do in their business. 10:16
 19 They may be in the -- in the code arena and 10:18
 20 they want to make sure it's written so that 10:13
 21 you can adopt it in code. It could be a 10:16
 22 number of reasons why they choose to 10:18
 23 participate. 10:10
 24 Q (BY MR. BECKER) And why is it that they'd 10:16
 25 want to participate for a standard that would be 10:18
 Page 50

1 adopted into code? 10:12
 2 MR. CUNNINGHAM: Object to form. 10:14
 3 THE WITNESS: My -- my guess would be 10:17
 4 that, you know, it's going to affect their -- 10:18
 5 their business somehow or the -- you know, or 10:12
 6 the jurisdiction in which they work. 10:16
 7 Q (BY MR. BECKER) Ms. Reiniche, I'm handing 10:12
 8 you what's been previously marked as Exhibit 1076. 10:13
 9 This is Defendant Public.Resource.Org's Amended Notice 10:19
 10 of Rule 30(b)(6) Deposition of American Society of 10:13
 11 Heating, Refrigeration, and Air-Conditioning Engineers, 10:18
 12 Inc. And this document had been previously introduced 10:18
 13 in Mr. Comstock's deposition. 10:13
 14 A Okay. 10:16
 15 Q Have you seen this document before, 10:17
 16 Ms. Reiniche -- excuse me, Ms. Reiniche? 10:19
 17 A Yes. 10:18
 18 Q And when did you first see this document 10:16
 19 before, to your recollection? 10:10
 20 MR. CUNNINGHAM: So I'm -- Matt, this 10:11
 21 question is obviously fine, but I just want 10:13
 22 to caution the witness to not go into the 10:15
 23 substance of any communications that may have 10:18
 24 occurred between you and counsel. 10:13
 25 THE WITNESS: I probably would have seen 10:15
 Page 51

1 this when we first tried to -- started trying 10:15
 2 to schedule my deposition. I'm guessing 10:19
 3 February. 10:11
 4 Q (BY MR. BECKER) And have you reviewed the 10:14
 5 topics of examination that's starting on page 4? 10:16
 6 A Yes. 10:13
 7 Q And you're aware that you are here as a 10:17
 8 30(b)(6) designee for ASHRAE with regards to particular 10:19
 9 topics of examination? 10:16
 10 A Yes. 10:17
 11 Q And that means that -- that you are expected 10:17
 12 to prepare and be knowledgeable as to those particular 10:10
 13 topics, correct? 10:13
 14 A Yes. 10:14
 15 Q And those topics are, topic number 1, "The 10:16
 16 process and activities of developing the works at 10:11
 17 issue, including participation of government and 10:14
 18 private sector personnel in standards development." 10:17
 19 A Yes. 10:10
 20 Q And did you prepare for that topic? 10:11
 21 A Yes. 10:13
 22 Q And have you been using your knowledge of 10:17
 23 that topic in the answers that you had given me earlier 10:19
 24 today concerning the standards committee and project 10:13
 25 committee? 10:18
 Page 52

1 A Yes. 10:19
 2 Q And have you been using your knowledge with 10:11
 3 regards to that topic as it applies to the other 10:13
 4 answers that you've provided me about the ASHRAE's 10:16
 5 operations? 10:19
 6 A Yes. 10:10
 7 Q And the other topics that you have prepared 10:10
 8 for today include topic number 2, correct? 10:12
 9 A For the copyright? 10:11
 10 Q For topic number 2, "All elements of the 10:12
 11 chain of title of copyright ownership, including 10:15
 12 copyright authorship and ownership of component parts 10:19
 13 of the works at issue in this case"? 10:13
 14 A Yes. 10:14
 15 Q And you've also prepared for topic number 3, 10:17
 16 "The authority of persons executing copyright 10:10
 17 assignment forms in favor of you to convey the 10:13
 18 copyright rights in their works or expression, 10:17
 19 including but not limited to evidence of authority of 10:19
 20 employees to assign copyrights they do not own 10:12
 21 individually"? 10:15
 22 A Yes. 10:16
 23 Q On to page 5. You've also prepared for topic 10:13
 24 number 6; is that correct? 10:17
 25 A Yes. 10:11
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1 A Do you mean everyone on the roster, or do you 10:42
 2 mean just project committee? 10:45
 3 Q For everyone on the roster. 10:40
 4 A For -- yes, for everyone on the roster. 10:44
 5 Q And so are there people outside of the 10:40
 6 project committee that would be contributing text to 10:43
 7 Standard 90.1 at that time? 10:46
 8 A Yes. 10:48
 9 Q And would all of the people who were 10:40
 10 contributing text to Standard 90.1 at that time be 10:43
 11 listed on these pages of the roster? 10:46
 12 A No. 10:48
 13 Q So what other people would have been 10:49
 14 contributing text to Standard 90.1 at that time? 10:42
 15 A Commenters on -- draft goes out for comment 10:46
 16 and those who submitted a continuous maintenance change 10:40
 17 proposal. 10:43
 18 Q And where does -- excuse me. 10:44
 19 Does ASHRAE keep lists of commenters? 10:53
 20 A We have lists of commenters. For this year, 10:58
 21 I don't know, because our record retention policy 10:54
 22 wouldn't require us to keep records this far back. 10:56
 23 Q What was the ASHRAE's record retention 10:59
 24 policy? 10:52
 25 A We follow the ANSI policy of keeping records 10:53
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1 back to the last prior revisions. 10:50
 2 Q And what is the last prior revision for 10:50
 3 Standard 90.1? 10:50
 4 A 2013. 10:50
 5 Q So does that mean that ASHRAE would not have 10:51
 6 records for the 2010 addition of 90.1? 10:51
 7 A Not necessarily. We -- if they're 10:51
 8 electronic, we probably still have them. There may be 10:51
 9 some in paper format that are in Iron Mountain. I 10:51
 10 can't guarantee that all the prior stuff is still 10:51
 11 there, especially if it's not in electronic format. 10:51
 12 Q And what is Iron Mountain? 10:51
 13 A It's an off-site storage facility. 10:51
 14 Q And does the -- your same answer that you 10:51
 15 don't necessarily have records as to the 2007 and 2004 10:51
 16 edition of Standard 90.1 also apply? 10:51
 17 A That would be correct. Some -- if it's 10:51
 18 electronic, then we probably still have it. But if 10:51
 19 it's paper, it may or may not still be at Iron 10:51
 20 Mountain. 10:51
 21 Q At what point would ASHRAE have destroyed 10:52
 22 these documents for Standard 20 -- 90.1 2010 edition, 10:52
 23 if it had done so? 10:52
 24 A If we destroyed it, we could have destroyed 10:52
 25 it at the time of 2013 publishing. 10:52
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1 Q And would that have meant that the -- the 10:58
 2 records for the 2007 edition of 90.1 would have been 10:52
 3 destroyed at the time of the 2010 publishing? 10:59
 4 A If they were destroyed, then yes. 10:52
 5 Q You had mentioned before the term "continuous 10:59
 6 maintenance change." What does that mean? 10:53
 7 A Standard 90.1 is on continuous maintenance, 10:56
 8 so anyone at any time can propose a change to the 10:59
 9 standard. It could be a project committee member or 10:53
 10 the public. If it's the public, then there's a 10:56
 11 continuous maintenance change proposal form that gets 10:51
 12 submitted. 10:54
 13 Q And similarly, for the continuous maintenance 10:56
 14 change proposal forms, would those also have been 10:51
 15 destroyed? 10:54
 16 A They could have been destroyed. 10:56
 17 Q Who would know whether or not these documents 10:52
 18 for the 2010 prior editions of ASHRAE Standard 90.1 10:55
 19 were or were not destroyed? 10:50
 20 MR. CUNNINGHAM: I'm going to object 10:54
 21 that the line of questioning about document 10:56
 22 retention policy is outside the scope of the 10:58
 23 30(b)(6) topics. 10:52
 24 You can answer. 10:54
 25 THE WITNESS: Okay. I would -- I -- 10:57
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1 there is a log of files that we keep that are 10:53
 2 at Iron Mountain. I have access to those 10:54
 3 logs, can find out what's there. I would not 10:54
 4 know what was or was not destroyed unless I 10:54
 5 brought every single box back from Iron 10:54
 6 Mountain, assuming they are all labeled 10:54
 7 correctly. 10:54
 8 Q (BY MR. BECKER) Ms. Reiniche, looking at 10:54
 9 Exhibit 1119 on page 2, where it says that ASHRAE was 10:55
 10 ordered to produce lists of project committee members, 10:55
 11 does Exhibit 1120 provide that list of project 10:55
 12 committee members for Standard 90.1? 10:55
 13 MR. CUNNINGHAM: Objection to form. 10:55
 14 THE WITNESS: This is only at one point 10:55
 15 in time, so this isn't every single one. 10:55
 16 This is at one point. 10:55
 17 Q (BY MR. BECKER) But would it provide that 10:55
 18 for that one point in time? 10:55
 19 A Yes. 10:55
 20 Q Ms. Reiniche, I'm handing you what has been 10:56
 21 marked as Exhibit 1121 -- 10:56
 22 A Okay. 10:56
 23 Q -- which reads "ASHRAE Roster." Could you 10:56
 24 tell me what this is? 10:56
 25 A This is the roster that would have been -- 10:56
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1 THE WITNESS: To my knowledge, it is 11:01
 2 probably something we keep it's a -- if it 11:04
 3 was entered in the database. At the time, we 11:06
 4 had the database that tracks them. And 11:09
 5 provided there's not an issue with the 11:01
 6 database, then it would be kept. 11:04
 7 Q (BY MR. BECKER) And what database are you 11:05
 8 referring to? 11:06
 9 A We have a continuous maintenance change 11:07
 10 proposal access database. 11:09
 11 Q And do you know when ASHRAE first started 11:02
 12 using that database? 11:05
 13 A Around 2003. 11:08
 14 Q What kind of information does that database 11:04
 15 contain? 11:07
 16 A What you see in this report, which is the 11:07
 17 proposer, the number, proposal date, when it was 11:00
 18 received. And then there -- there will be a date that 11:03
 19 isn't shown on here that tells when the committee would 11:07
 20 have responded so that we can close out the proposal. 11:01
 21 Q And does the database also contain the 11:06
 22 content of the proposal itself? 11:00
 23 A No. 11:02
 24 Q Where would someone find the content of the 11:04
 25 proposal itself? 11:07

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1 A If it was -- when we were saving 11:09
 2 electronically, then there will be a -- what we call a 11:03
 3 task sheet that we save on our network drive where 11:06
 4 they're saved. And then if not, it's in paper. It 11:09
 5 would have been sent to Iron Mountain. 11:03
 6 Q And what would be the title of the document 11:06
 7 that would have this -- one of these proposals in it? 11:09
 8 A On the network drive? 11:05
 9 Q Yeah. 11:06
 10 MR. CUNNINGHAM: Object to form. 11:09
 11 THE WITNESS: It's probably Task Sheet 6 11:01
 12 would be the title. 11:05
 13 Q (BY MR. BECKER) And what does -- are there 11:06
 14 other task sheets? 11:03
 15 A Yes. 11:04
 16 Q And what are the other task sheets? 11:05
 17 A There's a Task Sheet 1 for new projects; Task 11:08
 18 Sheet 2 that was membership; Task Sheet 3 is title, 11:02
 19 purpose and scope change. I don't believe we have a 4; 11:07
 20 a Task Sheet 5, which is public review; Task Sheet 7, 11:02
 21 which is publication; and Task Sheet 8, which is 11:07
 22 appeals. And Task Sheet 10 might -- there might be a 11:03
 23 Task Sheet 10 now. We might have switched the 11:07
 24 continuous maintenance to that. 11:01
 25 Q Is there a Task Sheet 9? 11:03

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1 A No. 11:07
 2 Q Why is that? 11:07
 3 A They just aren't using it -- there may have 11:07
 4 been one way back when they did everything in paper, 11:07
 5 but we don't use a Task Sheet 9 now. 11:07
 6 (Exhibit 1133 marked for identification.) 11:08
 7 Q (BY MR. BECKER) I'm handing you what's been 11:08
 8 marked as Exhibit number 1133. This is Bates number 11:08
 9 ASHRAE0002469. Could you tell me what this document 11:08
 10 is? 11:08
 11 A These are proposals received for continuous 11:08
 12 maintenance of ASHRAE Standard 90.1 2004 dated as of 11:08
 13 January 4th, 2005. 11:08
 14 Q For both Exhibit 1132 and 1133, it appears 11:08
 15 that the dates that the proposals were received -- 11:08
 16 excuse me, let me say that again. 11:08
 17 For Exhibits 1132 and 1133, it appears that 11:08
 18 the date of the document in the top right corner is 11:08
 19 subsequent to the year of the standard itself; is that 11:09
 20 correct? 11:09
 21 A You mean -- 11:09
 22 Q Let me clarify. For -- for Exhibit 1132, 11:09
 23 that exhibit pertains to Standard 90.1 2001, but the 11:09
 24 document itself is from January 5th, 2004; is that 11:09
 25 correct? 11:09

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1 A That's correct. 11:05
 2 Q And why is that? 11:05
 3 A That would have been at the one-year mark -- 11:07
 4 well, they have 13 months to -- to respond to 11:02
 5 continuous maintenance change proposals within a year, 11:05
 6 so this would have been printed prior to their January 11:07
 7 2004 meeting, because we would want to know what the 11:01
 8 status of the continuous maintenance change proposals 11:05
 9 were at that time. 11:10
 10 Q The proposals that were reflected here, would 11:11
 11 those be -- if made effective, would those be made 11:16
 12 effective in Standard 90.1 2001 or in a later version? 11:15
 13 A A later version. 11:10
 14 Q So the proposals reflected in Exhibit 1132, 11:19
 15 would those, if they had been enacted, be enacted into 11:13
 16 Standard 90.1 2004? 11:18
 17 A Yes. 11:10
 18 (Exhibit 1134 marked for identification.) 11:12
 19 Q (BY MR. BECKER) I'm handing you what's been 11:10
 20 marked as Exhibit 1134, Bates number ASHRAE0022821. 11:11
 21 Could you tell me what this document is, please? 11:19
 22 A This is the form to comment on a public 11:12
 23 review draft for an addendum to 90.1 2004. 11:17
 24 Q And do you see where it says "Number 2, 11:17
 25 copyright release"? 11:10

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1 A Yes. 11:12
 2 Q What is the significance of the copyright 11:12
 3 release? 11:12
 4 MR. CUNNINGHAM: Object to form. 11:12
 5 THE WITNESS: It -- the significance of 11:12
 6 it is when the commenter submits their 11:12
 7 comments, they are giving ASHRAE the 11:12
 8 nonexclusive rights to use whatever material 11:12
 9 they submit in their comments to change or 11:12
 10 modify the standard and then ASHRAE owns the 11:12
 11 copyright, and they don't. 11:12
 12 MR. BECKER: I'm sorry, Counsel, will 11:12
 13 you mind elaborating on the reason for your 11:12
 14 objection? 11:12
 15 MR. CUNNINGHAM: It calls for a legal 11:12
 16 conclusion. 11:12
 17 Q (BY MR. BECKER) Why does ASHRAE include the 11:12
 18 copyright release in this document? 11:12
 19 MR. CUNNINGHAM: Object to form. 11:12
 20 THE WITNESS: We include it so that we 11:12
 21 can include the material in -- in the 11:12
 22 document that they're commenting on without 11:12
 23 having to get copyright permission; because 11:13
 24 they're giving it, we don't have to go back. 11:13
 25 They're giving it when they sign it. 11:13
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1 Q (BY MR. BECKER) Does ASHRAE believe that it 11:10
 2 owns the copyright if somebody signs this form? 11:11
 3 A Yes. 11:16
 4 Q Would ASHRAE accept a form like this if it 11:12
 5 had not been signed and dated? 11:16
 6 A No. 11:18
 7 Q Do you know of any instance in which ASHRAE 11:11
 8 has accepted a form like this if it has not been signed 11:14
 9 and dated? 11:17
 10 A No. 11:18
 11 Q Do you have any reason to believe that this 11:11
 12 document produced by ASHRAE is not an authentic 11:13
 13 document? 11:16
 14 A No. 11:16
 15 Q And are you familiar with this document 11:11
 16 through your work at ASHRAE? 11:13
 17 A Yes. 11:16
 18 Q Is this one of the documents that you review? 11:19
 19 A Yes. 11:13
 20 (Exhibit 1135 marked for identification.) 11:16
 21 Q (BY MR. BECKER) I'm handing you what has 11:19
 22 been marked as Exhibit 1135, Bates number 11:12
 23 ASHRAE0022819. Do you recognize this document? 11:15
 24 A Yes. 11:19
 25 Q And what is this document? 11:19
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1 A This is a document to submit a continuous 11:11
 2 maintenance change proposal. 11:16
 3 Q Does this document contain a copyright 11:10
 4 release as well? 11:14
 5 A Yes. 11:15
 6 Q Could you please mark on the page where the 11:12
 7 copyright release is? 11:16
 8 (Witness complied with the request of counsel.) 11:13
 9 A There's two spots. 11:13
 10 MR. CUNNINGHAM: I'm going to go ahead 11:15
 11 and object again to form here, Matt. 11:19
 12 Q (BY MR. BECKER) And those two spots you've 11:18
 13 marked with a number 1 and number 2; is that correct? 11:19
 14 A That's correct. 11:12
 15 Q Why does ASHRAE use two copyright releases on 11:12
 16 this form? 11:19
 17 MR. CUNNINGHAM: Object to form. 11:10
 18 THE WITNESS: Actually, I think we 11:11
 19 allowed it so they could either sign it and 11:11
 20 send it in or they could put an electronic 11:14
 21 signature in. I just think there's a 11:17
 22 signature line that we missed when we made 11:18
 23 the form. 11:10
 24 Q (BY MR. BECKER) So this form should have 11:13
 25 a -- a signature line below the first copyright 11:14
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1 release, but it does not? 11:10
 2 A Correct. 11:11
 3 Q And if this form were printed out and sent to 11:13
 4 ASHRAE, would ASHRAE reject it if someone had not 11:19
 5 signed below the first copyright release? 11:13
 6 A On this one, we would have allowed either the 11:17
 7 electronic signature if they printed it with the 11:10
 8 electronic or if they had signed it, because the 11:11
 9 language was the same. 11:14
 10 Q Would ASHRAE accept this document if someone 11:19
 11 had not typed in their name where it says "I, insert 11:14
 12 name"? 11:10
 13 A If -- if they did not sign it and did not 11:10
 14 insert their name, we would not accept it. 11:13
 15 Q Comparing documents Exhibits 1134 and 1135, 11:17
 16 is the copyright release in 1134 the same as the 11:12
 17 copyright release -- the first copyright release in 11:10
 18 1135? 11:13
 19 A There is missing -- oh, no, I just can't read 11:10
 20 right. No, they're the same. 11:17
 21 Q And comparing the first and second copyright 11:12
 22 release in 1135, can you say what the differences 11:16
 23 between those two are? 11:10
 24 MR. CUNNINGHAM: I'm just going to 11:11
 25 object. Matt, I think the document speaks 11:12
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1 for itself here 11:14
 2 THE WITNESS: The -- the only difference 11:11
 3 is one we allow electronic signature, and the 11:12
 4 other is just a hand -- is a handwritten 11:15
 5 signature 11:10
 6 Q (BY MR BECKER) Thank you 11:11
 7 (Exhibit 1136 marked for identification) 11:14
 8 Q (BY MR BECKER) I'm handing you what's been 11:12
 9 marked as Exhibit 1136, Bates number ASHRAE0022823 Do 11:14
 10 you recognize this document? 11:10
 11 A Yes 11:12
 12 Q And what is this document? 11:13
 13 A This is the -- the form to comment on a 11:14
 14 public review draft standard guideline or addendum 11:17
 15 THE COURT REPORTER: Can we go off the 11:10
 16 record a second? 11:14
 17 THE VIDEOGRAPHER: Going off the record 11:17
 18 at 11:19 11:18
 19 (Recess taken) 11:27
 20 THE VIDEOGRAPHER: Going on the record 11:28
 21 at 11:22 11:28
 22 Q (BY MR BECKER) Ms Reiniche, looking again 11:26
 23 on -- at Exhibit 1136, if you look at the second page 11:26
 24 of the exhibit, could you tell me what the significance 11:22
 25 of the date on the second page is? 11:27

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1 A That was when we were -- we must have made a 11:23
 2 revision. So if we changed anything, even if it's one 11:23
 3 word, we put a new revision date on a form. 11:23
 4 Q And returning to Exhibit 1135, is that also 11:23
 5 what "revised 1/30/2006" means at the bottom of that 11:23
 6 document? 11:23
 7 A Yes. 11:23
 8 Q And returning to Exhibit 1134 at the back of 11:23
 9 that document where it says "REV 03-01-2004," is that 11:23
 10 also what that date means? 11:23
 11 A Yes. 11:24
 12 Q Thank you. 11:24
 13 (Exhibit 1137 marked for identification.) 11:24
 14 Q (BY MR. BECKER) Handing you what's been 11:24
 15 marked as Exhibit 1137. This is ASHRAE Bates number 11:24
 16 0022825. Do you recognize this document? 11:24
 17 A Yes. 11:24
 18 Q And what is this document? 11:24
 19 A This is a form for commenting on a public 11:24
 20 review draft to an ASHRAE standard, guideline or 11:24
 21 addendum. 11:24
 22 Q And does this document also contain the same 11:24
 23 copyright release -- excuse me, the same two copyright 11:24
 24 releases that had appeared on the previous exhibit? 11:24
 25 A Which one? 11:25

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1 Q 1136. 11:22
 2 A Yes. 11:25
 3 Q And which is the same as the copyright 11:26
 4 releases on Exhibit 1135; is that correct? 11:20
 5 A That's correct. 11:25
 6 Q And Exhibit 1137 says that it was revised on 11:21
 7 January 30th, 2006 on the back of the document; is that 11:26
 8 correct? 11:20
 9 A That's correct. 11:21
 10 (Exhibit 1138 marked for identification.) 11:28
 11 Q (BY MR. BECKER) Ms. Reiniche, I'm handing 11:27
 12 you what's been marked as Exhibit 1138, Bates number 11:27
 13 ASHRAE0022820. Do you recognize this document? 11:21
 14 A Yes. 11:26
 15 Q And what is this document? 11:27
 16 A This is the form to submit a proposed change 11:28
 17 to an ASHRAE standard under continuous maintenance. 11:21
 18 Q And does this document contain the same two 11:27
 19 copyright releases that were featured in the previous 11:20
 20 exhibit, 1137? 11:24
 21 A Yes. 11:29
 22 Q And at the bottom of the page, does this 11:22
 23 document show that it was revised on March 9th, 2007? 11:24
 24 A Yes. 11:25
 25 (Exhibit 1139 marked for identification.) 11:21

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1 Q (BY MR. BECKER) I'm handing you what's been 11:26
 2 marked as Exhibit 1139. This is Bates number 11:26
 3 ASHRAE0022814. Do you recognize this document? 11:20
 4 A Yes. 11:24
 5 Q Could you tell me what this document is? 11:24
 6 A This is an Application for Project Committee 11:26
 7 Organizational Representative Membership form. 11:27
 8 Q Does this document include a copyright 11:27
 9 release under section 6? 11:20
 10 A Yes. 11:22
 11 Q Apart from referring to ASHRAE standard or 11:24
 12 guideline project committee, does this copyright 11:20
 13 release under section 6 of Exhibit 1139 appear the same 11:24
 14 as the copyright -- the first copyright release in 11:22
 15 Exhibit 1138? 11:23
 16 MR. CUNNINGHAM: Object to form. 11:26
 17 THE WITNESS: Actually, it differs. 11:20
 18 Q (BY MR. BECKER) How does it differ? 11:22
 19 A There's additional language included in 11:24
 20 Exhibit 1139. 11:29
 21 Q And could you tell me what that -- excuse me, 11:21
 22 could you tell me what that additional language is? 11:24
 23 A In the third sentence down, it adds, "to any 11:29
 24 contributions I make to documents prepared by or for 11:24
 25 such committee for ASHRAE publication." And -- and 11:28

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1 then the rest is all the same. 11:22
 2 Q Could you tell me on what date Exhibit 1139 11:21
 3 was revised? 11:21
 4 A October 2009. 11:23
 5 (Exhibit 1140 marked for identification.) 11:31
 6 Q (BY MR. BECKER) Handing you what's been 11:35
 7 marked as Exhibit 1140. Do you recognize this 11:35
 8 document? 11:32
 9 A Yes. 11:32
 10 Q Could you tell me what this document is? 11:32
 11 A This is the ASHRAE Standard Guideline Project 11:34
 12 Committee Application for Individual Membership. 11:38
 13 Q And does this Exhibit 1140 include a 11:31
 14 copyright release under section 5? 11:34
 15 A Yes. 11:36
 16 Q Could you tell me if this copyright release 11:30
 17 differs in any way from the copyright release on 11:35
 18 Exhibit 1139? 11:30
 19 MR. CUNNINGHAM: Object to form. 11:33
 20 THE WITNESS: The only difference is 11:31
 21 that on form 1139, it says "elected as an 11:34
 22 organizational member" versus 1140, which is 11:30
 23 "as a member." 11:33
 24 Q (BY MR. BECKER) Are Exhibits 1139 and 11:32
 25 Exhibits 1140 documents that individuals are required 11:35
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1 to fill out in order to obtain membership with ASHRAE? 11:30
 2 A For project committees, yes. 11:37
 3 (Exhibit 1141 marked for identification.) 11:30
 4 Q (BY MR. BECKER) I'm handing you what's been 11:30
 5 marked as Exhibit 1141. Do you recognize this 11:31
 6 document? 11:36
 7 A Yes. 11:39
 8 Q Could you tell me what this document is? 11:30
 9 A This document is -- language includes our 11:33
 10 copyright information for electronic or -- or the 11:37
 11 signing. 11:31
 12 Q Does this document, Exhibit 1141, include the 11:36
 13 same two copyright releases that were seen in Exhibit 11:33
 14 1135? 11:39
 15 MR. CUNNINGHAM: Object to form. 11:38
 16 THE WITNESS: There's a few "and"s 11:36
 17 missing in the -- in -- in 1141 that are in 11:38
 18 1135. And in 1141, the signature line is 11:30
 19 included, which is not in 1135. But other 11:35
 20 than that, they're the same. 11:38
 21 Q (BY MR. BECKER) Thank you. 11:32
 22 Does this document appear to be redacted to 11:35
 23 you? 11:38
 24 A Yes. 11:38
 25 Q Do you know why this document is redacted? 11:39
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1 A No. 11:32
 2 Q Does ASHRAE ordinarily keep a document that 11:38
 3 would look like this in its redacted form? 11:36
 4 A Actually, I -- I would -- correct. If it was 11:30
 5 redacted, it was probably because it had contact -- or 11:32
 6 contact information of the individual on here, and that 11:36
 7 would have been why it would have been redacted. 11:38
 8 (Exhibit 1142 marked for identification.) 11:35
 9 Q (BY MR. BECKER) I'm handing you what's been 11:34
 10 marked as Exhibit 1142. This is ASHRAE Bates number 11:35
 11 0001618. With the exception of the different Bates 11:39
 12 numbers, does this document appear to you to be 11:33
 13 identical to the previous exhibit, Exhibit 1141? 11:36
 14 A Yes. 11:32
 15 (Exhibit 1143 marked for identification.) 11:32
 16 Q (BY MR. BECKER) I'm handing you what's been 11:38
 17 marked as Exhibit 1143. Could you tell me what this 11:30
 18 document is? 11:35
 19 A This is the Form for Continuous Maintenance 11:36
 20 Change Proposal. 11:39
 21 Q And do you recognize this document? 11:30
 22 A Yes. 11:32
 23 Q And could you tell me when this document was 11:37
 24 last revised? 11:30
 25 A January 30th, 2006. 11:31
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1 Q And does this document have the same two 11:37
 2 copyright releases as in Exhibit 1135? 11:37
 3 A Yes. 11:37
 4 (Exhibit 1144 marked for identification.) 11:37
 5 Q (BY MR. BECKER) I'm handing you what's been 11:38
 6 marked as Exhibit 1144. Do you recognize this 11:38
 7 document? 11:38
 8 A Yes. 11:38
 9 Q Could you tell me what it is? 11:38
 10 A This is the Form for Commenting in a Public 11:38
 11 Review Draft ASHRAE Standard, Guideline or Addendum. 11:38
 12 Q And looking at the second page of this 11:38
 13 document, could you tell me the date on which it was 11:38
 14 revised? 11:38
 15 A March 1st, 2004. 11:38
 16 Q And does this document have the same 11:38
 17 copyright release as Exhibit 1134? 11:38
 18 A Yes. 11:39
 19 (Exhibit 1145 marked for identification.) 11:39
 20 Q (BY MR. BECKER) Handing you what's been 11:39
 21 marked as Exhibit 1145. This is Bates number 11:39
 22 ASHRAE0001606. Could you -- do you recognize this 11:39
 23 document? 11:39
 24 A Yes. 11:39
 25 Q Could you tell me what this document is? 11:39
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1 A This is the Form for Commenting on a Public 11:39
 2 Review Draft ASHRAE Standard, Guideline or Addendum 11:32
 3 Q And could you tell me the date on which this 11:37
 4 was revised? 11:39
 5 A March 1st, 2004 11:33
 6 Q And does this include the same copyright 11:34
 7 release that was in the previous exhibit, 1144? 11:36
 8 A Yes 11:46
 9 (Exhibit 1146 marked for identification) 11:41
 10 Q (BY MR. BECKER) I'm handing you what's been 11:49
 11 marked as Exhibit 1146 Do you recognize this 11:40
 12 document? 11:44
 13 A Yes 11:44
 14 MR. BECKER: And this -- just for the 11:47
 15 record, this document is Bates number 11:49
 16 ASHRAE0001600 11:41
 17 Q (BY MR. BECKER) Could you tell me what this 11:45
 18 document is? 11:47
 19 A This is the Form for Submittal of a Proposed 11:48
 20 Change to ASHRAE Standard Under Continuous Maintenance 11:41
 21 Q Could you -- could you tell me the 11:47
 22 significance of the date in the bottom left-hand 11:49
 23 corner? 11:43
 24 A That would have been the date it was revised 11:43
 25 Q Does this document include the same copyright 11:43
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1 release under section I as was in Exhibit 1134? 11:41
 2 A With the exception of splitting up a 11:41
 3 sentence, it's exactly the same. There's an "and" in 11:41
 4 1134 between "proposals" and "I understand" -- and "I 11:41
 5 understand" that is not in 1146. 11:42
 6 (Exhibit 1147 marked for identification.) 11:42
 7 Q (BY MR. BECKER) I'm handing you what's been 11:42
 8 marked as Exhibit 1147. This is Bates number 11:42
 9 ASHRAE0001604. Do you recognize this document? 11:42
 10 A Yes. 11:42
 11 Q Could you tell me what this document is? 11:42
 12 A This is a Continuous Maintenance Submittal 11:42
 13 form. 11:42
 14 Q And could you tell me when this document was 11:42
 15 revised? 11:42
 16 A January 30th, 2006. 11:42
 17 Q Does this document include the same two 11:42
 18 copyright -- copyright releases as in Exhibit 1135? 11:42
 19 A Yes. 11:43
 20 (Exhibit 1148 marked for identification.) 11:43
 21 Q (BY MR. BECKER) I'm handing you what's been 11:43
 22 marked as Exhibit 1148. Do you recognize this 11:43
 23 document? 11:43
 24 A Yes. 11:43
 25 Q Could you tell me what this document is? 11:43
 Page 83

1 A This is the Form for Commenting on a Public 11:43
 2 Review Draft ASHRAE Standard, Guideline or Addendum. 11:43
 3 Q Looking at the second page of this document, 11:43
 4 could you tell me when this document was revised? 11:43
 5 A January 30th, 2006. 11:43
 6 Q Does this document under section 2, 11:43
 7 "Copyright Release," have the same two copyright 11:43
 8 releases that were in Exhibit 1135? 11:43
 9 A In the first paragraph, in -- in the third 11:44
 10 line down, instead of saying "the standard," like we 11:44
 11 see in Exhibit 1135, in Exhibit 1148, it says "this 11:44
 12 standard." 11:44
 13 (Exhibit 1149 marked for identification.) 11:44
 14 Q (BY MR. BECKER) I'm handing you what's been 11:44
 15 marked as Exhibit 1149. Do you recognize this 11:44
 16 document? 11:44
 17 A Yes. 11:44
 18 Q Could you tell me what this document is? 11:44
 19 A This is the Form for Commenting on a Public 11:45
 20 Review Draft, ASHRAE Standard, Guideline or Addendum. 11:45
 21 MR. BECKER: For the record, I'll just 11:45
 22 state that this is Bates number 11:45
 23 ASHRAE0001610. 11:45
 24 Q (BY MR. BECKER) Looking at the back of the 11:45
 25 document, could you tell me the date on which this was 11:45
 Page 84

1 revised? 11:45
 2 A January 30th, 2006. 11:45
 3 Q Does this document, Exhibit 1149, have the 11:45
 4 same copyright releases as in the previous exhibit, 11:45
 5 1148? 11:45
 6 A Yes. 11:45
 7 (Exhibit 1150 marked for identification.) 11:45
 8 Q (BY MR. BECKER) I'm handing you what's been 11:46
 9 marked as Exhibit 1150. This is Bates number 11:46
 10 ASHRAE0001605. Do you recognize this document? 11:46
 11 A Yes. 11:46
 12 Q And could you tell me what this document is? 11:46
 13 A This is the Form for Submittal of a Proposed 11:46
 14 Change to an ASHRAE Standard Under Continuous 11:46
 15 Maintenance. 11:46
 16 Q And could you tell me, looking at the bottom 11:46
 17 right-hand corner, the date on which this was revised? 11:46
 18 A March 9th, 2007. 11:46
 19 Q And does Exhibit 1150 have the same two 11:46
 20 copyright releases as Exhibit 1135? 11:46
 21 A With the exception of an "and" that's in 11:47
 22 paragraph -- in the second paragraph of 1135, where 11:47
 23 it's between "proposals" and "I understand," it's the 11:47
 24 same. 11:47
 25 (Exhibit 1151 marked for identification.) 11:47
 Page 85

1 Q (BY MR. BECKER) I'm handing you what has 11:48
 2 been marked as Exhibit 1151. Do you recognize this 11:40
 3 document? 11:42
 4 A Yes. 11:42
 5 Q Could you tell me what this document is? 11:43
 6 A This is an Application for Project Committee 11:45
 7 Organizational Representative Membership. 11:47
 8 Q And looking at the bottom left-hand corner, 11:41
 9 could you tell me the date on which this was revised? 11:45
 10 A October 2009. 11:48
 11 Q Comparing the copyright release -- excuse me. 11:40
 12 Is there a copyright release under Exhibit -- 11:45
 13 excuse me, section 6 of Exhibit 1151? 11:47
 14 A Yes. 11:41
 15 Q And comparing that copyright release on 11:43
 16 Exhibit 1151 with the copyright release on 11:47
 17 Exhibit 1139, can you tell me if they are identical? 11:42
 18 A They are identical. 11:41
 19 Q Thank you. 11:46
 20 (Exhibit 1152 marked for identification.) 11:48
 21 Q (BY MR. BECKER) Handing you Exhibit 1152, 11:41
 22 Bates number ASHRAE0001616. Do you recognize this 11:43
 23 document? 11:49
 24 A Yes. 11:49
 25 Q Could you tell me what this document is? 11:43
 Page 86

1 A This is the ASHRAE Standard Guideline Project 11:44
 2 Committee Application for Individual Membership. 11:47
 3 Q And could you tell me the date on which this 11:56
 4 was revised? 11:57
 5 A October 2009. 11:58
 6 Q Comparing the -- excuse me. 11:52
 7 Is there a copyright release at section 5 of 11:59
 8 Exhibit 1152? 11:52
 9 A Yes. 11:54
 10 Q Comparing the copyright release on section 5 11:56
 11 of Exhibit 1152 with the copyright release from 11:58
 12 Exhibit 1151, could you tell me if there are any 11:52
 13 differences between the two? 11:56
 14 A The difference is on 1151, it's for an 11:55
 15 organizational member; and 1152, it's a member. 11:59
 16 Q Thank you. 11:56
 17 (Exhibit 1153 marked for identification.) 11:56
 18 Q (BY MR. BECKER) I'm handing you what's been 11:58
 19 marked as Exhibit 1153. Do you recognize this 11:54
 20 document? 11:50
 21 A Yes. 11:51
 22 Q Could you tell me what this document is? 11:54
 23 A This is how you would enter a comment on the 11:55
 24 online comment database with entering the -- your name 11:58
 25 into that field and "I agree" in order to go forward. 11:52
 Page 87

1 MR. BECKER: For the record, I'll note 11:57
 2 that this is Bates number ASHRAE0001612. 11:58
 3 Q (BY MR. BECKER) Are users of the ASHRAE 11:56
 4 website required to fill in their name into the box 11:58
 5 that says "Name of whoever is logged in to comment 11:54
 6 would be entered here"? 11:57
 7 MR. CUNNINGHAM: Objection to form. 11:59
 8 THE WITNESS: In order to comment, any 11:52
 9 member of the public would have to enter 11:55
 10 their name as it would appear above that line 11:58
 11 and hit "I agree" in order to comment in the 11:50
 12 online comment database. 11:54
 13 Q (BY MR. BECKER) Could you tell me who checks 11:55
 14 that box for names? 11:58
 15 A You can't go forward. If you click "I do not 11:51
 16 agree," you cannot submit a comment. 11:53
 17 Q If -- does somebody check whatever names are 11:56
 18 put in there to make sure that they match with the 11:50
 19 person who's submitting the comments? 11:53
 20 A Do you mean can I physically tell if you were 11:58
 21 signed in as somebody else and put their name in there? 11:52
 22 Q Yes. 11:56
 23 A I cannot physically tell that. 11:58
 24 Q And if -- if I went on to the ASHRAE website 11:51
 25 and I put in my name as just the letter Z and clicked 11:56
 Page 88

1 "I agree," would it allow me to proceed? 11:53
 2 A No. 11:56
 3 Q And how does it stop me from proceeding? 11:57
 4 A There is a name -- where you see "Name of 11:50
 5 whoever is logged in to comment would be entered here," 11:53
 6 the system generates the letters -- for example, for 11:56
 7 mine, it would say Mrs. Stephanie R-E-I-N, is where it 11:51
 8 ends up stop -- it goes to a certain amount of 11:55
 9 characters. That's what I enter there and hit "I 11:58
 10 agree." 11:51
 11 Q So it might not allow you to enter your full 11:53
 12 name? 11:56
 13 A Correct. You have to enter whatever it shows 11:56
 14 above there, because it's -- you know, it's got so 11:58
 15 many -- the coding is such to so many characters. 11:52
 16 Q And where would it show the person's name? 11:57
 17 A Where you see "Name of whoever is logged in 11:59
 18 to comment would be entered here," their name would 11:52
 19 appear there. 11:56
 20 Q Okay. Does this Exhibit 1153 include a 11:56
 21 copyright release? 11:56
 22 A Yes. 11:57
 23 Q And is that the second paragraph on 11:51
 24 Exhibit 1153? 11:54
 25 A Yes. 11:56
 Page 89

1 Q And does this copyright release on 11:52
 2 Exhibit 1153 appear identical to the second copyright 11:55
 3 release on Exhibit 1135? 11:50
 4 A Other than the fact you can't do the "I, 11:53
 5 insert name," it starts with "I, hereby," it's the 11:56
 6 same. 11:50
 7 (Exhibit 1154 marked for identification.) 11:53
 8 Q (BY MR. BECKER) I'm handing you what's been 11:50
 9 marked as Exhibit 1154. Do you recognize this 11:50
 10 document? 11:54
 11 A Yes. 11:56
 12 MR. BECKER: For the record, this is 11:58
 13 Bates number ASHRAE0022827. 11:59
 14 Q (BY MR. BECKER) Could you tell me what this 11:53
 15 document is? 11:54
 16 A This is the -- where you would go to log in 11:54
 17 at the online comment database, and it shows me as 11:50
 18 being logged in, because my name appears, 11:53
 19 Mrs. Stephanie C. R-E-I-N. 11:57
 20 Q And does this document, Exhibit 1154, include 11:59
 21 a copyright release? 11:54
 22 A Yes. 11:55
 23 Q And is this copyright release identical to 11:56
 24 the copyright release in Exhibit 1153? 11:58
 25 A Yes. 11:59
 Page 90

1 Q Ms. Reiniche, do you know when this copyright 11:50
 2 release was first added to the ASHRAE website? 11:57
 3 A It would have been when we started the online 11:54
 4 comment database, which was around 2005 -- no, I'm 11:56
 5 sorry, around 2008. 11:57
 6 Q And for the online comment database, has it 11:54
 7 always required individuals to enter their name and 11:58
 8 click "I agree" -- 11:53
 9 A Yes. 11:54
 10 Q -- in order to gain access? 11:55
 11 Ms. Reiniche, I will represent to you that we 11:59
 12 have now produced before you as exhibits all of the 11:51
 13 blank copyright releases that ASHRAE has produced to 11:55
 14 Public Resource through discovery. 11:50
 15 Are you aware of any other copyright releases 11:53
 16 that ASHRAE uses in order to get copyright for 11:57
 17 Standards 90.1 or for the 1993 ASHRAE handbook that 11:53
 18 have not been produced to Public Resource? 11:50
 19 A I'm not aware of anything that has not been 11:53
 20 produced. 11:55
 21 Q Is ASHRAE aware of any copyright releases 11:57
 22 that have not been produced to Public Resource? 11:50
 23 A No. 11:54
 24 Q Is ASHRAE aware of any copyright assignments 11:57
 25 that have not been produced to Public Resource? 11:51
 Page 91

1 A No. 11:53
 2 MR. CUNNINGHAM: Object to the form on 11:55
 3 that. 11:56
 4 Q (BY MR. BECKER) Does ASHRAE see a difference 11:51
 5 between copyright releases and copyright assignments? 11:54
 6 MR. CUNNINGHAM: Object to the form. 11:57
 7 THE WITNESS: No. 11:58
 8 Q (BY MR. BECKER) Do you see a difference 11:51
 9 between copyright releases and copyright assignments? 11:52
 10 MR. CUNNINGHAM: Object insofar as it's 11:56
 11 outside the scope. 11:59
 12 THE WITNESS: No. 11:51
 13 Q (BY MR. BECKER) Is there any way in which 11:56
 14 someone who contributed text to Standards 90.1 or to 11:58
 15 the 1993 ASHRAE handbook would have given copyright 12:05
 16 rights to ASHRAE, other than through the copyright 12:04
 17 releases that we have discussed today? 12:09
 18 MR. CUNNINGHAM: Object to form. 12:03
 19 THE WITNESS: Do you mean because their 12:08
 20 company submitted -- they took language from 12:01
 21 a different document and put it in there? 12:03
 22 Q (BY MR. BECKER) I mean, does ASHRAE believe 12:06
 23 that it owns the copyright in contributions to 12:08
 24 Standard 90.1 or to the 1993 ASHRAE handbook by virtue 12:05
 25 of any copyright assignments or releases, other than 12:00
 Page 92

1 those that we have discussed today? 12:04
 2 A No. 12:08
 3 Q And does ASHRAE believe that it owns 12:09
 4 copyright in contributions to Standards 90.1 or to the 12:02
 5 1993 handbook by virtue of any other means, other than 12:06
 6 those copyright releases that we have discussed today? 12:01
 7 A No. 12:05
 8 MR. CUNNINGHAM: I'm going to object 12:08
 9 insofar as the last few questions called for 12:09
 10 legal conclusions. 12:01
 11 MR. BECKER: I think that we can stop 12:01
 12 for lunch here, if that works for the rest of 12:03
 13 you. 12:05
 14 THE VIDEOGRAPHER: Going off the record 12:06
 15 at 12:01. 12:07
 16 (Lunch recess.) 13:04
 17 (Exhibit 1155 marked for identification.) 13:05
 18 THE VIDEOGRAPHER: Going on the record 13:02
 19 at 13:03. 13:03
 20 Q (BY MR. BECKER) Ms. Reiniche, we're back on 13:03
 21 the record now. 13:05
 22 Did you have anything that you had remembered 13:06
 23 or wanted to add to prior testimony today? 13:09
 24 A No. 13:03
 25 Q Thank you. 13:04
 Page 93

<p>1 Now, Ms. Reiniche, I'm handing you what's 13:05 2 been marked as Exhibit 1155. It's Bates number 13:09 3 ASHRAE0001598. So, Ms. Reiniche, my sincere apologies. 13:07 4 I had missed this one last document that pertains to 13:04 5 the subject that we were discussing prior to lunch. 13:08 6 Can you tell me if you recognize this 13:02 7 document? 13:04 8 A Yes. 13:04 9 Q And can you tell me what this document is? 13:05 10 A This is an Application for Membership on 13:09 11 ASHRAE Standard or Guideline Project Committee. 13:01 12 Q And can you tell me if this document contains 13:03 13 a copyright assignment? 13:06 14 A Yes, under number 7. 13:08 15 Q Okay. And could you tell me if after seeing 13:09 16 this document if that changes any of your answers 13:01 17 earlier today? 13:05 18 A No, it does not. 13:05 19 Q Thank you. 13:07 20 Ms. Reiniche, could you walk me through at a 13:07 21 high level how ASHRAE standard -- standards are 13:00 22 created? 13:03 23 A Sure. So it starts with a title, purpose and 13:03 24 scope being submitted for consideration to be approved. 13:08 25 That would have been approved by the procedures, policy 13:03 Page 94</p>	<p>1 publication. If they need to make more changes, it 13:06 2 will go back to the public review process. 13:08 3 Q So in this process that you were describing, 13:01 4 it's the standards committee that would begin drafting 13:05 5 the document; is that correct? 13:08 6 A No. It's the project committee that drafts 13:09 7 the document. 13:01 8 Q And the process that you just described, is 13:01 9 that the process that's used for ASHRAE Standard 90.1? 13:06 10 A It would have when it was started. The 13:02 11 difference -- there's a little difference now because 13:04 12 it's on continuous maintenance. 13:06 13 Q And what -- what does that difference mean? 13:08 14 A The difference is the membership is on a 13:00 15 four-year rotating cycle, so one -- basically, roughly 13:04 16 one-third of the committee would roll off every four 13:08 17 years, so they're not -- everyone is not coming off at 13:01 18 the same time. And new members will be added, so 13:04 19 they're added continuously, typically once a year. 13:07 20 Then instead of the full draft going out, 13:02 21 their addenda are issued to go out for public review 13:07 22 and comment. They'd either come from stuff that has 13:00 23 been generated by the committee or through a continuous 13:03 24 maintenance change proposal. And then the rest of the 13:05 25 process would follow the same way. 13:07 Page 96</p>
<p>1 interpretation subcommittee, then forwarded to the 13:07 2 standards committee for approval. Depending on what 13:02 3 year, it would have had to go to tech council, but 13:06 4 always ends up at our board of directors to approve the 13:00 5 title, purpose and scope for a new standard project 13:03 6 committee or guideline. 13:07 7 Then after that, you would do a call for 13:09 8 members, people would submit the membership 13:02 9 applications, and then the committee chair would 13:05 10 recommend to the standards project liaison subcommittee 13:08 11 and standards committee their membership. 13:01 12 And then the committee would -- would begin 13:06 13 working on drafting the document. Then they would 13:00 14 approve it for public review. And then depending on 13:04 15 what type of committee, would dictate how much more 13:08 16 oversight. So standards project liaison subcommittee 13:03 17 or the SPLS liaison would -- would say it's okay to go 13:06 18 out for public review. It goes out for comment. 13:01 19 The committee reviews all the comments, 13:05 20 responds to all the commenters. And then the 13:07 21 commenters have to indicate their resolution status. 13:00 22 And then the committee needs to decide whether or not 13:03 23 changes need to be made to the standard -- to the 13:06 24 document based on the comments received, or if not -- 13:09 25 if not, it goes for -- they'll approve it for 13:02 Page 95</p>	<p>1 Q And the -- who drafts the title, purpose and 13:03 2 scope? 13:07 3 A The title, purpose and scope can be -- a new 13:02 4 one can be submitted by anyone. I could submit one; 13:05 5 you could submit one. The technical committee within 13:07 6 ASHRAE is usually how it's submitted. 13:01 7 Q And is the technical committee, are they 13:02 8 volunteers or are they employees of ASHRAE? 13:07 9 A Volunteers. 13:00 10 Q And the project committee as well is 13:01 11 volunteers, correct? 13:03 12 A That's correct. 13:04 13 Q How are ASHRAE employees involved in the 13:01 14 creation and maintenance of ASHRAE Standard 90.1? 13:05 15 A In the -- are you talking from now or are you 13:01 16 talking about when it was first started? 13:04 17 Q Let's -- let's go from when it first started 13:07 18 until now. 13:09 19 A So when the title, purpose and scope would 13:01 20 have been proposed, a staff member would -- would 13:03 21 review that to make sure it's in the correct format 13:05 22 and, if there is some questions, would actually send it 13:09 23 back to whoever had proposed it to make -- to correct 13:01 24 it or say if they're okay, if we met their intent, and 13:05 25 then send it forward to -- it probably when -- 19 -- 13:09 Page 97</p>

<p>1 Now, Ms. Reiniche, I'm handing you what's 13:05 2 been marked as Exhibit 1155. It's Bates number 13:09 3 ASHRAE0001598. So, Ms. Reiniche, my sincere apologies. 13:07 4 I had missed this one last document that pertains to 13:04 5 the subject that we were discussing prior to lunch. 13:08 6 Can you tell me if you recognize this 13:02 7 document? 13:04 8 A Yes. 13:04 9 Q And can you tell me what this document is? 13:05 10 A This is an Application for Membership on 13:09 11 ASHRAE Standard or Guideline Project Committee. 13:01 12 Q And can you tell me if this document contains 13:03 13 a copyright assignment? 13:06 14 A Yes, under number 7. 13:08 15 Q Okay. And could you tell me if after seeing 13:09 16 this document if that changes any of your answers 13:01 17 earlier today? 13:05 18 A No, it does not. 13:05 19 Q Thank you. 13:07 20 Ms. Reiniche, could you walk me through at a 13:07 21 high level how ASHRAE standard -- standards are 13:00 22 created? 13:03 23 A Sure. So it starts with a title, purpose and 13:03 24 scope being submitted for consideration to be approved. 13:08 25 That would have been approved by the procedures, policy 13:03 Page 94</p>	<p>1 publication. If they need to make more changes, it 13:06 2 will go back to the public review process. 13:08 3 Q So in this process that you were describing, 13:01 4 it's the standards committee that would begin drafting 13:05 5 the document; is that correct? 13:08 6 A No. It's the project committee that drafts 13:09 7 the document. 13:01 8 Q And the process that you just described, is 13:01 9 that the process that's used for ASHRAE Standard 90.1? 13:06 10 A It would have when it was started. The 13:02 11 difference -- there's a little difference now because 13:04 12 it's on continuous maintenance. 13:06 13 Q And what -- what does that difference mean? 13:08 14 A The difference is the membership is on a 13:00 15 four-year rotating cycle, so one -- basically, roughly 13:04 16 one-third of the committee would roll off every four 13:08 17 years, so they're not -- everyone is not coming off at 13:01 18 the same time. And new members will be added, so 13:04 19 they're added continuously, typically once a year. 13:07 20 Then instead of the full draft going out, 13:02 21 their addenda are issued to go out for public review 13:07 22 and comment. They'd either come from stuff that has 13:00 23 been generated by the committee or through a continuous 13:03 24 maintenance change proposal. And then the rest of the 13:05 25 process would follow the same way. 13:07 Page 96</p>
<p>1 interpretation subcommittee, then forwarded to the 13:07 2 standards committee for approval. Depending on what 13:02 3 year, it would have had to go to tech council, but 13:06 4 always ends up at our board of directors to approve the 13:00 5 title, purpose and scope for a new standard project 13:03 6 committee or guideline. 13:07 7 Then after that, you would do a call for 13:09 8 members, people would submit the membership 13:02 9 applications, and then the committee chair would 13:05 10 recommend to the standards project liaison subcommittee 13:08 11 and standards committee their membership. 13:01 12 And then the committee would -- would begin 13:06 13 working on drafting the document. Then they would 13:00 14 approve it for public review. And then depending on 13:04 15 what type of committee, would dictate how much more 13:08 16 oversight. So standards project liaison subcommittee 13:03 17 or the SPLS liaison would -- would say it's okay to go 13:06 18 out for public review. It goes out for comment. 13:01 19 The committee reviews all the comments, 13:05 20 responds to all the commenters. And then the 13:07 21 commenters have to indicate their resolution status. 13:00 22 And then the committee needs to decide whether or not 13:03 23 changes need to be made to the standard -- to the 13:06 24 document based on the comments received, or if not -- 13:09 25 if not, it goes for -- they'll approve it for 13:02 Page 95</p>	<p>1 Q And the -- who drafts the title, purpose and 13:03 2 scope? 13:07 3 A The title, purpose and scope can be -- a new 13:02 4 one can be submitted by anyone. I could submit one; 13:05 5 you could submit one. The technical committee within 13:07 6 ASHRAE is usually how it's submitted. 13:01 7 Q And is the technical committee, are they 13:02 8 volunteers or are they employees of ASHRAE? 13:07 9 A Volunteers. 13:00 10 Q And the project committee as well is 13:01 11 volunteers, correct? 13:03 12 A That's correct. 13:04 13 Q How are ASHRAE employees involved in the 13:01 14 creation and maintenance of ASHRAE Standard 90.1? 13:05 15 A In the -- are you talking from now or are you 13:01 16 talking about when it was first started? 13:04 17 Q Let's -- let's go from when it first started 13:07 18 until now. 13:09 19 A So when the title, purpose and scope would 13:01 20 have been proposed, a staff member would -- would 13:03 21 review that to make sure it's in the correct format 13:05 22 and, if there is some questions, would actually send it 13:09 23 back to whoever had proposed it to make -- to correct 13:01 24 it or say if they're okay, if we met their intent, and 13:05 25 then send it forward to -- it probably when -- 19 -- 13:09 Page 97</p>

1 90.1 was developed in, I think, 1975. They probably 13:05
 2 didn't have all the subcommittees that we have now, but 13:01
 3 would have went through the approving bodies up through 13:04
 4 the board that way. 13:07
 5 Q And would there have been a project committee 13:07
 6 as well for -- for the original 90.1? 13:09
 7 A Yes. 13:01
 8 Q And during that process, did staff members 13:09
 9 draft any of the text for 90.1? 13:15
 10 A From the beginning? 13:10
 11 Q Yeah. 13:12
 12 A Not unless they were making the edits to -- 13:13
 13 because of conformity and -- or conflicts or things 13:16
 14 like that. 13:19
 15 Q And would staff members have contributed any 13:12
 16 text to subsequent versions of 90.1? 13:18
 17 A In the same way, either in the discussions, 13:10
 18 if there's a conflict or stuff doesn't -- or through 13:13
 19 the editing and review of the material. 13:17
 20 Q And does ASHRAE have any record of that? 13:12
 21 A If it was done -- it would have been done via 13:17
 22 email, at the time email started. 90.1 started before 13:10
 23 the Internet, so if the -- if -- if the records still 13:15
 24 existed, it would have been in paper format. 13:10
 25 Q What is ASHRAE's purpose in creating these 13:11
 Page 98

1 standards? 13:14
 2 A It's to -- the purpose is to advance the 13:16
 3 building sciences. We have a long mission statement, 13:12
 4 but that's essentially what it is. 13:16
 5 Q Does ASHRAE's mission statement reflect its 13:15
 6 purposes in -- in developing these standards? 13:18
 7 A I would say yes. 13:13
 8 Q And how does ASHRAE advance the building 13:16
 9 sciences? 13:19
 10 A I would -- well, I would say through the 13:12
 11 development of the -- the standards that affect, you 13:15
 12 know, the energy efficiency of buildings, indoor air 13:18
 13 quality, indoor environmental quality. I'm sure 13:12
 14 there's other things that we create, courses and books 13:15
 15 that are outside the standards development process that 13:18
 16 we do as well. 13:11
 17 Q And why is it that individuals who are not 13:10
 18 employees of ASHRAE participate in the standard design 13:16
 19 process? 13:19
 20 MR. CUNNINGHAM: Object to form. 13:13
 21 THE WITNESS: I would say because for 13:14
 22 various reasons it could affect their 13:18
 23 company. Maybe they want to make the world a 13:10
 24 better place, maybe it affects the codes. It 13:13
 25 varies. It depends on the individuals. 13:16
 Page 99

1 Q (BY MR. BECKER) And by "the codes," are you 13:18
 2 referring to the standards that have been enacted into 13:19
 3 regulation? 13:14
 4 A That and -- and the international codes, the 13:14
 5 codes spelled by NFPA, IAPMO. 13:19
 6 Q Are there any other reasons why -- why 13:13
 7 individuals who are not employees of ASHRAE participate 13:16
 8 in the ASHRAE development -- standard development 13:19
 9 process? 13:13
 10 MR. CUNNINGHAM: Object to form. 13:14
 11 THE WITNESS: I'm sure there are. I 13:15
 12 just -- that's not a question I ask when 13:16
 13 people apply for membership. 13:19
 14 Q (BY MR. BECKER) Does ASHRAE draw -- draft 13:11
 15 model laws or ordinances? 13:14
 16 A Where we would start with the drafting for 13:16
 17 the law, is that what you mean? 13:11
 18 Q Does ASHRAE oversee the drafting of model 13:12
 19 laws and ordinances? 13:16
 20 A We submit comments on things that are coming 13:18
 21 out through -- through -- through the -- through 13:10
 22 Congress or that have been posted in the Federal 13:12
 23 Register; things like that. 13:15
 24 Q And what's the purpose of submitting comments 13:16
 25 in -- for things that are coming out in legislation and 13:19
 Page 100

1 regulation as you're describing? 13:11
 2 A The purpose is to -- to -- typically, you 13:14
 3 want stuff that's been done through consensus process 13:19
 4 and has the expertise, so that may be a reason. 13:13
 5 Another reason may be to make it consistent language 13:17
 6 with what's already out there in our standards or 13:10
 7 others; that type of thing. 13:14
 8 Q When you say "you want stuff that's been done 13:15
 9 through the consensus process," who is "you" in that 13:10
 10 sentence? 13:14
 11 A ASHRAE. 13:15
 12 Q ASHRAE. Okay. 13:15
 13 And why is it that ASHRAE wants things that 13:18
 14 have been done through the consensus process? 13:11
 15 A Because the -- the proper experts are 13:14
 16 participating in the development of those documents, 13:17
 17 it's -- it's been vetted in the industry, people have 13:10
 18 had a chance to comment. We've tried to reach 13:13
 19 resolution so, you know, an equal amount of people are 13:17
 20 unhappy. 13:10
 21 Q And you referred to an interest in expertise 13:14
 22 in the process of drafting legislation and regulation. 13:18
 23 Does that also reflect ASHRAE's interest in -- in 13:13
 24 having expertise reflected in that process? 13:17
 25 MR. CUNNINGHAM: Object to the form. 13:19
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1 THE WITNESS: I'm not sure what you 13:11
 2 mean. 13:12
 3 Q (BY MR. BECKER) Okay. Just a moment ago, 13:13
 4 you said the purpose is to -- "typically, you want 13:16
 5 stuff that's been done through consensus process and 13:10
 6 has the expertise, so that may be a reason." So what 13:13
 7 did you mean by "has expertise" there? 13:18
 8 A So if you're writing, for example, something 13:12
 9 on how to create a widget, you want the people that 13:14
 10 know how to create a widget, the information coming 13:18
 11 from that versus someone who has -- in legislation may 13:11
 12 have a marketing degree that doesn't understand how to 13:16
 13 create that widget. 13:18
 14 Q And so for air-conditioning or heating, you 13:19
 15 would want somebody who has expertise in that area, 13:13
 16 rather than necessarily a legislator or a regulator who 13:17
 17 doesn't have expertise in that area; is that correct? 13:11
 18 A We would want the information to come through 13:15
 19 stuff that had been done by the expert to be reflected, 13:17
 20 that would be correct. 13:11
 21 Q And why is that important to have it come 13:12
 22 from an expert? 13:14
 23 A Because they're the ones that understand how 13:15
 24 to make that product or how to construct that building 13:17
 25 or how to make something more energy efficient; that 13:10
 Page 102

1 type of thing. 13:13
 2 Q Is there technical expertise that's necessary 13:14
 3 in order to understand that subject? 13:17
 4 MR. CUNNINGHAM: Object to the form. 13:19
 5 THE WITNESS: It depends on what you're 13:15
 6 writing. But I don't think you can do it 13:16
 7 just with -- just looking at something. You 13:19
 8 have to have some knowledge. 13:12
 9 Q (BY MR. BECKER) So for -- to make it 13:13
 10 concrete for Standard 90.1, is that a standard that 13:15
 11 would require technical expertise in order to know what 13:19
 12 its contents were and what should be enacted into law? 13:16
 13 MR. CUNNINGHAM: Object to the form. 13:19
 14 THE WITNESS: You need to understand 13:12
 15 how -- all of 90.1. It does help to have 13:15
 16 technical expertise in engineering. Whether 13:18
 17 or not something needs -- the technical 13:11
 18 expertise is needed to go into the law, I 13:13
 19 would still venture on the side of yes. 13:17
 20 Q (BY MR. BECKER) How does one identify a 13:10
 21 particular ASHRAE standard? Is there -- is there a 13:14
 22 particular naming convention that ASHRAE uses for its 13:19
 23 standards? 13:11
 24 A Each has a number, and so it's just 13:13
 25 sequential in number; whatever number we are last at is 13:16
 Page 103

1 the next number for a standard. There are a couple 13:19
 2 when they're tied together; for example, 90.1 has a 13:19
 3 90.2 and a 90.4, because they cover -- it's energy 13:19
 4 efficiency, but they cover a certain building type. 13:19
 5 Q And when referring to these standards, if 13:19
 6 they were referred to in, say, regulation, would it 13:19
 7 need to say ASHRAE 90.1 or could the regulation simply 13:19
 8 say 90.1 and would people know what that was referring 13:19
 9 to? 13:19
 10 MR. CUNNINGHAM: Object to the form. 13:19
 11 MR. FEE: Same objection. 13:19
 12 THE WITNESS: If you're within ASHRAE, 13:19
 13 you will know ASHRAE 90.1. If you just said 13:19
 14 90.1, I would probably want you to say 13:19
 15 ANSI/ASHRAE Standard 90.1 and the year, so 13:19
 16 you know which document they're talking 13:19
 17 about. 13:19
 18 Q (BY MR. BECKER) Would that be the correct 13:19
 19 way to cite the ASHRAE 90.1 standard? 13:19
 20 MR. FEE: Objection, form. 13:20
 21 THE WITNESS: I would include the title. 13:20
 22 The first reference you make as well still 13:20
 23 makes it clear. 13:20
 24 Q (BY MR. BECKER) Yeah. So people should say 13:20
 25 ANSI/ASHRAE Standard 90.1? 13:20
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1 MR. FEE: Same objection. 13:20
 2 THE WITNESS: They should say 13:20
 3 ANSI/ASHRAE Standard 90.1, energy efficiency 13:20
 4 for -- oh, I just lost the blank -- my -- for 13:20
 5 buildings -- not -- except for residential 13:20
 6 buildings or something. 13:20
 7 Q (BY MR. BECKER) Thank you. 13:20
 8 Referring back to Exhibit 1155, on the back 13:21
 9 of that exhibit, Bates number ASHRAE0001599, it refers 13:21
 10 to interest categories; is that correct? 13:21
 11 A That's correct. 13:21
 12 Q And it has a -- an interest category that 13:22
 13 includes user; is that correct? 13:22
 14 A That's correct. 13:22
 15 Q And within the user interest category is a 13:22
 16 subcategory for a user government; is that correct? 13:22
 17 A That's correct. 13:22
 18 Q And that's for a representative of a 13:22
 19 government agency; is that correct? 13:22
 20 A That would be correct. 13:22
 21 Q And this document by the -- the date on the 13:22
 22 bottom left-hand corner, does that mean that this 13:22
 23 document was last revised on March 5th, 2001? 13:22
 24 A Yes. 13:22
 25 Q Thank you. 13:22
 Page 105

1 And if you refer to Exhibit 1151, please. 13:22
 2 A Okay. 13:23
 3 Q This also has, under section 5, a listing of 13:23
 4 check boxes for interest categories; is that correct? 13:23
 5 A That's correct. 13:23
 6 Q And for SSPC 90.1, those categories include 13:23
 7 compliance, designer, general interest, industry, user 13:23
 8 and utility; is that correct? 13:23
 9 A That's correct. 13:23
 10 Q And if you turn to the next page, Bates 13:23
 11 number ASHRAE0001614, that includes a -- the 13:23
 12 definitions of these interest categories; is that 13:23
 13 correct? 13:23
 14 A That's correct. 13:23
 15 Q And for compliance, would that category 13:23
 16 include regulators? 13:23
 17 A If you -- if you include them as federal 13:24
 18 officials, then yes. 13:24
 19 Q And who makes the determination for these 13:24
 20 particular interest categories? 13:24
 21 A Do you mean who decides which interest 13:24
 22 category a person belongs in? 13:24
 23 Q Yes. 13:24
 24 A The applicant suggests which interest 13:24
 25 category they belong in, then the chair of the -- of 13:24
 Page 106

1 the project committee will review that information, 13:23
 2 look at all their applicable paperwork, and then decide 13:26
 3 if that's correct. 13:29
 4 They may say no and put them in a different 13:21
 5 interest category. And then SPLS will look at that 13:24
 6 recommendation, and they could look at the same 13:20
 7 paperwork and determine that they're still not in the 13:22
 8 correct interest category and move them into a 13:26
 9 different one. 13:28
 10 Q And so has it happened that people have been 13:28
 11 moved from one interest category to a different one? 13:20
 12 A Yes. 13:27
 13 (Exhibit 1156 and Exhibit 1157 marked for 13:28
 14 identification.) 13:21
 15 Q (BY MR. BECKER) I'd like to hand you what's 13:21
 16 been marked as 1 -- Exhibits 1156 and Exhibits 1157. 13:23
 17 Exhibit 1156 is Bates number ASHRAE0026227. And then 13:27
 18 Exhibit 1157 is Bates number ASHRAE0026229. 13:23
 19 Do you recognize these documents, 13:24
 20 Ms. Reiniche? 13:26
 21 A Yes. 13:27
 22 Q And could you tell me what these documents 13:21
 23 are? 13:23
 24 A Document 1156 is an email conversation 13:26
 25 regarding a meeting that's -- that was going to occur 13:21
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1 with the Department of Energy with senior leadership 13:24
 2 within ASHRAE. 13:29
 3 And document 1157 appears to be a draft, 13:22
 4 because -- since it's not signed, I can't say it's the 13:21
 5 official one, but a Draft Memorandum of Understanding 13:24
 6 Between the Department of Energy and ASHRAE. 13:27
 7 Q And does it appear to you that this draft, 13:22
 8 the Exhibit 1157, was the attachment to Exhibit 1156? 13:20
 9 A Well, I would say it probably is the exhibit, 13:20
 10 but since the document doesn't have a -- a thing that 13:24
 11 says DOEMOU.doc on it, I would have to assume that it 13:29
 12 is the same one. 13:25
 13 Q I'll -- I'll represent that -- that it is 13:25
 14 the -- the attachment. 13:27
 15 Could you tell me what -- what is the purpose 13:22
 16 of the Department of Energy Memorandum of Understanding 13:24
 17 with ASHRAE? 13:20
 18 A Its -- its basic purpose is to talk about 13:21
 19 ways that we're going to work together or towards 13:24
 20 goals. 13:28
 21 Q And does ASHRAE have a history of working 13:25
 22 together with the Department of Energy? 13:27
 23 A Yes. 13:21
 24 Q How long has ASHRAE been working with the 13:21
 25 Department of Energy? 13:27
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1 MR. CUNNINGHAM: Object to the form. 13:22
 2 THE WITNESS: I would probably say since 13:22
 3 at least 90.1 has been as part of -- adopted 13:24
 4 into EPAAct as the minimum energy efficiency 13:26
 5 for commercial buildings. 13:21
 6 Q (BY MR. BECKER) Do you have any idea when -- 13:23
 7 approximately when that would have been? 13:24
 8 A I would -- I want to say '99, but I'm -- I 13:32
 9 need to check. 13:36
 10 Q What's the -- the -- what -- what is the 13:38
 11 purpose of ASHRAE's work with the Department of Energy? 13:33
 12 MR. CUNNINGHAM: Object to the form. 13:32
 13 THE WITNESS: To -- to advance the 13:38
 14 mission of ASHRAE, which is, you know, 13:30
 15 advance the art of building sciences. 13:32
 16 Q (BY MR. BECKER) And for -- for Exhibit 13:37
 17 ASHRAE -- excuse me, Exhibit 1156, you're listed among 13:39
 18 the recipients for this email; is that correct? 13:34
 19 A That's correct. 13:38
 20 Q And you're listed among the recipients for 13:39
 21 the -- the email that's further down in the chain in -- 13:32
 22 on that exhibit; is that correct? 13:38
 23 A That's correct. 13:39
 24 Q On Exhibit 1157, section 2, it refers to 13:38
 25 promoting and supporting implementation of ASHRAE 13:34
 Page 109

1 standards through training programs, including 13:37
 2 self-directed learning, building code interaction and 13:30
 3 ASHRAE chapter oriented training. 13:33
 4 What is the Department of Energy's role in 13:36
 5 that? 13:38
 6 A They -- Department of Energy provides 13:39
 7 training not only ASHRAE, but other code bodies' codes, 13:33
 8 so it would be supported through software development, 13:30
 9 maybe at the DOE level, they give trainings on what's 13:35
 10 in 90.1; things like that. 13:30
 11 Q Does the Department of Energy provide funding 13:33
 12 to ASHRAE? 13:37
 13 A No. 13:37
 14 Q Does the Department of Energy provide any 13:30
 15 funds to ASHRAE? 13:34
 16 A I suppose if someone is a -- a member and the 13:38
 17 Department of Energy pays their membership fees to 13:32
 18 ASHRAE to be a member of ASHRAE, then yes, but it goes 13:34
 19 to membership. 13:37
 20 Q On the second page of Exhibit 1157, 13:36
 21 subsection 5 says, "Cooperating in promoting of 13:32
 22 ANSI/ASHRAE standards adoption in the International 13:36
 23 Standards Organization (ISO) standards." 13:39
 24 What is that referring to? 13:32
 25 A That must have been -- that would have been a 13:35
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1 new thing added. The Department of Energy hasn't done 13:37
 2 anything that I'm aware of to promote the adoption of 13:30
 3 ASHRAE -- ANSI/ASHRAE standards in ISO. 13:32
 4 Q And for section 8, where it refers to 13:38
 5 "Cooperating and promotion of ANSI/ASHRAE standards 13:30
 6 adoption in building codes," what does that refer to? 13:36
 7 A That could be supporting proposals that would 13:33
 8 have been submitted to adopt 90.1 in -- in the 13:39
 9 international code, because that's the federal minimum, 13:33
 10 and they would have provided supporting testimony, 13:37
 11 probably. 13:30
 12 Q When you say "they would have provided 13:31
 13 supporting testimony, probably," is that the Department 13:33
 14 of Energy that would provide that? 13:36
 15 A A -- a staff member from the Department of 13:37
 16 Energy. 13:30
 17 Q Okay. Are there any other ways that ASHRAE, 13:31
 18 ANSI and the Department of Energy have cooperated in 13:39
 19 promoting these standards adoption in building codes? 13:33
 20 A I'm not aware of ANSI promoting standards 13:30
 21 adoption in building codes, other than -- it's an 13:34
 22 ANSI/ASHRAE standard going through their process. They 13:39
 23 don't go to building codes. I can't think of anything 13:31
 24 else with the Department of Energy. 13:36
 25 Q Anything else with regards to just ASHRAE and 13:38
 Page 111

1 the Department of Energy? 13:31
 2 A No. 13:32
 3 Q And section 10 refers to "Advancing and 13:34
 4 supporting the professional development of DOE 13:36
 5 personnel by facilitating membership, attendance, and 13:39
 6 active participation at the local and society levels of 13:33
 7 ASHRAE, especially as a member of technical committees 13:37
 8 and standard project committees, and by providing a 13:30
 9 venue for publication of research and practice." 13:33
 10 What kind of publication is this referring 13:36
 11 to? 13:37
 12 A They're talking about research publication. 13:31
 13 If the DOE does research, they're publishing it 13:34
 14 somewhere. It's not referring to standards. 13:37
 15 Q Does ASHRAE publish DOE research? 13:30
 16 A Not that I'm aware of. 13:36
 17 Q With regards to section 13, do you know what 13:32
 18 they are referring to with regards to counter-terrorism 13:38
 19 design features? 13:35
 20 A No. 13:30
 21 Q Do you know what -- under -- under section 13:34
 22 14, the DOE Energy Efficient Building Systems Regional 13:38
 23 Innovation Cluster Initiative is? 13:35
 24 A I don't think that exists anymore, but 13:30
 25 there's been a collaborative where they've worked 13:32
 Page 112

1 together, and they just -- they talk about research and 13:34
 2 things like that. 13:37
 3 Q Was the Memorandum of Understanding Between 13:31
 4 the DOE and ASHRAE, Exhibit 1157, eventually signed by 13:34
 5 both ASHRAE and the Department of Energy? 13:34
 6 A I need to go back and check to see if it was 13:37
 7 signed. 13:30
 8 Q How would you characterize the relationship 13:32
 9 between the Department of Energy and ASHRAE? 13:34
 10 A I mean, they work -- we work together. 13:32
 11 That's probably on -- not all -- not all of these 13:35
 12 projects, but I mean some things. 13:30
 13 Q You mentioned that someone from the 13:30
 14 Department of Energy would testify on behalf of ASHRAE 13:33
 15 in terms of getting the Standard 90.1 adopted as a 13:38
 16 building code. How does ASHRAE benefit from having 13:38
 17 90.1 endorsed by the DOE? 13:32
 18 MR. CUNNINGHAM: Object to the 13:35
 19 characterization of prior testimony. 13:36
 20 THE WITNESS: They don't testify on 13:30
 21 behalf of ASHRAE. They testify on behalf of 13:31
 22 the Department of Energy. 13:34
 23 Q (BY MR. BECKER) Excuse me. 13:35
 24 A So the benefit is then the IECC and 90.1 can 13:36
 25 be the same. So it's a -- it's the benefit to having 13:35
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<p>1 a -- one code. 13:39</p> <p>2 Q And are the IECC and Standard 90.1 the same? 13:32</p> <p>3 A They are not exactly the same. 13:36</p> <p>4 Q And how do they differ? 13:39</p> <p>5 A I would have to look at the versions and the 13:32</p> <p>6 comparisons. In some instances, 90.1 would be more 13:35</p> <p>7 stringent; in other, IECC. 13:30</p> <p>8 Q On balance, would you characterize the IECC 13:30</p> <p>9 as being more stringent than ASHRAE 90.1 or vice versa? 13:34</p> <p>10 A They have a different process. The IECC, 13:41</p> <p>11 while it's a consensus process, is not an ANSI 13:45</p> <p>12 consensus process, so it's comparing apples to oranges. 13:49</p> <p>13 Q What does ASHRAE do to educate governments 13:46</p> <p>14 and government officials about its work? 13:49</p> <p>15 A It has a staff person and/or leadership talk 13:42</p> <p>16 to the staff on the hill about what our process is, 13:49</p> <p>17 what standards we have, certification programs, classes 13:44</p> <p>18 and things like that. 13:44</p> <p>19 Q And are there particular staff people who 13:45</p> <p>20 talk to staff members on the hill? 13:47</p> <p>21 A Yes. 13:40</p> <p>22 Q And what individuals are these? 13:41</p> <p>23 A Mark Ames and Doug Read. And Jeff Littleton 13:45</p> <p>24 might talk to some, too. 13:49</p> <p>25 Q And you say ASHRAE has leadership that talks 13:49</p> <p style="text-align: right;">Page 114</p>	<p>1 within ASHRAE? 13:43</p> <p>2 A Yes. 13:43</p> <p>3 Q And is that located in Washington, D.C.? 13:43</p> <p>4 A Yes. 13:43</p> <p>5 Q And what is -- why is it that ASHRAE has a 13:43</p> <p>6 separate department for government affairs that's 13:44</p> <p>7 located in Washington, D.C.? 13:44</p> <p>8 A So they can -- it's easier to talk to people 13:44</p> <p>9 on the hill. It's been there as long as I've been 13:44</p> <p>10 there. 13:44</p> <p>11 MR. BECKER: All right. Let's take a 13:44</p> <p>12 break. 13:44</p> <p>13 THE VIDEOGRAPHER: Going off the record 13:44</p> <p>14 at 13:44. 13:44</p> <p>15 (Recess taken.) 13:53</p> <p>16 THE VIDEOGRAPHER: Going on the record 13:56</p> <p>17 at 13:56. 13:56</p> <p>18 Q (BY MR. BECKER) Ms. Reiniche, are you aware 13:56</p> <p>19 if DOE employees are on the 90.1 policy committee? 13:56</p> <p>20 A 90.1 policy committee? You mean on the 13:56</p> <p>21 project committee? 13:56</p> <p>22 Q Project committee, excuse me. 13:56</p> <p>23 A Yes. 13:56</p> <p>24 Q They are? 13:56</p> <p>25 A There is a staff person on there, yes. 13:56</p> <p style="text-align: right;">Page 116</p>
<p>1 to staff on the hill. Is that Jeff Littleton? 13:42</p> <p>2 A The -- it -- it could be Jeff, it could be 13:45</p> <p>3 whoever is the president for that given -- given 13:40</p> <p>4 society year or vice president that society year. It 13:43</p> <p>5 depends on the year, it depends on who they're talking 13:47</p> <p>6 to. 13:42</p> <p>7 Q And what are Mr. Ames' and Mr. Read's 13:42</p> <p>8 positions at ASHRAE? 13:47</p> <p>9 A Well, Mr. -- Mark's title is senior manager 13:49</p> <p>10 of government affairs. Doug's title was director. He 13:46</p> <p>11 has retired. 13:43</p> <p>12 Q And was -- was Doug's -- Doug Read's title 13:46</p> <p>13 just director or director of government affairs? 13:49</p> <p>14 A Director of government affairs. 13:42</p> <p>15 Q Are there other employees of ASHRAE who work 13:48</p> <p>16 with -- or who did work with Mr. Ames and Mr. Read on 13:43</p> <p>17 government affairs? 13:48</p> <p>18 A They have a secretary -- or an administrative 13:41</p> <p>19 assistant that works there. She doesn't talk to people 13:46</p> <p>20 on the hill. And they have a new person there, Jim 13:48</p> <p>21 Scarborough. He deals with local. 13:42</p> <p>22 Q Is that a local government that he works -- 13:40</p> <p>23 deals with? 13:43</p> <p>24 A Yeah, the grassroots chapters within ASHRAE. 13:44</p> <p>25 Q So is government affairs its own department 13:49</p> <p style="text-align: right;">Page 115</p>	<p>1 Q And have DOE employees been on the 90.1 13:53</p> <p>2 project committee -- committee in the past? 13:57</p> <p>3 A Yes. 13:59</p> <p>4 Q Okay. And so DOE employees provide -- they 13:50</p> <p>5 contribute to the development of 90.1; is that correct? 13:50</p> <p>6 MR. FEE: Objection to form. 13:54</p> <p>7 THE WITNESS: They participate in the 13:55</p> <p>8 process. I'm not aware of any draft 13:57</p> <p>9 language. 13:50</p> <p>10 (Exhibit 1158 marked for identification.) 13:51</p> <p>11 Q (BY MR. BECKER) Ms. Reiniche, I'm handing 13:52</p> <p>12 you what's been marked as Exhibit 1158. This is a 13:53</p> <p>13 document with Bates number ASHRAE0005856. It's labeled 13:50</p> <p>14 "Marketing Task Force Report." 13:58</p> <p>15 A Okay. 13:50</p> <p>16 Q Are you familiar with this document, 13:53</p> <p>17 Ms. Reiniche? 13:55</p> <p>18 A Yes. 13:59</p> <p>19 Q Could you tell me what this document is? 13:50</p> <p>20 A This is a document that would have been 13:53</p> <p>21 presented to the project committee on priorities -- on 13:54</p> <p>22 trying to get things out in the marketplace. 13:56</p> <p>23 Q And could you tell me what -- do you know 13:53</p> <p>24 what Chris Mathis's position is at ASHRAE? 13:56</p> <p>25 A He is not a staff member at ASHRAE. 13:50</p> <p style="text-align: right;">Page 117</p>

1 what portion of 90.1 it was commented on or, you know, 14:11
 2 how it was developed, that type of thing. 14:16
 3 Q And then two pages later on ASHRAE0003506, it 14:14
 4 then has "Recommendations," and then parentheses 14:10
 5 "repeated." And the first three recommendations are 14:14
 6 "Make it free, make it beautiful, and make it 14:17
 7 electronic." 14:10
 8 Do you understand this as referring to ASHRAE 14:15
 9 90.1? 14:17
 10 A Yes. 14:17
 11 Q Three pages later on ASHRAE0003509, it says, 14:17
 12 "Paradigm Shift Issues." And then it says, "Decide if 14:15
 13 we want to continue to live in this code minimum 14:19
 14 world." And "code minimum" is underlined. 14:12
 15 Do you know what this is referring to with 14:16
 16 the term "code minimum world"? 14:18
 17 A That means, you know, a minimum level for 14:15
 18 your -- the development of -- in 90.1, energy 14:17
 19 efficiency, or do you want to go beyond the code. 14:12
 20 Q I'm sorry, what do you mean by "go beyond the 14:14
 21 code"? 14:17
 22 A Maybe towards the -- towards the development 14:18
 23 of green standards or green codes. 14:10
 24 Q And how do green standards and green codes 14:14
 25 differ from Standard 90.1? 14:16
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1 A Green codes and green standards typically are 14:14
 2 not cost -- cost -- cost justified, where you can 14:16
 3 propose doing some technology -- technological thing 14:12
 4 that's expensive that, you know, a normal building 14:16
 5 person wouldn't want to put -- you know, building owner 14:11
 6 wouldn't want to put in their building versus a 14:14
 7 minimum, which is not only is it energy efficient, but 14:18
 8 it's cost -- cost effective. 14:11
 9 THE COURT REPORTER: A building owner 14:12
 10 would want to put in their building? 14:13
 11 THE WITNESS: Would not want to put in 14:17
 12 their building. 14:17
 13 Q (BY MR. BECKER) At the bottom of that page, 14:17
 14 it says, "How long will we have our EPAAct advantage?" 14:18
 15 What is ASHRAE's EPAAct advantage? 14:12
 16 A That were referenced in the EPAAct over 14:17
 17 another minimum energy efficient commercial building 14:12
 18 code. 14:15
 19 (Exhibit 1160 marked for identification.) 14:13
 20 Q (BY MR. BECKER) I'm handing you what's been 14:13
 21 marked as Exhibit 1160. This is Bates number 14:14
 22 ASHRAE0025561. 14:10
 23 A Okay. 14:15
 24 Q Do you recognize this document, Ms. Reiniche? 14:10
 25 A Yes. 14:16
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1 Q And is that -- are you one of the recipients 14:12
 2 of this email? 14:17
 3 A Yes. 14:19
 4 Q And what is this email? 14:14
 5 A This is an email on having a discussion about 14:16
 6 DOE comparing the IECC and 90.1 as equivalent. 14:14
 7 Q At the bottom of -- near the bottom of the 14:18
 8 page, Ryan Colker writes, "Folks, we are seeing some 14:13
 9 indications from DOE that they are beginning to see the 14:18
 10 IECC and 90.1 as equivalent (i.e., states can be in 14:11
 11 compliance if they adopt the IECC without the reference 14:11
 12 to 90.1.) As you can guess, this could have 14:14
 13 significant impact on the future of 90.1." 14:10
 14 What did Mr. Colker mean by that? 14:17
 15 MR. CUNNINGHAM: Object to form. 14:10
 16 THE WITNESS: That he's concerned that 14:13
 17 if it's found to be equivalent, that it could 14:17
 18 mean that the IECC would be referenced in 14:19
 19 EPAAct instead of 90.1. 14:13
 20 Q (BY MR. BECKER) And who is Ryan Colker? 14:17
 21 A Well, at that time, he was the manager of 14:16
 22 government affairs for ASHRAE. 14:18
 23 Q Do you know if Mr. Colker is still at ASHRAE? 14:17
 24 A He is not. 14:20
 25 Q Do you know when he left ASHRAE? 14:20
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1 A I want to say sometime in 2010. 14:25
 2 Q And Doug Read responded to Ryan Colker by 14:25
 3 saying, "I echo Ryan's concern. I suggest we take a 14:21
 4 stance and clearly delineate the differences and 14:25
 5 differentiate ourselves from the ICEC. Doug." 14:28
 6 Did -- do you think that Mr. Read meant the 14:25
 7 IECC? 14:28
 8 A Yes. 14:20
 9 Q And has ASHRAE taken a stance and clearly 14:22
 10 delineated the differences between ASHRAE Standard 90.1 14:28
 11 and the IECC? 14:24
 12 A We have not done a comparison between the two 14:27
 13 line for line, no. 14:23
 14 Q Was that what ASHRAE was considering doing, 14:26
 15 was doing a line-for-line comparison between the IECC 14:29
 16 and ASHRAE Standard 90.1? 14:25
 17 A They discussed it. 14:27
 18 Q Has ASHRAE done anything else to 14:20
 19 differentiate Standard 90.1 from the IECC in the minds 14:25
 20 of the public? 14:22
 21 MR. CUNNINGHAM: Object to the form. 14:24
 22 THE WITNESS: I am not aware we've done 14:28
 23 anything in the eyes of the public. We've 14:21
 24 probably had discussions where we pointed out 14:23
 25 the difference between the processes that are 14:27
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1 used to develop the two documents, but it's 14:29
 2 not been, like, you know, a press release or 14:21
 3 something like that. 14:25
 4 Q (BY MR. BECKER) Was ASHRAE concerned that if 14:28
 5 the IECC and ASHRAE's Standard 90.1 were seen as 14:20
 6 equivalent, it would mean that there would be less 14:25
 7 incorporation of standard -- ASHRAE Standard 90.1 into 14:20
 8 laws and regulations throughout the United States? 14:26
 9 A It would depend on if the EPAct changed. 14:23
 10 If -- if the reference changed. That's possible. 14:26
 11 Q Would that mean that if -- if the EPAct 14:20
 12 changed -- 14:23
 13 A If the reference in the EPAct was changed 14:23
 14 from 90.1 to the IECC. 14:26
 15 Q Then that would mean there would be less 14:22
 16 adoption of Standard 90.1 into the laws and regulations 14:25
 17 of jurisdictions in the United States? 14:20
 18 A It's possible, yes. 14:24
 19 Q And was ASHRAE concerned about that? 14:26
 20 A If -- if that changed, they were. They were 14:23
 21 concerned if it changed, yes. 14:29
 22 Q Did it change? 14:21
 23 A No. 14:23
 24 Q Did the DOE ever publicly weigh the option of 14:22
 25 changing the EPAct to IECC instead of ASHRAE 90.1? 14:22
 Page 130

1 A Not that I'm aware of, there hasn't been 14:22
 2 anything published where they were going to do that 14:25
 3 (Exhibit 1161 marked for identification) 14:21
 4 Q (BY MR BECKER) Ms Reiniche, I'm handing 14:29
 5 you what's been marked as Exhibit 1161 This is Bates 14:20
 6 number ASHRAE0005677 Do you recognize this document? 14:25
 7 A Yes 14:29
 8 Q Could you tell me what this document is? 14:24
 9 A This is a presentation given by Stephen 14:27
 10 Skalko, who is the chair of 90 1, at a conference on 14:21
 11 energy codes 2010 14:27
 12 THE COURT REPORTER: Say that again 14:27
 13 "Who is the chair of 90 1," and -- 14:27
 14 THE WITNESS: It's at -- given at an 14:27
 15 energy codes conference in 2010 at -- in 14:24
 16 Charlotte, North Carolina 14:28
 17 Q (BY MR BECKER) On page 3 of this document, 14:23
 18 Bates number ASHRAE0005679, it says at the top, 14:29
 19 "Standard 90 1 Timeline," and it delineates between the 14:25
 20 growing period from 1970 to 1999, and then the maturity 14:22
 21 period from 1999 to 2010 What does that mean? 14:20
 22 MR CUNNINGHAM: Object to the form 14:22
 23 Matt, do we know if the Steven person, do we 14:23
 24 know if he's an ASHRAE staff member? Do 14:28
 25 we -- was that asked at any point? 14:21
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1 MR. BECKER: It has not been asked. 14:27
 2 MR. CUNNINGHAM: Okay. I -- are you -- 14:27
 3 is your position here that someone who, by 14:27
 4 virtue of being on one of the committees, 14:27
 5 essentially speaks for ASHRAE, such that you 14:27
 6 can ask Ms. Reiniche to interpret their -- 14:27
 7 their documents? 14:27
 8 MR. BECKER: Well, if Ms. Reiniche has 14:27
 9 an understanding of what this might mean, 14:27
 10 particularly because of her senior role with 14:27
 11 regards to the development of these standards 14:27
 12 and so forth, then I would hope that 14:28
 13 Ms. Reiniche can provide that information. 14:28
 14 I think that a document such as this 14:28
 15 discussing ASHRAE 90.1 2010 falls well within 14:28
 16 topic number 1 that she's been designated on. 14:28
 17 Q (BY MR. BECKER) I'm sorry, Ms. Reiniche. 14:28
 18 Let's see. I asked why do you think there was a 14:28
 19 distinction between this growing period and mature -- 14:28
 20 maturity period for Standard 90.1? 14:28
 21 MR. CUNNINGHAM: Same objection. 14:28
 22 THE WITNESS: I think because the 14:29
 23 growing period, there's one time frame where 14:29
 24 I think they pulled residential out. I think 14:29
 25 at one time it included residential. It does 14:29
 Page 132

1 not include low-rise residential. 1999 would 14:23
 2 have been when we started continuous 14:28
 3 maintenance. 14:21
 4 Without seeing Mr. Skalko's notes on 14:23
 5 this, but based on my knowledge, I think that 14:26
 6 these periods are times that -- in the 14:29
 7 maturity period shows greater energy savings, 14:23
 8 and that's what he's trying to demonstrate in 14:27
 9 that timeline. 14:20
 10 Q (BY MR. BECKER) Do you know who Mr. Steven 14:21
 11 V. Skalko is? 14:23
 12 A Yes. 14:25
 13 Q And who is he? 14:25
 14 A He is the past chair of 90.1. I think he 14:26
 15 started after the 2010 version published. 14:23
 16 Q And do you have any idea how long Mr. Skalko 14:32
 17 has been a member of ASHRAE? 14:30
 18 A I would have to look in the ASHRAE records, 14:32
 19 but he's been a member longer than I've been there, so 14:35
 20 over 11 years. 14:38
 21 Q And for as long as you know, has Mr. Skalko 14:32
 22 worked on ASHRAE 90.1? 14:36
 23 A Yes. 14:32
 24 Q And would you say that Mr. Skalko is -- is -- 14:32
 25 would you say that Mr. Skalko knows a good deal about 14:39
 Page 133

1 ASHRAE Standard 90.1? 14:36
 2 A Yes. 14:38
 3 MR. FEE: Objection to form. 14:38
 4 (Exhibit 1162 marked for identification.) 14:34
 5 Q (BY MR. BECKER) I'm handing you what's been 14:34
 6 marked as Exhibit 1162. This is Bates number 14:35
 7 ASHRAE0026233. Do you recognize this document? 14:34
 8 A Yes. 14:38
 9 Q And could you tell me what this document is? 14:39
 10 A This is a Memorandum of Understanding between 14:31
 11 the Department of Energy and ASHRAE. It's not dated, 14:34
 12 but I would guess it's sometime in 2007 time frame, 14:35
 13 because that's when Terry Townsend was president of 14:39
 14 ASHRAE. 14:34
 15 Q And is this a signed copy of the Memorandum 14:35
 16 of Understanding between the DOE and ASHRAE? 14:39
 17 A Yes. 14:34
 18 Q Has ASHRAE had multiple Memorandums of 14:35
 19 Understanding with the Department of Energy? 14:30
 20 A Yes. 14:32
 21 Q When did ASHRAE first start having 14:34
 22 Memorandums of Understanding with the Department of 14:39
 23 Energy? 14:32
 24 A After EPAct was -- when 90.1 was made a 14:34
 25 reference in EPAct. 14:38
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1 Q Could you remind me of when that was? 14:30
 2 A I think it was '99 14:32
 3 Q Okay 14:34
 4 A Around that time frame 14:34
 5 Q Was that soon after EPAct? 14:35
 6 A I would have to look 14:31
 7 Q Has ASHRAE -- ASHRAE and the DOE continued to 14:36
 8 enter into memorandums of understanding to the present 14:33
 9 day? 14:36
 10 A Yes 14:37
 11 Q How regularly do they do so? 14:37
 12 A It -- it varies It depended -- it depends 14:32
 13 on who's at -- who's in charge at the Department of 14:35
 14 Energy We were just working on a new one I'm not 14:38
 15 positive if it's signed yet 14:33
 16 Q Is this typically an annual event? 14:37
 17 A Not always annual Sometimes it's every 14:34
 18 couple of years 14:36
 19 Q And is it sometimes an annual event, though? 14:37
 20 A Sometimes 14:39
 21 Q And why would the -- why would the leadership 14:32
 22 of the Department of Energy reflect or change whether 14:33
 23 ASHRAE would enter into a memorandum -- memorandum of 14:38
 24 understanding with the Department of Energy? 14:30
 25 A I can't speak for the Department of Energy 14:36
 Page 135

1 I don't know why they would choose to do that. I mean, 14:38
 2 my -- my guess is their goals are the same as ours, 14:31
 3 energy efficient buildings in the United States. So I 14:36
 4 would assume they would enter MOUs with whatever 14:38
 5 organizations would help them reach that goal. 14:32
 6 Q How is it that ASHRAE 90.1 came to be 14:35
 7 incorporated into EPAct? 14:30
 8 MR. CUNNINGHAM: Object to form. 14:36
 9 THE WITNESS: I am not positive on how 14:37
 10 that came about. I would have to check. 14:39
 11 Q (BY MR. BECKER) Did ASHRAE staff meet with 14:39
 12 the Department of Energy to help facilitate the 14:36
 13 incorporation of ASHRAE Standard 90.1 into EPAct? 14:31
 14 A I have -- I'll have to go back and double 14:36
 15 check in my records to see. 14:39
 16 Q Would it be customary for ASHRAE staff to 14:30
 17 meet with members of the Department of Energy prior to 14:37
 18 the incorporation of ASHRAE Standard 90.1 into EPAct? 14:32
 19 A It would be customary for ASHRAE staff with 14:38
 20 ASHRAE volunteer leadership to go to -- when they were 14:32
 21 requesting that type of thing. 14:36
 22 (Exhibit 1163 marked for identification.) 14:39
 23 Q (BY MR. BECKER) I'm handing you what's been 14:32
 24 marked as Exhibit 1163. This is Bates number 14:33
 25 ASHRAE0024558. Do you recognize this document? 14:38
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1 A Yes. 14:36
 2 Q And what is this document? 14:39
 3 A This is a presentation that would have been 14:30
 4 made by the D.C. office to tech council and the chapter 14:32
 5 technology and transfer committee. I think that's what 14:33
 6 CTTC stands for. And it would have been made in -- at 14:36
 7 the ASHRAE meeting in Albuquerque, New Mexico, on 14:41
 8 June 26, 2010. 14:47
 9 Q And what is the purpose of this document, to 14:42
 10 your understanding? 14:44
 11 A The purpose of this document is for the D.C. 14:45
 12 office just to let the CTCC [sic] and tech council know 14:49
 13 what they've been doing in D.C. 14:44
 14 Q On the third page of Bates number 14:45
 15 ASHRAE0024560 titled "Participation Coalitions," it 14:48
 16 says, "High-Performance Building Congressional Caucus 14:45
 17 Coalition," in parentheses, "ask your representative to 14:49
 18 join." 14:43
 19 What is that referring to? 14:44
 20 A There is a high-performance building caucus 14:45
 21 coalition that meets in D.C. It deals with high 14:40
 22 performance buildings. Beyond -- that would be beyond 14:44
 23 the minimum code. 14:47
 24 Q Are these -- and who composes this coalition? 14:40
 25 A Oh, there's a lot of different standards 14:48
 Page 137

1 developers that are in part of it. It might even be in 14:41
 2 here, it tells you. There's a -- there's a long list. 14:46
 3 I don't have that memorized. I don't know if it -- oh, 14:41
 4 if you turn to page -- that says ASHRAE0024575, that 14:47
 5 shows you who's on the high -- what groups are involved 14:45
 6 in the high-performance building congressional caucus 14:40
 7 at that time. It includes the representatives and then 14:45
 8 the different standards developers that are involved. 14:47
 9 Q The code chairs and members that are listed 14:44
 10 on that page you just referenced, are these all members 14:46
 11 of Congress? 14:49
 12 A Yes. 14:40
 13 Q What's the purpose of participation in the 14:47
 14 high-performance building congressional caucus? 14:40
 15 A It's really pro -- promoting doing things for 14:43
 16 high-performance buildings, so stretch codes, green 14:47
 17 standards, pushing the envelope to make things even 14:41
 18 more energy efficient than the minimum code. 14:49
 19 Q And is this for the purpose of influencing 14:42
 20 these members of Congress so as to have them 14:46
 21 incorporate these standards into the law? 14:41
 22 MR. CUNNINGHAM: Object to the form. 14:47
 23 THE WITNESS: Not that I'm aware of. 14:48
 24 Q (BY MR. BECKER) What's the purpose of having 14:40
 25 the members of Congress involved? 14:41
 Page 138

1 A Education. 14:44
 2 Q And what is the benefit of educating the 14:45
 3 members of Congress? 14:48
 4 A So they understand things when things do come 14:49
 5 before them when they're making a decision of what to 14:42
 6 incorporate into law. 14:44
 7 Q So it's to help them with their decisions 14:46
 8 to -- as to what to incorporate into reference into the 14:49
 9 law? 14:42
 10 A Correct. 14:43
 11 Q And how does the high-performance building 14:49
 12 congressional caucus and the supporting coalition 14:44
 13 educate these members of Congress on issues related to 14:40
 14 incorporating these -- excuse me, incorporating 14:46
 15 standards into the law? 14:40
 16 MR. CUNNINGHAM: Object to the 14:43
 17 characterization of the prior testimony. 14:45
 18 THE WITNESS: They -- my recollection 14:47
 19 from the presentations made by the D.C. 14:49
 20 office was that they -- they have a lunch, 14:42
 21 they sit there and they talk, sometimes they 14:45
 22 have an educational session; things like 14:47
 23 that. 14:40
 24 Q (BY MR. BECKER) So they meet with the 14:44
 25 members of Congress? 14:46
 Page 139

1 A Yeah, about -- I'm not sure they still meet 14:47
 2 or how often they still meet. I think it was about 14:40
 3 once a month. 14:42
 4 Q Do they meet individually with the members of 14:49
 5 Congress or as a larger group? 14:41
 6 A If they're doing it as the high-performance 14:45
 7 building congressional caucus, they're meeting as a 14:48
 8 group. If they're advancing something within their 14:41
 9 organization, then the supporting coalition would 14:44
 10 probably be meeting individual with representatives. 14:47
 11 Q On page ASHRAE0024568, it says, 14:45
 12 "Legislation," with an image of the capitol building, 14:43
 13 and then it says, "ASHRAE Washington, D.C." 14:48
 14 A Um-hmm. 14:43
 15 Q Then on the following page it says, "American 14:43
 16 Clean Energy and Security Act, HR 2454 a/k/a 14:46
 17 Waxman-Markey, sets national building code energy 14:42
 18 efficiency targets." 14:49
 19 Then two bullet points down it says, "Uses 14:42
 20 ASHRAE 90.1-2004 and" E -- "IECC 2006 as baselines." 14:45
 21 Does ASHRAE advocate for the use of earlier 14:48
 22 versions of 90.1 in Standard -- excuse me, in -- in 14:45
 23 laws or regulations? 14:44
 24 A That's not what this refers to. 14:44
 25 Q What does that refer to? 14:46
 Page 140

1 A This refers to as part of EPAAct the 14:48
 2 Department of Energy is required to determine how much 14:41
 3 more energy efficient 90.1 -- and when they're talking 14:45
 4 about the IECC 2006, they're talking about the 14:49
 5 residential code. That's where that falls in there. 14:44
 6 And they want to do it -- set it at a 14:48
 7 baseline, so each consecutive every three years. So 14:41
 8 for example, 90.1-2007 has to be more energy efficient 14:44
 9 than -- so much more energy efficient than 90.1-2004 14:49
 10 They measure that. If it's not more energy efficient, 14:44
 11 then they wouldn't adopt that. And then for 90.1-2010. 14:49
 12 They are just taking a baseline target to measure the 14:40
 13 amount of energy efficiency so that it's not in flux 14:43
 14 and cause market confusion. 14:48
 15 And the same with the IECC. That's -- but 14:40
 16 the IECC refers only to the residential, not to 14:42
 17 commercial in this instance. 14:46
 18 Q Does ASHRAE 90.1-2004 refer only to 14:44
 19 residential and not commercial in this instance? 14:49
 20 A No, 90.1-2004 is commercial. There's two 14:41
 21 codes in that reference, two different codes. 14:44
 22 Q So in this instance, if you had a -- a 14:47
 23 commercial building, then ASHRAE 90.1-2004 would be the 14:41
 24 baseline standard and not be IECC 2006? 14:48
 25 A No. 14:43
 Page 141

<p>1 Q How am I mistaken? 14:45 2 A What this proposed legislation was, was to 14:48 3 set the baseline for which the DOE uses to make the 14:43 4 determination on whether or not the next version of 14:47 5 90.1 is more energy efficient. So this was proposing 14:40 6 to use 90.1-2004 as the benchmark for each subsequent 14:44 7 version of 90.1. 14:48 8 And then -- and that's only commercial. And 14:40 9 then the IECC is for residential. They're referenced 14:43 10 as the residential. What's being advocated here is 14:48 11 that you use the IECC 2006 as the baseline for each 14:41 12 subsequent version of the IECC for residential moving 14:46 13 forward as for energy efficiency. 14:49 14 Q Okay. Does the IECC itself refer to 14:42 15 commercial buildings or is it only for residential 14:49 16 buildings? 14:42 17 A There -- there's different I-codes within the 14:46 18 IECC. So there's the IRC, which is residential, but 14:40 19 it's part of the whole body of codes. So the IECC for 14:43 20 residential is just the energy efficiency stuff for 14:40 21 residential home -- residential stuff. 14:44 22 Q On the following page, it says, "American 14:55 23 Clean Energy Leadership Act, S.1462." It says, 14:58 24 "Introduced by Senator Jeff Bingaman, D-NM. Updates 14:51 25 national building energy codes and standards at least 14:58 Page 142</p>	<p>1 the -- but we explained that once you -- as you get 14:50 2 above -- when you're going between the 30 and the 50 14:53 3 percent, it gets more and more difficult to have 14:55 4 cost-effective equipment and things like that and -- in 14:58 5 there. So it -- it wasn't put in the law. 14:52 6 Q On page ASHRAE0024581, it says, "Additional 14:58 7 Washington office activities." And it says for the 14:56 8 third major bullet point, "Building code adoptions," 14:56 9 and then under that, "Standard 90.1 and Standard 14:50 10 189.1/IGCC promotion." 14:54 11 Does this mean that the Washington office was 14:50 12 engaged in promoting the adoption of Standard 90.1 into 14:54 13 building codes? 14:50 14 A I don't remember. And without seeing it, if 14:55 15 he -- he didn't have notes with it, so I don't think it 14:59 16 was at a building code level. I think that's something 14:52 17 they were talking about expanding in the grassroots. 14:57 18 That was not done at that time. 14:52 19 Q So that's something -- is that something 14:53 20 that's done in -- at this time? 14:55 21 A We have started a grassroots program to reach 14:51 22 out when we are made aware of references to -- to 14:53 23 different standards. And we could ask volunteers in 14:58 24 those jurisdictions to go. 14:52 25 Q And when you say "a grassroots program," who 14:53 Page 144</p>
<p>1 every three years to achieve target energy savings of," 14:51 2 and then it -- four bullet points down from that, it 14:55 3 says, "If DOE determines ASHRAE's future revised model 14:50 4 codes will not meet targets, DOE will propose or 14:55 5 establish a modified code or standard that meets the 14:58 6 above targets. Uses 90.1-2004 as baseline for 14:50 7 commercial buildings IECC 2006 for residential." 14:56 8 When it references "Uses 90.1-2004 as 14:59 9 baseline for commercial buildings," is that in the same 14:53 10 capacity as the reference on the prior page that you 14:56 11 were just referring to? 14:59 12 A Yes. One is a bill proposed in the House; 14:51 13 one is a bill proposed in the Senate. 14:54 14 Q Did the Department of Energy propose or 14:53 15 establish a modified code or a standard that met the 14:56 16 above targets on page ASHRAE0024570? 14:50 17 A This is -- this proposed language is not 14:58 18 in -- in law at this particular time. This was -- this 14:51 19 was talking about what was being proposed at this point 14:55 20 in time in 2010. 14:50 21 Q What was the outcome? 14:53 22 A I don't -- I don't think they set -- I don't 14:56 23 believe that they set targets, because it's -- as part 14:59 24 of the -- these codes, it has to be cost effective. 14:56 25 And as ASHRAE explained -- and I'm not sure if it's 14:51 Page 143</p>	<p>1 is involved in the grassroots program? 14:57 2 A It's -- it's the individual ASHRAE chapters 14:50 3 within each state, and then each -- you know, there's 14:52 4 multiple chapters within a state. So whoever is 14:55 5 closest to wherever the decision is being made. 14:58 6 Q And so this is -- the grassroots program 14:52 7 works to advocate for building code adoptions -- 14:59 8 adoptions of Standard 90.1 into building codes -- 14:54 9 MR. CUNNINGHAM: Objection. 14:58 10 Q (BY MR. BECKER) -- in states and local 14:59 11 governments? 14:51 12 MR. CUNNINGHAM: Objection, 14:52 13 mischaracterization of prior testimony. 14:53 14 THE WITNESS: It could include Standard 14:54 15 90.1. It could include any other -- our 14:56 16 other standards as well. 14:59 17 Q (BY MR. BECKER) And at the bottom of this 14:54 18 page, it says, "Empowering chapters to engage state and 14:56 19 local policy-makers." Do you know what that 14:59 20 references? 14:52 21 A That's referencing what I was talking about, 14:53 22 the grassroots, and encouraging local chapters to talk 14:55 23 to their state and local policy makers. 14:51 24 Q And on the next page, it says, "Opportunities 14:55 25 for individual member participation. Contact state and 14:59 Page 145</p>

<p>1 marked as Exhibit 1174. Could you please tell me what 15:42 2 this document is? 15:42 3 A This is a subset, I think, of another email 15:42 4 exchange related to Exhibit 1170 where Mark indicates 15:43 5 that this correction was made by Jim Calm. 15:43 6 (Exhibit 1175 marked for identification.) 15:44 7 Q (BY MR. BECKER) I'm handing you what's been 15:44 8 marked as Exhibit 1175. Do you recognize this 15:44 9 document? 15:45 10 A Yes. 15:45 11 Q And could you tell me what this document is? 15:45 12 A This is a Certificate of Registration with 15:45 13 the United States Copyright Office for the 1993 ASHRAE 15:45 14 Handbook: Fundamentals Inch-Pound Edition. 15:45 15 Q What is the 1999 ASHRAE Handbook: 15:45 16 Fundamentals? 15:45 17 A It covers a variety of topics. I would have 15:45 18 to look at the inside cover to tell you every topic 15:45 19 that it covers. 15:45 20 Q What's the purpose of the 1993 ASHRAE 15:45 21 Handbook: Fundamentals? 15:45 22 A It's a -- it's a tool for engineers to use 15:45 23 when they're working with the topics covered in that 15:45 24 book. 15:45 25 Q Is the 1993 ASHRAE Handbook: Fundamentals 15:45 Page 158</p>	<p>1 A Yes 15:44 2 Q Can you tell me what this document is? 15:44 3 A This document is the letter that gets sent to 15:46 4 the project committee that shows the public review 15:49 5 comments for BSR/ASHRAE/IESNA Addenda S, T, and X to 15:43 6 ANSI/ASHRAE/IESNA Standard 90.1-2007 15:45 7 Q And if you look at the sixth, seventh, 15:40 8 eighth, ninth, and I believe tenth page of this 15:47 9 document, are those copyright releases on all of those 15:51 10 pages I mentioned? 15:59 11 A Yes 15:57 12 Q And who are those copyright releases from? 15:57 13 A Larry Spielvogel 15:50 14 Q Do you know who Larry Spielvogel is? 15:54 15 A Yes 15:58 16 Q Who is Mr. Spielvogel? 15:58 17 A He is an ASHRAE member 15:50 18 Q Has Mr. Spielvogel ever been an employee of 15:52 19 ASHRAE? 15:57 20 A No 15:57 21 Q Do Mr. Spielvogel's proposed contributions 15:50 22 appear in this document? 15:54 23 A Actually, yes 15:56 24 Q And where is that? 15:59 25 A Under -- on the page labeled ASHRAE0013966, 15:51 Page 160</p>
<p>1 referenced in ASHRAE Standard 90.1? 15:46 2 A I would have to look. 15:46 3 (Exhibit 1176 marked for identification.) 15:46 4 Q (BY MR. BECKER) I'm handing you what's been 15:46 5 marked as Exhibit 1176. This is Bates number 15:46 6 ASHRAE0001592. Could you -- do you recognize this 15:46 7 document? 15:46 8 A Yes. 15:46 9 Q And could you please tell me what it is? 15:46 10 A Well, the first page labeled ASHRAE001592 is 15:47 11 the certification -- Certificate of Registration with 15:47 12 the United States Copyright Office for ANSI/ASHRAE/IES 15:47 13 Standard 90.1-2010 IP Edition. 15:47 14 For the page labeled ASHRAE0001594, that is 15:47 15 the Certificate of Registration with the United States 15:47 16 Copyright Office for ANSI/ASHRAE/IESNA 15:47 17 Standard 90.1-2007 IP Edition. 15:47 18 For the page labeled ASHRAE001596, this is 15:47 19 the Certificate of Registration with the United States 15:47 20 Copyright Office for ANSI/ASHRAE/IESNA 15:48 21 Standard 90.1-2004 IP -- IP Edition. 15:48 22 (Exhibit 1177 marked for identification.) 15:48 23 Q (BY MR. BECKER) I'm handing you what's been 15:48 24 marked as Exhibit 1177. It's the document beginning 15:48 25 with ASHRAE0013961. Do you recognize this document? 15:48 Page 159</p>	<p>1 under 4 "Comment (Proposed Text)," it says, "Do not 15:52 2 approve and do not publish this addendum." 15:52 3 Q So these are his contributions, then, as to 15:52 4 say "Do not approve and do not publish this addendum" 15:52 5 that he's referring to? 15:52 6 A That is correct. 15:52 7 Q If you turn to the page ASHRAE0013973, is 15:52 8 that another signed copyright release on that page? 15:53 9 A Yes. 15:53 10 Q And in that instance, has it been signed and 15:53 11 also had the -- the name of the individual inserted? 15:53 12 A Yes. 15:53 13 Q And who is that individual? 15:53 14 A James Calm. 15:53 15 Q And what is Mr. Calm's relationship to 15:53 16 ASHRAE, if any? 15:53 17 A He's a member of ASHRAE. 15:53 18 Q And has Mr. Calm ever been an employee of 15:53 19 ASHRAE? 15:53 20 A No. 15:53 21 Q And Mr. Calm's contribution on the following 15:53 22 page, is that "Disapprove proposed revisions in 15:53 23 Addendum S"? 15:54 24 A That would be his comment, yes. 15:54 25 Q And then if you turn to ASHRAE0013982, is 15:54 Page 161</p>

1 for time at the time. 16:58
 2 Q (BY MR. BECKER) How did you know that she 16:50
 3 was -- that Ms. Ramspeck was referring to 16:52
 4 Public.Resource.Org when she said "Did you know that 16:56
 5 there has been a big increase in the number of 16:59
 6 copyrighted docs beginning in January"? 16:51
 7 A Because I knew about the SMACNA things, and 16:57
 8 so staff was watching to see what copyrighted documents 16:52
 9 were out there, if they belonged to ASHRAE. 16:56
 10 Q And so there was sufficient discussion of 16:56
 11 Public.Resource.Org in February of 2013 that without 16:59
 12 even referencing Public.Resource.Org, you knew that 16:54
 13 Ms. Ramspeck was referring to Public.Resource.Org? 16:58
 14 MR. CUNNINGHAM: Objection to the form. 16:51
 15 THE WITNESS: At that time, we would 16:55
 16 have discussed Public.Resource.Org, and I 16:56
 17 would have known that's what she was 16:59
 18 referring to. 16:51
 19 Q (BY MR. BECKER) What is the purpose of the 16:59
 20 IPRPC? 16:52
 21 MR. FEE: Objection, lack of 16:54
 22 foundation. 16:55
 23 MR. CUNNINGHAM: Objection. 16:56
 24 THE WITNESS: It's -- it's dealing with 16:59
 25 intellectual property mostly, things -- or 16:52
 Page 190

1 things like patents and some, I guess, quasi 16:56
 2 legal things. 16:56
 3 Q (BY MR. BECKER) How much of the discussion 16:56
 4 in IPRPC relates to Public.Resource.Org? 16:56
 5 MR. FEE: Objection to form. 16:56
 6 THE WITNESS: On the items I have either 16:56
 7 seen in email or when I've been able to 16:56
 8 participate remotely on their calls, minimal. 16:56
 9 Q (BY MR. BECKER) Is ASHRAE concerned about 16:57
 10 alleged copyright infringement by other entities other 16:57
 11 than Public.Resource.Org? 16:57
 12 MR. CUNNINGHAM: Objection to scope and 16:57
 13 to the form. 16:57
 14 THE WITNESS: Of course. We don't -- we 16:57
 15 don't allow other people to post copyrighted 16:57
 16 material or anywhere else. If -- when we're 16:57
 17 made aware of it, we ask for it to be 16:57
 18 removed. 16:57
 19 Q (BY MR. BECKER) Where has ASHRAE seen 16:57
 20 infringement of its standards? 16:57
 21 MR. CUNNINGHAM: Same objection. 16:57
 22 THE WITNESS: I'm -- I'm not privy to 16:57
 23 every single time. I don't -- it's not 16:57
 24 related to 90.1, but I know that there have 16:57
 25 been public review drafts of, for example, 16:57
 Page 191

1 our Standard 188 posted on company websites 16:57
 2 without seeking permission from me first to 16:51
 3 post it after the public review period has 16:53
 4 ended. And I've sent letters to ask them to 16:56
 5 remove it, and they are removed. 16:58
 6 Q (BY MR. BECKER) Is ASHRAE aware of 16:56
 7 infringement or potential infringement on file-sharing 16:59
 8 websites of ASHRAE standards? 16:53
 9 MR. CUNNINGHAM: Same objection. 16:55
 10 THE WITNESS: I'm not aware of those. 16:57
 11 MR. BECKER: We can take a break here. 16:57
 12 THE VIDEOGRAPHER: Going off the record 16:50
 13 at 16:58. 16:52
 14 (Recess taken.) 17:19
 15 THE VIDEOGRAPHER: Going on the record 17:24
 16 at 17:24. 17:26
 17 Q (BY MR. BECKER) Ms. Reiniche, could you 17:25
 18 please refer again to Exhibits 1175 and 1176. Those 17:26
 19 are the certificates of registration from the copyright 17:22
 20 office. 17:27
 21 A Okay. 17:28
 22 Q Ms. Reiniche, does ASHRAE claim to be the 17:20
 23 author of standard -- of the editions of Standard 90.1 17:24
 24 that are listed in Exhibit 1176? 17:20
 25 MR. CUNNINGHAM: Objection to the 17:27
 Page 192

1 form. 17:27
 2 THE WITNESS: Yes. 17:28
 3 Q (BY MR. BECKER) And does ASHRAE claim to be 17:20
 4 the author of the 1993 ASHRAE Handbook: Fundamentals as 17:22
 5 listed in Exhibit 1175? 17:28
 6 MR. CUNNINGHAM: Same objection. 17:21
 7 THE WITNESS: Yes. 17:27
 8 Q (BY MR. BECKER) Is ASHRAE the sole author of 17:28
 9 these works? 17:20
 10 MR. CUNNINGHAM: Same objection. 17:20
 11 THE WITNESS: It's the members of the 17:27
 12 project committee as -- as part of their 17:29
 13 membership that agreed to write the document 17:23
 14 and -- and have it attributed to ASHRAE. 17:25
 15 Q (BY MR. BECKER) And the members of the 17:29
 16 project committee are not employees of ASHRAE, correct? 17:20
 17 A That's correct. 17:23
 18 Q And so what is the basis for ASHRAE's claim 17:28
 19 that it's the author of these works? 17:21
 20 MR. CUNNINGHAM: Objection to the form, 17:25
 21 calls for a legal conclusion. 17:26
 22 THE WITNESS: As a basis of the signed 17:20
 23 copyright assignments that all the members 17:22
 24 sign when they apply for membership, that the 17:25
 25 commenters sign when they submit a comment 17:29
 Page 193

1 and that the members that submit change -- or 17:21
 2 the public that submits change proposals sign 17:26
 3 when they submit a change proposal 17:29
 4 Q (BY MR BECKER) Has ASHRAE ever compensated 17:24
 5 any of the members of the project committee for the 17:26
 6 sale of any of the works at issue? 17:23
 7 A No 17:26
 8 Q Ms Reiniche, is the project committee for 17:27
 9 Standard 90.1 in charge of the selection and 17:23
 10 arrangement of the content of Standard 90.1? 17:28
 11 A Yes 17:28
 12 Q Is anybody else responsible for the selection 17:23
 13 and arrangement of standard -- of the content of 17:27
 14 Standard 90.1? 17:23
 15 A The selection of the content, no The 17:24
 16 arrangement, they're not going to change the order, but 17:20
 17 the formatting in terms of, you know, the two-column 17:22
 18 format, it could switch from one to two column after 17:26
 19 public review is done by public -- our publications 17:20
 20 department 17:23
 21 Q And who made the decision to switch it from 17:24
 22 one column to two column? 17:28
 23 A That would have been Steve Comstock would 17:21
 24 have decided to -- I believe the standard was 17:24
 25 originally one column When they go out for public 17:27
 Page 194

1 review, we put it in one column, because it's easier 17:20
 2 for people to read one column, you know, and we don't 17:22
 3 have to mess with the formatting 17:25
 4 Then because of the length, I believe they 17:29
 5 switched to a two-column format for publication 17:21
 6 And -- and that's -- that's why they did it, so the -- 17:24
 7 your printed copy isn't, you know, 3 inches thick 17:29
 8 versus an inch and a half thick 17:24
 9 Q So when you say two-column format, you mean 17:27
 10 the text appears in two columns on the page, as opposed 17:28
 11 to just being a single column on the page? 17:23
 12 A That's correct 17:25
 13 Q And is that the only change in arrangement 17:23
 14 that's performed by ASHRAE staff? 17:27
 15 A By publications, they might correct the 17:20
 16 numbering of a section if the committee changed 17:23
 17 something and the numbering was off, but it's just to 17:25
 18 make it format correctly for -- on the publication 17:28
 19 side 17:23
 20 (Exhibit 1193 marked for identification) 17:24
 21 Q (BY MR BECKER) Ms Reiniche, I'm handing 17:30
 22 you what's been marked as Exhibit 1193 This is Bates 17:31
 23 number ASHRAE0001628 Do you recognize this document? 17:37
 24 A Yes 17:33
 25 Q Can you tell me what this document is? 17:35
 Page 195

1 A These are the minutes from the 90.1 meeting 17:38
 2 for sure from Saturday, January 24th, 2004. Then 17:34
 3 from -- and it also includes the minutes from the 17:31
 4 meeting on Sunday, January -- January 25th, 2004. Hang 17:35
 5 on. They usually have more than -- another meeting. 17:35
 6 And from Monday, January 26, 2004. 17:30
 7 Q And could you please turn to page 8? 17:33
 8 A 8? 17:39
 9 Q Yes. Section 10 on page 8 includes the 17:39
 10 marketing task force ad hoc subcommittee update. And 17:30
 11 it says in the second and third sentence, it says, "The 17:39
 12 discussion included the question of who is the customer 17:33
 13 for Standard 90.1. Chris stated that the subcommittee 17:37
 14 has one customer that it has failed to fulfill the 17:32
 15 needs of, and that is the Department of Energy, DOE." 17:37
 16 Does ASHRAE consider the Department of Energy 17:33
 17 to be a customer? 17:35
 18 A It would be one customer. 17:38
 19 (Exhibit 1194 marked for identification.) 17:31
 20 Q (BY MR. BECKER) Ms. Reiniche, I'm handing 17:38
 21 you a document that has been marked as Exhibit 1194. 17:30
 22 This is Bates number ASHRAE0006892. Can you tell me 17:34
 23 what this document is? 17:33
 24 A This document is an ASHRAE 90.1 questionnaire 17:34
 25 summary combined -- compiled by Valerie Block, the 17:38
 Page 196

1 chair of the 90.1 marketing committee. 17:33
 2 Q And can you tell me what the purpose of this 17:32
 3 questionnaire summary was? 17:35
 4 A The purpose of -- of the questionnaire or the 17:36
 5 summary -- summary? 17:39
 6 Q Of the summary itself. 17:31
 7 A It was to give information to the committee 17:32
 8 on what -- the opinions of the users of the standard 17:37
 9 were. 17:31
 10 Q And which committee was that? 17:32
 11 A 90.1. 17:33
 12 (Exhibit 1195 marked for identification.) 17:38
 13 Q (BY MR. BECKER) Ms. Reiniche, I'm handing 17:38
 14 you what's been marked as Exhibit 1195. Bates labeled 17:30
 15 ASHRAE0024267. Do you recognize this document? 17:35
 16 A This is -- yes. 17:30
 17 Q And can you tell me what this document is? 17:32
 18 A This is a document where the president of 17:39
 19 ASHRAE was asking for the committee on utilities and 17:38
 20 energy to consider a building energy labeling program 17:33
 21 that was being developed by ASHRAE. This is the 17:38
 22 building energy quotient, but it's not -- it's not a 17:36
 23 90.1 tool. 17:31
 24 (Exhibit 1196 marked for identification.) 17:34
 25 Q (BY MR. BECKER) Ms. Reiniche, I'm handing 17:34
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1 you what's been marked as Exhibit 1196, ASHRAE Bates 17:35
 2 number 0024287. Do you recognize this document? 17:39
 3 A Yes. 17:30
 4 Q And could you tell me what this document is? 17:32
 5 A This is a letter from -- who would have been 17:34
 6 the president of ASHRAE at the time in 2009, Gordon 17:38
 7 Holness, to President Obama talking about as we're 17:33
 8 working towards energy efficiency, where we have agreed 17:31
 9 to try to -- the project committee to be 30 percent 17:35
 10 more energy efficient from 2004, version of 17:31
 11 Standard 90.1 to the 2010 version. 17:34
 12 And it also mentions our Building Energy 17:39
 13 Quotient BEQ program that provides people with energy 17:32
 14 use of buildings and to ask that the -- while they're 17:36
 15 implementing the executive order, that they look at 17:35
 16 considering using the building EQ program. 17:38
 17 (Exhibit 1197 marked for identification.) 17:39
 18 Q (BY MR. BECKER) Ms. Reiniche, I'm handing 17:33
 19 you what's been marked as Exhibit 1197. Do you 17:34
 20 recognize this document? 17:37
 21 A Yes. 17:30
 22 Q And can you tell me what this document is? 17:31
 23 A This is an ASHRAE Facts and Stats document 17:35
 24 that D.C. folks would leave with congressional staff 17:39
 25 members. 17:37
 Page 198

1 Q And what was the purpose of leaving this with 17:37
 2 congressional staff members? 17:30
 3 A Just to give you a -- give them information 17:31
 4 about what ASHRAE is, what our expertise is in, and 17:33
 5 about our standards, our research program, 17:30
 6 publications, continuing education; just ASHRAE as a 17:33
 7 whole 17:37
 8 (Exhibit 1198 marked for identification) 17:39
 9 Q (BY MR BECKER) Ms Reiniche, I'm handing 17:34
 10 you what's -- what's been marked as Exhibit 1198, Bates 17:35
 11 number ASHRAE0024393 Do you recognize this document? 17:30
 12 A Yes 17:37
 13 Q And what is this document? 17:37
 14 A This is another sort of fact sheet type thing 17:39
 15 that ASHRAE does to educate the staff members of the 17:32
 16 legislature about ASHRAE's role in energy efficiency 17:36
 17 and our views on how to get there 17:31
 18 (Exhibit 1199 marked for identification) 17:33
 19 Q (BY MR BECKER) Ms Reiniche, I'm handing 17:42
 20 you what's been marked as Exhibit 1199 This is Bates 17:45
 21 labeled ASHRAE0024624 Do you recognize this document? 17:40
 22 A Yes 17:40
 23 Q And what is this document? 17:41
 24 A These are -- this is an email that shows the 17:42
 25 notes from what would have been an ASHRAE leadership 17:45
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1 meeting with different organizations in Washington, 17:41
 2 D.C. 17:41
 3 Q And when you say what would have been an 17:41
 4 ASHRAE leadership meeting with different organizations 17:41
 5 in Washington, D.C., do you mean it was a meeting that 17:41
 6 did occur? 17:41
 7 A Yes. 17:41
 8 Q Is it clear to you who the participants of 17:42
 9 this meeting would have been? 17:42
 10 MR. FEE: Can I see this document before 17:42
 11 you get into this any further? 17:42
 12 Okay. 17:42
 13 THE WITNESS: Well, I can tell from the 17:42
 14 ASHRAE side, based on this email, that Lynn 17:42
 15 Bellenger, Ron Jarnigan, Tom Watson, Jeff 17:43
 16 Littleton, Doug Read, and Mark Ames would 17:43
 17 have been at these meetings. Some of them I 17:43
 18 can -- it appears from this that OSTP had 17:43
 19 Kevin Hurst there. 17:43
 20 Q (BY MR. BECKER) That's fine if you -- 17:43
 21 A I mean, I would have to -- I mean, some of 17:43
 22 them I can tell that -- you know, who was there, I can 17:43
 23 tell which organizations were there, but some I can 17:43
 24 tell by the way the notes were written who was there, 17:43
 25 and some I cannot. I can -- if it would be easier, I 17:44
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1 I can tell you what organizations appears. 17:44
 2 Q Yes, if you could say which organizations. 17:46
 3 A So -- and this -- my recollection of the 17:40
 4 leadership meetings, typically it's more -- more than 17:46
 5 one meeting, so they weren't all in one meeting 17:48
 6 together, so these would have been notes from all of 17:40
 7 their meetings. 17:42
 8 So they would have talked with the EPA, 17:45
 9 DOE -- sorry, the page is sticking -- FEMP, NEMA, ASE, 17:48
 10 AHRI, NASEO, N-A-S-E-O, and that looks to be it. 17:42
 11 Q Okay. So it's all of the organizations that 17:48
 12 are -- that are listed as individual acronyms at the 17:40
 13 top of each paragraph section? 17:40
 14 A Right. 17:41
 15 Q And would those have been separate meetings 17:44
 16 with each individually? 17:46
 17 A Some of them could have been clumped 17:47
 18 together, some of them could have been separate. It's 17:41
 19 hard to tell from this email string how those occurred. 17:43
 20 But sometimes they have it where they're going to meet 17:49
 21 with these three organizations and then these three 17:42
 22 organizations; something like that. 17:44
 23 (Exhibit 1200 marked for identification.) 17:49
 24 Q (BY MR. BECKER) I'm handing you what's been 17:45
 25 marked as Exhibit 1200. This is Bates labeled 17:46
 Page 201

1 standards at issue here. 18:03
 2 THE WITNESS: This email relates to 18:06
 3 Standard 161-2007. That's indoor air quality 18:08
 4 for commercial aircrafts. And it's about a 18:04
 5 congressional committee considering an FAA 18:09
 6 reauthorization bill and wants to know if -- 18:01
 7 if the members of 161 are supportive of this 18:06
 8 bill. 18:01
 9 Q (BY MR. BECKER) And in the top email, 18:05
 10 Mr. Weber's communication, he says, "Ladies and 18:01
 11 Gentlemen, below is an email from Ryan Colker, manager 18:06
 12 of government affairs in the ASHRAE Washington office. 18:09
 13 ASHRAE is encouraging legislators to adopt ASHRAE 18:03
 14 Standard 161-2007 and intends on sending the attached 18:07
 15 letter early next week. Ryan would like to make the 18:03
 16 SSPC aware of the intentions and would like to know if 18:07
 17 their organizations are willing to support the 18:01
 18 adoption." 18:04
 19 Is one of the roles of government -- ASHRAE's 18:09
 20 government affairs office in Washington, D.C., to 18:02
 21 encourage legislators to adopt ASHRAE standards? 18:06
 22 A If it's relevant to a bill that the 18:01
 23 legislature is -- is drafting. 18:08
 24 Q Does that include encouraging legislators to 18:01
 25 adopt ASHRAE Standard 90.1? 18:04
 Page 210

1 A If it's related to a legislation that they're 18:07
 2 creating. 18:00
 3 Q So if -- for clarity, if the -- if standard 18:01
 4 ASHRAE 90.1 is related to the legislation that's being 18:09
 5 created, then the Washington office of ASHRAE might 18:03
 6 encourage the adoption of Standard 90.1 into that 18:08
 7 legislation? 18:03
 8 A Yes, in consultation with ASHRAE leadership 18:05
 9 and those with relevant technical expertise. 18:09
 10 (Exhibit 1207 marked for identification.) 18:09
 11 Q (BY MR. BECKER) I'm handing you what's been 18:07
 12 marked as Exhibit 1207. Could you please take a moment 18:08
 13 to read this document and tell me what it is? 18:02
 14 MR. CUNNINGHAM: Same objection as the 18:02
 15 last document. This is outside the scope and 18:03
 16 irrelevant, as it doesn't relate to the 18:06
 17 standards at issue. 18:08
 18 THE WITNESS: So this is an email where 18:05
 19 Mike Lubliner, who was involved in 62.2, said 18:09
 20 he was talking with HUD and about having them 18:05
 21 adopt 62.2 and asked -- and discussing with 18:00
 22 Steve Emmerich, who I believe was the chair 18:06
 23 at that time, about who could speak on that. 18:08
 24 And then they asked Mark Weber if we 18:03
 25 could -- who is the staff liaison for 62.2, 18:07
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1 if we could get comp copies to send to HUD to 18:01
 2 consider it, and Mark indicated that's 18:04
 3 probably very likely 18:07
 4 And then they ask for the -- where to 18:00
 5 send it, to Rhonda from -- Rhonda Dickerson, 18:03
 6 who I'm assuming is from HUD And instead of 18:08
 7 using the paper comment -- paper format, they 18:02
 8 sent a PDF copy that -- indicating it wasn't 18:08
 9 to be distributed outside of the HUD 18:12
 10 manufacturing housing consensus committee and 18:15
 11 not to reprint without ASHRAE permission 18:18
 12 Q (BY MR BECKER) You are a recipient of this 18:13
 13 email; is that correct? 18:15
 14 A Yes 18:17
 15 Q What does HUD stand for? 18:10
 16 A Housing Urban Development 18:14
 17 Q And is that a federal agency? 18:17
 18 A Yes 18:11
 19 Q Is it common for ASHRAE to provide copies of 18:10
 20 ASHRAE standards to members of government when they are 18:16
 21 considering incorporating that standard into 18:10
 22 legislation or regulation? 18:14
 23 A If it's been requested, we typically will 18:17
 24 provide a copy for them to review, yes 18:10
 25 Q And that would be a complimentary copy, 18:13
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1 correct? 18:11
 2 A That is correct. 18:11
 3 (Exhibit 1208 marked for identification.) 18:11
 4 Q (BY MR. BECKER) Ms. Reiniche, I'm handing 18:11
 5 you what's been marked as Exhibit 1208. This has been 18:11
 6 produced as ASHRAE0024209. Do you recognize this 18:12
 7 document? 18:12
 8 MR. CUNNINGHAM: Object to this document 18:12
 9 as it also appears to relate to standards 18:12
 10 other than those that are at issue in this 18:12
 11 case. 18:12
 12 THE WITNESS: Yes, I recognize the 18:12
 13 document. 18:12
 14 Q (BY MR. BECKER) And what is this document? 18:12
 15 A This is a document from Terry Townsend, who 18:12
 16 would have been the president of ASHRAE in 2007, to 18:13
 17 Andrew Fanara from EPA Energy Star Program. And it's 18:13
 18 about a draft report to Congress on server and 18:13
 19 datacenter energy efficiency. 18:13
 20 And he's talking about the -- how ASHRAE is 18:13
 21 involved in that and the majority of this deals with 18:13
 22 our technical committee 9.9, which is missing critical 18:13
 23 facilities and the work they've done in the different 18:13
 24 publications they have, thermal guidelines for data 18:13
 25 processing equipment. And -- and then they had 18:13
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1 CERTIFICATE
2 STATE OF GEORGIA:
3 COUNTY OF FULTON:
4
5 I, SHARON A. GABRIELLI, HEREBY CERTIFY that
6 the foregoing deposition was taken down by me in
7 stenotype, and the questions and answers thereto were
8 transcribed by means of computer-aided transcription,
9 and that the foregoing represents a true and correct
10 transcript of the testimony given by said witness.
11 I FURTHER CERTIFY that I am not kin or
12 counsel to the parties in the case; am not in the
13 regular employ of counsel for any of said parties; nor
14 am I in any way financially interested in the result of
15 said case.
16 IN WITNESS WHEREOF, I have hereunto set my
17 hand this 10th day of April, 2015
18
19
20
21
22
23
24
25

SHARON A. GABRIELLI, RPR
CCR-B-2002

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EXHIBIT 13

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UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

- - -

AMERICAN SOCIETY FOR : Case No.
TESTING AND MATERIALS d/b/a: 1:13-cv-01215-PSC-DAR
ASTM INTERNATIONAL; :
:
NATIONAL FIRE PROTECTION :
ASSOCIATION, INC.; and :
:
AMERICAN SOCIETY OF :
HEATING, REFRIGERATING, :
AND AIR-CONDITIONING :
ENGINEERS, INC. :
Plaintiffs, :
:
vs. :
:
PUBLIC.RESOURCE.ORG, INC., :
Defendant. :
:

AND RELATED COUNTERCLAIMS. :
_____ :

Videotaped 30(b)(6) deposition
of American Society for Testing & Materials,
through DANIEL SMITH, held in the offices of
Veritext Philadelphia, 1801 Market Street,
Ten Penn Center, Suite 1800, Philadelphia,
Pennsylvania 19103, commencing at 10:43 a.m.,
July 24, 2015, before Linda Rossi Rios, a
Federally Approved RPR, CCR and Notary
Public.

PAGES 1 - 292

1 giving your best testimony today?
2 A. No.
3 Q. Mr. Smith, what do you do for a
4 living?
5 A. I work for ASTM International.
6 Q. And when you say you work for
7 ASTM International, what do you mean?
8 A. I'm the vice --
9 MR. FEE: Objection. Vague.
10 You can answer.
11 THE WITNESS: I'm the vice
12 president of technical committee
13 operations.
14 BY MR. BECKER:
15 Q. And what is technical committee
16 operations?
17 A. It's a division within ASTM.
18 Q. What does technical committee
19 mean?
20 A. Technical committees develop
21 standards.
22 Q. When you say "standards," what
23 do you mean by that?
24 A. Consensus standards.
25 Q. By "consensus standards," what

Page 14

1 do you mean by that?
2 A. Documents.
3 Q. Any documents?
4 A. Specifications, test methods,
5 practices, guides, classifications and
6 terminology.
7 Q. Does the term "standards" have
8 any specific meaning to you?
9 MR. FEE: Objection. Vague.
10 THE WITNESS: I'm not sure what
11 you mean by that.
12 BY MR. BECKER:
13 Q. Can you define what a standard
14 is?
15 A. Just what I said previously,
16 it's a test method, a specification, a
17 practice, a guide, classification or
18 terminology.
19 Q. And you say that the technical
20 committees develop standards. How do --
21 actually, let me back up.
22 What is a technical committee?
23 A. I'm not sure how to answer
24 that. I'm not sure what you mean by that.
25 Q. How would you define a

Page 15

1 technical committee?
2 A. A group of experts that develop
3 standards.
4 Q. And who are those experts?
5 A. Volunteers.
6 Q. And are they only volunteers?
7 MR. FEE: Objection. Vague.
8 THE WITNESS: For the most part
9 from my knowledge, they're all
10 volunteers.
11 BY MR. BECKER:
12 Q. How does a technical committee
13 go about developing standards as you say?
14 A. They use our consensus process.
15 Q. What is the consensus process?
16 A. It's two levels of voting
17 starting with the subcommittee and then the
18 main committee.
19 Q. What's the difference between a
20 subcommittee and a main committee?
21 A. A subcommittee is typically
22 smaller with a more narrow interest. A main
23 committee has broader interest.
24 Q. So within a technical
25 committee, then, there is -- is there just

Page 16

1 one main committee?
2 A. A main committee is a technical
3 committee.
4 Q. And are there numerous
5 subcommittees?
6 A. Yes.
7 Q. And how many subcommittees on
8 average?
9 A. It varies.
10 Q. Could you give me a range by
11 which it might vary?
12 A. The best of my knowledge, maybe
13 from 3 to 40, 50.
14 Q. When you say there is a
15 consensus process that involves voting in the
16 subcommittee and then voting at the main
17 committee level, can you elaborate on that
18 process?
19 MR. FEE: Objection. Vague.
20 THE WITNESS: They vote on
21 standards so the folks on that
22 committee will vote on whether or not
23 they agree or not agree with the
24 content of the standard.
25 BY MR. BECKER:

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1 Q. Is that agree or don't agree on
2 the content of a draft standard or the
3 finalized standard?
4 A. A draft standard.
5 Q. Could we just back up a little
6 bit and could you walk me through how a
7 standard is developed at ASTM?
8 A. It varies, but it could be
9 by -- it starts typically with a task group.
10 Q. And what does the task group
11 do?
12 A. They'll develop the content of
13 the draft.
14 Q. And who composes the task
15 group?
16 MR. FEE: Objection. Vague.
17 THE WITNESS: The task group is
18 typically made up of volunteers who
19 wish to serve on the task group.
20 BY MR. BECKER:
21 Q. Are -- is everyone in a task
22 group an ASTM member?
23 A. No, not necessarily.
24 Q. In what situations would
25 individuals who are not members of ASTM

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1 compose members of the task group?
2 MR. FEE: Objection to form.
3 THE WITNESS: I'm not sure what
4 you mean by that. Could you repeat
5 that or say that differently?
6 BY MR. BECKER:
7 Q. Let's see. Are -- let me back
8 up just a moment.
9 Are any members of the task
10 group also members of ASTM?
11 A. Yes.
12 Q. But some members of the task
13 groups are not members of ASTM?
14 A. Could be. It's mostly members.
15 Q. And why would individuals who
16 are not members of ASTM be members of the
17 task group?
18 MR. FEE: Objection. Calls for
19 speculation.
20 THE WITNESS: From my
21 experience, because they're interested
22 in the standard that's being
23 developed.
24 BY MR. BECKER:
25 Q. How large are task groups on

Page 19

1 average?
2 A. It varies, but it could be
3 anywhere from 3 to 30 approximately.
4 Q. And you said that the task
5 group develops the content or the original
6 draft of a standard. Is that correct?
7 MR. FEE: Objection. Lack of
8 foundation.
9 THE WITNESS: From my
10 experience, that's what a task group
11 does.
12 BY MR. BECKER:
13 Q. How is a task group initially
14 formed?
15 A. It's formed by a group of
16 volunteers who want to develop a standard or
17 a revision to a standard.
18 Q. Do the members and -- excuse
19 me.
20 Do the ASTM members and
21 nonmembers of ASTM who compose task groups
22 generally have the same or similar interests?
23 MR. FEE: Objection. Calls for
24 speculation.
25 THE WITNESS: I don't know. I

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1 would think they would have a variety
2 of different interests.
3 BY MR. BECKER:
4 Q. Are there any characteristics
5 other than ASTM membership that would
6 distinguish ASTM members who are members of
7 task groups and those members of task groups
8 who are not ASTM members?
9 MR. FEE: Objection to form.
10 THE WITNESS: The members pay
11 the \$75 membership fee. Nonmembers
12 don't pay the membership. That's the
13 only thing I can think of.
14 BY MR. BECKER:
15 Q. How does a task group go about
16 developing the initial draft of a standard?
17 A. They could do it in a variety
18 of ways.
19 Q. Could you give me some examples?
20 A. They could do it through the
21 use of our collaboration areas, an online
22 space that allows them to develop the draft.
23 Q. And in what other ways?
24 A. They could do it through course
25 of e-mail.

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1 Q. And in what other ways?
2 A. Through a meeting.
3 Q. And in what other ways?
4 A. None other come to mind at this
5 point.
6 Q. Are there any differences in
7 how a task group would develop a draft of a
8 standard today versus how they might have
9 developed a draft of a standard in the 1970s
10 or 1980s?
11 MR. FEE: Objection. Lack of
12 foundation. Calls for speculation.
13 You can answer.
14 THE WITNESS: Just from common
15 sense, we wouldn't have had our Web
16 tools, they wouldn't have been able to
17 use our Web tools or our virtual
18 meeting technology in the '70s.
19 BY MR. BECKER:
20 Q. Do you know how task groups
21 developed drafts in the 1970s and 1980s?
22 A. I don't know firsthand, but my
23 guess is they would have done it at meetings.
24 Q. When did ASTM first provide the
25 online collaboration areas for the use by

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1 task groups?
2 A. Guessing, it was sometime
3 probably in the early 2000s roughly.
4 Q. How long have you been at ASTM
5 for?
6 A. About 23 years.
7 Q. So you were at ASTM for roughly
8 a decade, at least a decade prior to when the
9 online collaboration area was first rolled
10 out. Is that correct?
11 A. Approximately.
12 Q. So prior to when the online
13 collaboration area was rolled out, how did
14 task groups develop draft standards at ASTM?
15 A. To my knowledge, it would have
16 been at meetings.
17 Q. Were these meetings organized
18 by ASTM?
19 A. Some of them.
20 Q. But other meetings might not
21 have been organized by ASTM, is that what
22 you're saying?
23 MR. FEE: Objection. Vague.
24 THE WITNESS: They could. They
25 could organize their own meetings

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1 outside of ASTM.
2 BY MR. BECKER:
3 Q. Do you know how drafts of
4 the -- of ASTM standards were exchanged
5 between task group members prior to the
6 introduction of the online collaboration area
7 by ASTM?
8 A. My guess would be through mail
9 and fax.
10 Q. Do you know if that mail and
11 fax of drafts was facilitated by ASTM?
12 MR. FEE: Objection. Vague.
13 THE WITNESS: I would imagine
14 that some of them would have been
15 facilitated by ASTM and others would
16 not have been.
17 BY MR. BECKER:
18 Q. Prior to the introduction of
19 the online collaboration area, were there
20 specific forms that task group members were
21 made to fill out when drafting drafts of ASTM
22 standards?
23 MR. FEE: Objection to form.
24 THE WITNESS: I believe we had
25 forms starting in about 2003 on our

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1 membership applications that required
2 members to assign all rights to ASTM.
3 BY MR. BECKER:
4 Q. So the membership, the forms on
5 the membership applications for ASTM that
6 asked individuals to assign all rights to
7 ASTM, as you said, started in 2003 and didn't
8 exist prior to that date?
9 A. I believe that's correct.
10 Q. And this just concerned the
11 membership applications. Correct?
12 MR. FEE: Objection. Vague.
13 THE WITNESS: We also had them
14 on our renewal forms, membership
15 renewal forms. And then we also had
16 them on our work item registration,
17 and then our collaboration.
18 BY MR. BECKER:
19 Q. What is a work item registration
20 form?
21 A. It's for essentially opening up
22 a new work item.
23 Q. What is a work item?
24 A. Either a revision to a standard
25 or development of a new standard.

Page 25

1 Q. And when was the language that
2 you say concerns assignments of rights
3 introduced to the work item form?
4 A. I think it was in about 2003,
5 '04, '05, somewhere in there.
6 Q. So somewhere in the 2003 to
7 2005 period, you're not certain precisely
8 when?
9 A. I believe so.
10 Q. But it didn't exist on those
11 forms prior to at earliest 2003?
12 A. That's correct.
13 Q. Who fills out a work item form?
14 A. A member.
15 Q. Is it only ASTM members who
16 fill out work item forms?
17 A. If a member would ask a staff
18 person to help facilitate filling out a form,
19 they may do that.
20 Q. What is a collaboration form?
21 A. The collaboration, if a member
22 wants to initiate a collaboration area, they
23 have to go through an online process to
24 initiate it.
25 Q. Just so I understand, is that

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1 to create the online collaboration area that
2 you had described earlier as being a location
3 online provided by ASTM where members of a
4 task group could go to help develop the draft
5 for a standard?
6 A. Yes.
7 Q. And so the collaboration form
8 was only introduced after the collaboration
9 areas had been provided by ASTM to its
10 members?
11 A. Yes.
12 Q. And when, again, did you say
13 that that was?
14 A. I think it was about 2003.
15 Q. People who are members of task
16 groups for developing standards but are not
17 themselves ASTM members, do they fill out
18 membership applications for ASTM?
19 A. No.
20 Q. And those individuals who I
21 just described a moment ago, do they fill out
22 renewal forms for ASTM?
23 A. No.
24 Q. And those individuals who I
25 just described a moment ago, do they fill out

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1 work item registration forms for ASTM?
2 A. No.
3 Q. And those individuals I
4 described a moment ago, do they fill out
5 collaboration forms for ASTM?
6 A. Yes.
7 Q. They do. Are they required to
8 fill out collaboration forms for ASTM in
9 order to participate in the development of a
10 draft of a standard?
11 MR. FEE: Objection. Vague.
12 THE WITNESS: Yes.
13 BY MR. BECKER:
14 Q. From approximately what year
15 forward have individuals who are members of
16 ASTM task groups but not themselves members
17 of ASTM been required to fill out
18 collaboration forms in order to participate
19 in the drafting of an ASTM standard?
20 A. To my knowledge, since the
21 beginning.
22 Q. When you say "since the
23 beginning," what do you mean?
24 A. When we had -- when we created
25 the form.

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1 Q. So that would be approximately
2 2003, you're saying?
3 A. Yes.
4 Q. Were individuals who were
5 members of task groups but not themselves
6 members of ASTM required to fill out any
7 forms in order to participate in the drafting
8 of an ASTM standard prior to 2003?
9 A. Not to my knowledge.
10 Q. Is there any means by which
11 ASTM claims that individuals who are -- who
12 were members of task groups but not
13 themselves members of ASTM have assigned any
14 copyrights that they might have in the drafts
15 of the standards that were created and
16 eventually published through ASTM -- to ASTM?
17 MR. FEE: Objection. Calls for
18 a legal conclusion. Instruct you not
19 to disclose any communications you
20 might have had with counsel regarding
21 that subject. If you have an
22 independent knowledge that is
23 responsive, you can answer that.
24 THE WITNESS: I don't know. Not
25 to my knowledge.

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1 a legal conclusion. Vague.
2 Confusing. You can answer if you can.
3 THE WITNESS: I think I'll
4 answer it by just saying the purpose
5 of this form is for when an individual
6 wants to bring a document into ASTM to
7 make it into an ASTM standard.
8 BY MR. BECKER:
9 Q. So this document is not
10 required of every member of a task group who
11 contributes original material to an ASTM
12 standard draft?
13 MR. FEE: Objection. Vague. To
14 the extent it calls for a legal
15 conclusion.
16 THE WITNESS: This form would
17 not be.
18 BY MR. BECKER:
19 Q. When is the last time, to your
20 knowledge, that this form, Exhibit 1284, was
21 used by ASTM?
22 A. I don't know.
23 Q. Do you have any guess as to
24 what year this form was last used by ASTM?
25 MR. FEE: Objection. Lack of

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1 foundation. Calls for speculation.
2 THE WITNESS: I don't know.
3 BY MR. BECKER:
4 Q. Do you know any specific
5 standards that this form was used in
6 conjunction with?
7 A. I don't know offhand, no. No
8 specifics.
9 Q. Does ASTM retain the signed
10 copies that it receives of this Participation
11 and Acknowledgement Form?
12 A. I'm not sure.
13 Q. Do you know how many of these
14 Participation and Acknowledgement Forms have
15 been signed and returned to ASTM?
16 A. No.
17 Q. Do you have any approximate
18 guess as to how many of these Participation
19 and Acknowledgement Forms have been signed
20 and returned to ASTM?
21 MR. FEE: Objection. Calls for
22 speculation.
23 THE WITNESS: No.
24 BY MR. BECKER:
25 Q. Do you know if this

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1 Participation and Acknowledgement Form has
2 ever been signed and returned to ASTM?
3 A. I don't know for sure, but I
4 would guess it has been.
5 Q. And what's your basis for
6 guessing that it has been?
7 A. I vaguely remember instances
8 where we would have to use this.
9 Q. And what instances were those?
10 A. I can't remember.
11 Q. What other information do you
12 recollect in conjunction with those instances
13 where you believe that you had to use this
14 form as you describe it?
15 MR. FEE: Objection. Vague.
16 THE WITNESS: The only thing I
17 can remember is members interested in
18 bringing forward documents that they
19 were interested in having become ASTM
20 standard.
21 BY MR. BECKER:
22 Q. Prior to the introduction of
23 the Participation and Acknowledgement Form in
24 approximately 2002, was there any means by
25 which ASTM had members of task groups who

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1 contributed original contents to the drafts
2 of ASTM standards but were not themselves
3 members of ASTM thereby transferred their
4 copyrights to ASTM?
5 MR. FEE: Objection. Calls for
6 a legal conclusion. To the extent --
7 you shouldn't disclose any
8 communications you had with counsel
9 regarding the subject matter. If you
10 have independent information that you
11 can share, go ahead and answer with
12 respect to that.
13 THE WITNESS: I'm not aware of
14 any formal forms that we used prior to
15 2003.
16 BY MR. BECKER:
17 Q. Are you aware of any informal
18 means by which individuals such as those that
19 I just described in my previous question
20 might have transferred their copyright to
21 ASTM?
22 MR. FEE: Same objection and
23 instruction.
24 THE WITNESS: I'm not sure what
25 you mean by "informal."

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1 BY MR. BECKER:
2 Q. I'm simply asking because you
3 say you're not aware any formal forms that
4 are used prior to 2003. So I'm asking if
5 there were any informal means by which ASTM
6 believes that individuals transferred their
7 copyright to ASTM prior to 2003?
8 MR. FEE: Objection. Calls for
9 a legal conclusion. You shouldn't
10 disclose your communications with
11 counsel on this subject, but if you
12 have other information, you can answer
13 about that.
14 THE WITNESS: I don't believe --
15 we didn't feel like we needed any
16 formal, any formal assignment paper.
17 BY MR. BECKER:
18 Q. Why didn't ASTM feel like it
19 needed any formal assignment paper?
20 MR. FEE: Objection. Calls for
21 a legal conclusion. You shouldn't
22 disclose any communication you had
23 with counsel regarding the subject,
24 but if you have any other information
25 that's responsive, you can answer

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1 about that.
2 THE WITNESS: Because we felt
3 that there was a basic understanding,
4 there is a basic understanding today
5 and there's been a basic understanding
6 for as long as ASTM has been around
7 that the reason they come to the table
8 is for the sole purpose of developing
9 an ASTM standard that will receive a
10 logo, and that will be copyrighted and
11 be distributed. Our members buy the
12 resulting standards from ASTM. We've
13 never, that I can recall, have had a
14 member or a nonmember take issue with
15 ASTM selling the resulting copyrighted
16 standard to them and to others. I
17 believe that the reason they come to
18 the table is because they want --
19 they're there for the sole purpose of
20 having a standard that will have an
21 ASTM logo on it.
22 BY MR. BECKER:
23 Q. Anything else?
24 MR. FEE: Same objections and
25 instructions.

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1 THE WITNESS: Not at this time.
2 BY MR. BECKER:
3 Q. The basic understanding that
4 you just described, how is that basic
5 understanding documented?
6 MR. FEE: Objection. Again,
7 instruct you not to disclose
8 communications with counsel on that
9 subject, but if you have other
10 information, you can go ahead and
11 disclose that.
12 THE WITNESS: I'm not sure what
13 you mean by "documented."
14 BY MR. BECKER:
15 Q. Are there any documents that
16 reflect the basic understanding that you just
17 described concerning the reasons for
18 individuals contributing in the drafting of
19 ASTM standards?
20 A. No, we didn't feel like
21 documentation was needed.
22 Q. Does ASTM have any documents to
23 support its position that there was a basic
24 understanding between the members who --
25 excuse me, let me rephrase that.

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1 Does ASTM have any documents to
2 support its position that there was a basic
3 understanding between the individuals who
4 drafted ASTM standards and ASTM that the
5 copyright in those standards were to belong
6 to ASTM?
7 MR. FEE: Objection. Instruct
8 you not to disclose communications
9 with counsel on that subject. If
10 you're aware of other documents, you
11 can go ahead and respond with respect
12 to them.
13 THE WITNESS: I'm not aware of
14 any documents.
15 BY MR. BECKER:
16 Q. Just a moment ago you were
17 describing the reasons why people participate
18 in the drafting of ASTM standards. Could you
19 describe some of the incentives for
20 individuals to participate in the drafting of
21 ASTM standards?
22 MR. FEE: Objection. Lack of
23 foundation. You can answer.
24 THE WITNESS: In general, you
25 can say that an individual would -- or

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1 BY MR. BECKER:
2 Q. I'm simply asking because you
3 say you're not aware any formal forms that
4 are used prior to 2003. So I'm asking if
5 there were any informal means by which ASTM
6 believes that individuals transferred their
7 copyright to ASTM prior to 2003?
8 MR. FEE: Objection. Calls for
9 a legal conclusion. You shouldn't
10 disclose your communications with
11 counsel on this subject, but if you
12 have other information, you can answer
13 about that.
14 THE WITNESS: I don't believe --
15 we didn't feel like we needed any
16 formal, any formal assignment paper.
17 BY MR. BECKER:
18 Q. Why didn't ASTM feel like it
19 needed any formal assignment paper?
20 MR. FEE: Objection. Calls for
21 a legal conclusion. You shouldn't
22 disclose any communication you had
23 with counsel regarding the subject,
24 but if you have any other information
25 that's responsive, you can answer

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1 about that.
2 THE WITNESS: Because we felt
3 that there was a basic understanding,
4 there is a basic understanding today
5 and there's been a basic understanding
6 for as long as ASTM has been around
7 that the reason they come to the table
8 is for the sole purpose of developing
9 an ASTM standard that will receive a
10 logo, and that will be copyrighted and
11 be distributed. Our members buy the
12 resulting standards from ASTM. We've
13 never, that I can recall, have had a
14 member or a nonmember take issue with
15 ASTM selling the resulting copyrighted
16 standard to them and to others. I
17 believe that the reason they come to
18 the table is because they want --
19 they're there for the sole purpose of
20 having a standard that will have an
21 ASTM logo on it.
22 BY MR. BECKER:
23 Q. Anything else?
24 MR. FEE: Same objections and
25 instructions.

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1 THE WITNESS: Not at this time.
2 BY MR. BECKER:
3 Q. The basic understanding that
4 you just described, how is that basic
5 understanding documented?
6 MR. FEE: Objection. Again,
7 instruct you not to disclose
8 communications with counsel on that
9 subject, but if you have other
10 information, you can go ahead and
11 disclose that.
12 THE WITNESS: I'm not sure what
13 you mean by "documented."
14 BY MR. BECKER:
15 Q. Are there any documents that
16 reflect the basic understanding that you just
17 described concerning the reasons for
18 individuals contributing in the drafting of
19 ASTM standards?
20 A. No, we didn't feel like
21 documentation was needed.
22 Q. Does ASTM have any documents to
23 support its position that there was a basic
24 understanding between the members who --
25 excuse me, let me rephrase that.

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1 Does ASTM have any documents to
2 support its position that there was a basic
3 understanding between the individuals who
4 drafted ASTM standards and ASTM that the
5 copyright in those standards were to belong
6 to ASTM?
7 MR. FEE: Objection. Instruct
8 you not to disclose communications
9 with counsel on that subject. If
10 you're aware of other documents, you
11 can go ahead and respond with respect
12 to them.
13 THE WITNESS: I'm not aware of
14 any documents.
15 BY MR. BECKER:
16 Q. Just a moment ago you were
17 describing the reasons why people participate
18 in the drafting of ASTM standards. Could you
19 describe some of the incentives for
20 individuals to participate in the drafting of
21 ASTM standards?
22 MR. FEE: Objection. Lack of
23 foundation. You can answer.
24 THE WITNESS: In general, you
25 can say that an individual would -- or

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1 a company or an individual would be
2 interested in having an ASTM standard
3 that they could say their product or
4 service is in compliance with.
5 BY MR. BECKER:
6 Q. Are there any other reasons?
7 MR. FEE: Objection.
8 THE WITNESS: I'm sure there are
9 other reasons, I just can't think of
10 any right now.
11 BY MR. BECKER:
12 Q. Does ASTM have any forms by
13 which companies have assigned any copyrights
14 that they may have in the draft standards to
15 ASTM?
16 MR. FEE: Objection. To the
17 extent it calls for a legal
18 conclusion, I instruct you not to
19 disclose communications with counsel
20 on this subject, but if you have any
21 documents to identify, go ahead.
22 THE WITNESS: I'm not aware of
23 any.
24 BY MR. BECKER:
25 Q. Does ASTM distinguish between

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1 companies and individuals in the -- in its
2 understanding of the granting of copyright
3 rights to ASTM?
4 MR. FEE: Objection. Vague. To
5 the extent I understand it, I think it
6 calls for a legal conclusion. To the
7 extent you think that requires you to
8 disclose any communication from
9 counsel, you shouldn't do so. If you
10 understand you have non-privileged
11 information that is responsive, go
12 ahead and provide it.
13 THE WITNESS: I'm not sure what
14 you mean by that question.
15 BY MR. BECKER:
16 Q. Let me rephrase. If an
17 individual fills out a form that ASTM
18 believes assigns a copyright to ASTM but that
19 individual is employed by a company and is
20 acting in the scope of employment, does ASTM
21 believe that a copyright is granted to it?
22 MR. FEE: Objection. Calls for
23 a legal conclusion. Calls for
24 speculation. You shouldn't disclose
25 any communications with counsel that

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1 you might think are responsive to
2 that. If you have other information,
3 you can go ahead and answer.
4 THE WITNESS: My understanding
5 is that the members join as
6 individuals, and that when they come
7 to an ASTM meeting, they're
8 contributing their own knowledge to
9 the ASTM standard.
10 BY MR. BECKER:
11 Q. When you say that's your
12 understanding, is that also ASTM's
13 understanding?
14 A. Yes.
15 MR. FEE: Same objections.
16 THE WITNESS: Yes.
17 MR. FEE: And instructions.
18 BY MR. BECKER:
19 Q. When you say "members join as
20 individuals," does this also include
21 individuals who are government employees?
22 A. Yes.
23 Q. Does ASTM believe that
24 government employees who are acting within
25 the scope of their employment by the federal

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1 government join as individuals when they join
2 ASTM?
3 MR. FEE: Objection. Calls for
4 a legal conclusion. Calls for
5 speculation. Instruct you not to
6 disclose communications with counsel
7 on this subject, but you can answer if
8 you have other information.
9 THE WITNESS: I'm not sure what
10 the individual members believe. I
11 believe our committees believe that
12 the input they get on the standards
13 are from that individual, the
14 individual knowledge that they're
15 providing, not necessarily a company
16 or a government position.
17 BY MR. BECKER:
18 Q. And what's your basis for
19 believing that that is what the members of
20 the committee believe?
21 A. Just my experience.
22 Q. What experience are you
23 referring to?
24 A. My experience with working with
25 technical committees.

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1 experience in sitting in the meetings
2 and observing the individual members
3 contribute to the development of the
4 standards.
5 BY MR. BECKER:
6 Q. What about those contributions
7 of those members gave you that impression?
8 MR. FEE: Objection. Calls for
9 a legal conclusion. Compound.
10 THE WITNESS: I'm not thinking
11 of any one example. I'm just thinking
12 over time in all of my different
13 committees and all the different
14 meetings that I've attended, to me it
15 appears that people are contributing
16 off the cuff spontaneously in the
17 development of the standard.
18 BY MR. BECKER:
19 Q. When they participate, do
20 members of the federal government use their
21 federal government issued e-mail addresses?
22 MR. FEE: Objection. Compound.
23 Calls for speculation.
24 THE WITNESS: They may or they
25 may not.

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1 BY MR. BECKER:
2 Q. What is it about off-the-cuff
3 or spontaneous contributions that you think
4 means that these individuals are
5 participating in their individual capacity
6 and not as federal government employees?
7 MR. FEE: Objection. Calls for
8 a legal conclusion.
9 THE WITNESS: Just my belief
10 based on what I'm observing that I
11 think it's a very spontaneous
12 conversation, people providing
13 contributions based on what they
14 believe, not necessarily what their
15 company believes.
16 BY MR. BECKER:
17 Q. Are individuals who
18 participate -- excuse me.
19 Are federal government
20 employees who participate in ASTM committees
21 or task groups classified differently than
22 other individuals who participate in those
23 committees or task groups?
24 MR. FEE: Objection. Vague.
25 THE WITNESS: I'm not sure what

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1 you mean by "differently."
2 BY MR. BECKER:
3 Q. Is there a specific
4 classification that's given to government
5 employees who participate in the development
6 of standards under ASTM?
7 A. They're given a classification
8 just as all other members are.
9 Q. And what is that classification?
10 A. It could either be a producer,
11 user, general interest, depending upon the
12 scope of the committee.
13 Q. Would a federal government
14 employee count as a producer?
15 A. I can't think of a situation
16 where they would be.
17 Q. Would a federal government
18 employee count as a user?
19 A. They may.
20 Q. Would a federal government
21 employee count as a general interest member?
22 A. They may.
23 Q. In what circumstances might a
24 federal government employee count as a user
25 versus a general interest member?

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1 A. It depends on the scope of the
2 committee.
3 Q. Could you give some examples?
4 A. On my road and paving
5 committee, federal highway would be
6 considered a user.
7 MR. FEE: We've been going quite
8 some time. I asked to have a short
9 break. We're going to take a break
10 now, no question pending.
11 MR. BECKER: We can take a
12 break.
13 VIDEOGRAPHER: Time is now
14 11:48. We're going off the video
15 record.
16 - - -
17 (A recess was taken.)
18 - - -
19 VIDEOGRAPHER: The time is now
20 12:02. We're back on the video
21 record.
22 BY MR. BECKER:
23 Q. Mr. Smith, do you have any
24 additional recollections or other information
25 that you would like to add in response to any

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1 of the questions we've discussed so far
2 today?
3 A. Relative to our members'
4 awareness that they're assigning copyrights
5 to ASTM, I believe you had asked that
6 question prior to 2003.
7 Q. Yes.
8 A. ASTM also has an Intellectual
9 Property Policy that makes our members aware
10 of that as well.
11 Q. And when was ASTM's
12 Intellectual Property Policy first
13 instituted?
14 A. I'm not sure, but I believe it
15 was in the '90s.
16 Q. Is there anything else other
17 than ASTM's Intellectual Property Policy that
18 you believe contributes to ASTM's belief that
19 there was an understanding that the copyright
20 of individuals who participated in the
21 drafting of ASTM standards was owned by ASTM?
22 MR. FEE: Objection. Asked and
23 answered. Are you asking him to
24 repeat all the other things he
25 mentioned before or are you excluding

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1 those?
2 MR. BECKER: Were there other
3 things that he mentioned before?
4 MR. FEE: Oh, yeah. I'll be
5 honest. Actually I shouldn't say
6 that. But you're asking him to list
7 everything he can think of now again?
8 MR. BECKER: In terms of
9 documents.
10 MR. FEE: Oh, documents.
11 MR. BECKER: I don't think there
12 was anything else, was there?
13 MR. FEE: Your prior question
14 wasn't limited to documents, that's
15 why I said that.
16 THE WITNESS: Is it before 2003?
17 BY MR. BECKER:
18 Q. Yes.
19 A. I'm not aware of any other
20 documents.
21 Q. Is there anything else that you
22 have to add to your earlier testimony other
23 than your mention of the IP Policy?
24 A. I can't think of anything at
25 this time.

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1 - - -
2 (Exhibit 1285, Intellectual
3 Property Policy of ASTM, Bates
4 ASTM103277 - ASTM103284, was marked
5 for identification.)
6 - - -
7 BY MR. BECKER:
8 Q. I'm handing you what's been
9 marked as Exhibit 1285. Is this the
10 Intellectual Property Policy of ASTM that you
11 had just mentioned?
12 A. Yes, I believe this is a
13 version of it.
14 Q. Are there multiple versions of
15 the ASTM intellectual property policy?
16 A. I believe there were at least
17 two or three.
18 Q. This says it was approved on
19 April 28, 1999. Correct?
20 A. It does say that.
21 Q. It says that at the top of the
22 first page and at the bottom of the last
23 page. Is that correct?
24 A. That's correct.
25 MR. FEE: Objection. It says

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1 adopted on the last page, not
2 approved.
3 BY MR. BECKER:
4 Q. And for the record, this is the
5 document Bates number ASTM 103277 to
6 ASTM 103284 titled: "INTELLECTUAL PROPERTY
7 POLICY OF ASTM." It says at the top of page
8 Bates number ASTM103277 "Approved 28
9 April 1999." Is that correct?
10 A. Yes.
11 Q. Was this the first edition of
12 the Intellectual Property Policy of ASTM?
13 A. I believe there was one prior
14 to this.
15 Q. Do you know when the
16 Intellectual Property Policy of ASTM that
17 existed prior to this was created?
18 A. No.
19 Q. Do you have any idea?
20 A. I think it was at some point in
21 the '90s. Maybe mid '90s, but I'm not sure.
22 Q. Does ASTM have any record of an
23 Intellectual Property Policy prior to this
24 one, Exhibit 1285?
25 A. I'm not sure.

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1 Q. What did you discuss with Jim
2 Thomas when you met with him then?
3 A. I asked Jim about any memory
4 that he has relative to assignments of
5 copyright.
6 Q. And what did he say?
7 A. Pretty much what I've explained
8 to you relative to formally getting
9 documentation from our members on assignment
10 from 2003 to the present relative to our
11 renewal forms, membership application forms,
12 collaboration area. And then prior to that,
13 Jim's recollection and feelings were that
14 copyright assignment from our members was a
15 very basic understanding that our members had
16 and our staff have had, the sole purpose they
17 come to an ASTM meeting is to develop a
18 standard that's going to result in an ASTM
19 approved standard with a logo on it that's
20 copyrighted.
21 Q. Did Mr. Thomas identify any
22 basis for his belief that copyright
23 assignment from ASTM members was a very basic
24 understanding, as you described it, that ASTM
25 members had with the purpose of developing an
Page 94

1 ASTM standard?
2 A. Can you explain?
3 Q. Let me rephrase that. Did
4 Mr. Thomas identify any basis for his belief
5 that ASTM members had an understanding that
6 their drafts would be -- that the copyright
7 for their drafts would be held by ASTM?
8 A. I think his basis was on the
9 fact that we've never had a member that has
10 really questioned, that we can recall, or
11 challenged ASTM copyrighting something.
12 Another basis being that we sell our
13 standards and our members are some of our
14 biggest customers, so they're buying the
15 standards from us. Jim Thomas has provided
16 numerous presentations at different committee
17 meetings announcing about this lawsuit and
18 what the ramifications potentially could be.
19 How it could affect our business model and
20 how we want to maintain our low entry for
21 participation, \$75 membership, no meeting
22 fees, and we sell our resulting standards so
23 that we can support our operations. And the
24 members, based on the presentations that I've
25 seen, have embraced that concept.
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1 Q. Did Jim Thomas say all of that
2 to you? When I say "all of that," I'm
3 referring to your previous statement that you
4 attributed to Jim Thomas, were all of those
5 statements from Jim Thomas?
6 MR. FEE: Objection. Compound.
7 THE WITNESS: Jim has told me
8 and I have seen Jim do these
9 presentations.
10 BY MR. BECKER:
11 Q. When you spoke with Jim Thomas
12 on Tuesday, did he say that a member has
13 never challenged the copyright assertions by
14 ASTM?
15 A. Yes.
16 Q. And when you met with Jim
17 Thomas on Tuesday, did he say that the fact
18 that ASTM sells standards to its members is a
19 basis for why there may be an understanding
20 that by ASTM members, that their
21 contributions would be copyrighted by ASTM?
22 A. He had indicated that the fact
23 that we sell the standards back to our
24 members is probably a real good indication
25 that there's a basic understanding from our
Page 96

1 members that we are copyrighting the material
2 that they contribute.
3 Q. Did Jim Thomas say anything
4 else to you when you met with him on Tuesday?
5 MR. FEE: Objection. Vague.
6 THE WITNESS: I can't think of
7 anything else specific that he said.
8 BY MR. BECKER:
9 Q. Did you ask Jim Thomas any
10 questions when you met with him on Tuesday?
11 A. No, I don't think I asked him
12 any questions. I think the meeting was
13 basically to discuss copyright assignment.
14 And I don't know if -- it was more of a
15 discussion, I don't think we had -- I had
16 questions. I mean, I didn't need to ask
17 questions. It was a discussion.
18 Q. A moment ago you referred to
19 the \$75 fee. Do ASTM members -- excuse me,
20 let me rephrase.
21 Do individuals have to pay ASTM
22 a fee to participate in the standard drafting
23 process?
24 MR. FEE: Objection. Asked and
25 answered.
Page 97

1 THE WITNESS: They have to pay
2 \$75 to be a member, but they don't
3 have to pay \$75 to participate. So an
4 individual can participate without
5 paying ASTM.
6 BY MR. BECKER:
7 Q. What are the differences that
8 individuals who are members of ASTM enjoy in
9 their participation in the standard drafting
10 process versus individuals who are not
11 members?
12 MR. FEE: Objection. Vague.
13 THE WITNESS: They get to --
14 free volume of standards and they get
15 to vote. When it's on the ballots,
16 they get to cast votes. Nonmembers do
17 not.
18 BY MR. BECKER:
19 Q. When you say "on the ballots,"
20 what ballots are you referring to?
21 A. On the technical standards.
22 Q. Are those ballots for voting up
23 or down on the revision or creation of
24 particular standards?
25 A. Correct.

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1 Q. Have you had any other
2 communications with Jim Thomas about your
3 deposition today other than the meeting you
4 had with him on Tuesday?
5 A. No.
6 Q. And have you had any
7 communications with Marge Cassidy in
8 preparation for your deposition today other
9 than the meeting that you had with her?
10 A. No.
11 Q. You said you met with John
12 Pace, the vice president of publications, as
13 well in preparation for your deposition
14 today. Correct?
15 A. Uh-huh.
16 Q. What did you discuss with
17 Mr. Pace?
18 A. Any knowledge that he would
19 have relative to the assignment of copyright
20 from our members.
21 Q. What did Mr. Pace say?
22 A. He didn't provide any input.
23 He didn't have any knowledge.
24 Q. Did you discuss any other
25 issues with Mr. Pace at that meeting?

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1 A. No.
2 Q. When was that meeting?
3 A. That meeting was yesterday.
4 Q. So Mr. Pace provided no
5 information to you on the subject of
6 copyright by individuals to ASTM?
7 A. No.
8 MR. FEE: Objection. Vague.
9 BY MR. BECKER:
10 Q. A moment ago you referred to
11 presentations by Jim Thomas. Can you give
12 any specific -- can you tell me about any
13 specific presentations by Jim Thomas that you
14 think address issues of copyright ownership
15 by ASTM?
16 A. I can't recall any
17 presentations that he did specific on that
18 subject.
19 Q. What presentations were you
20 referring to?
21 A. At ASTM conferences where we
22 have breakfast meetings with all of the
23 individuals attending that meeting, are
24 invited to a breakfast meeting. And we hold
25 them in four different committee weeks; in

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1 January, April, May and June of every year.
2 I've heard Jim Thomas talk about what I said
3 at those breakfast meetings.
4 Q. Do you recall on what dates
5 Mr. Thomas spoke about those issues at
6 breakfast meetings?
7 A. I can't provide specific dates.
8 Q. Do you have general dates as in
9 this year, last year or the year prior?
10 A. I believe it was this year was
11 mentioned. And it was probably last year as
12 well.
13 Q. Do you recall Mr. Thomas
14 mentioning anything on this subject prior to
15 last year?
16 A. I can't say for sure.
17 Q. Are these breakfast meetings
18 recorded in any way?
19 A. No.
20 Q. Are there any minutes kept of
21 the breakfast meetings?
22 A. No, but we have annual -- our
23 annual meeting -- we may have minutes from
24 our annual meeting, but I'm not sure. I
25 think we might have slides actually,

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1 presentation slides that are available for
2 our annual meetings.
3 Q. You said you also meet with
4 Phil Lively, the vice president of
5 technology. Is that correct?
6 A. Yes.
7 Q. When did you meet with him?
8 A. I met with Phil yesterday.
9 Q. What did you speak with Phil
10 Lively about yesterday?
11 A. About copyright assignments for
12 members to ASTM.
13 Q. And what did Phil Lively tell
14 you?
15 A. About his involvement and help
16 with having the language that we talked about
17 earlier on the membership application screens
18 and the membership renewal screens and the
19 collaboration area screen and the work item
20 registration screens.
21 Q. When you say, "the language
22 that we talked about earlier," are you
23 referring to language that ASTM believes
24 assigns copyright from individuals to ASTM?
25 MR. FEE: Objection. Calls for
Page 102

1 a legal conclusion.
2 THE WITNESS: The language that
3 we talked about that is on the
4 membership applications, yes. That
5 the members acknowledge when they're
6 either registering a work item or
7 joining as a new member or renewing
8 their membership or opening up a
9 collaboration area that assigns all of
10 their past, present and future
11 contributions to ASTM standards --
12 into ASTM standards to ASTM.
13 BY MR. BECKER:
14 Q. What was Mr. Lively's
15 involvement in the language that you are
16 referring to?
17 MR. FEE: Objection. Vague.
18 THE WITNESS: He helped us with,
19 from a technology standpoint, getting
20 that language up onto our Web site,
21 onto the screens.
22 BY MR. BECKER:
23 Q. So you're saying that
24 Mr. Lively was involved in the -- Mr. Lively
25 did not draft the language, but Mr. Lively
Page 103

1 helped create the electronic version of the
2 forms that appear on the ASTM Web site. Is
3 that what you're saying?
4 MR. FEE: Objection. Compound.
5 THE WITNESS: I'm not sure what
6 exactly you mean by that, but
7 essentially he was able to accomplish
8 getting the language up onto the
9 screens so that the members can
10 acknowledge the statement during the
11 process.
12 BY MR. BECKER:
13 Q. Did Mr. Lively draft any of the
14 language on the membership application or
15 renewal forms or any of the other forms that
16 you're describing?
17 MR. FEE: Objection. Compound.
18 THE WITNESS: I don't believe
19 so.
20 BY MR. BECKER:
21 Q. What did Mr. Lively tell you
22 about the work that he did related to
23 copyright assignments?
24 A. Just that he could remember
25 helping with putting the information up on
Page 104

1 the Web screens, and he could remember when
2 he was a staff manager back in the very
3 beginning time, I think it was early '80s
4 when he was a staff manager, and kind of
5 reiterating what I had previously said about
6 there being an understanding that our members
7 understand that their contributions to ASTM,
8 is well understood that we're going to
9 copyright that material.
10 Q. Did Mr. Lively provide any
11 basis for his statement that there was an
12 understanding in the early '80s that ASTM
13 would copyright the material provided by
14 individuals that was incorporated into the
15 standard drafts?
16 A. Can you repeat that question?
17 Q. Yes. Did Mr. Lively provide
18 any basis for his statement that there was an
19 understanding in the early '80s that ASTM
20 would copyright the material provided by
21 individuals that was incorporated into the
22 standard drafts?
23 A. No. I think it was just his
24 belief just as it was my belief.
25 Q. Did you discuss anything else
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1 of any organizations typically sign up for
2 organizational memberships?
3 MR. FEE: Objection. Vague.
4 Beyond the scope of his designation.
5 THE WITNESS: I don't know.
6 BY MR. BECKER:
7 Q. Can organizational members be
8 members of technical committees?
9 A. Yes. As a matter --
10 MR. FEE: There's no question
11 pending.
12 BY MR. BECKER:
13 Q. I'm sorry, what were you about
14 to say?
15 A. I believe all organizational
16 members are members of technical committees
17 Q. Have any organizational members
18 executed copyright assignments for ASTM?
19 A. Not to my knowledge. I'm
20 sorry, can you repeat that question?
21 Q. Yes. Have any organizational
22 members executed copyright assignments for
23 ASTM?
24 A. Through the membership
25 applications that we talked about earlier,
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1 through the renewal applications that we
2 talked about earlier, if they're involved in
3 a collaboration area, they would make an
4 assignment, and if they registered a work
5 item, they would make an assignment.
6 Q. So those are the same -- the
7 same assignment language that would relate to
8 individual members you're saying would also
9 relate to organizational members when
10 organizational members sign up for
11 membership?
12 A. Correct.
13 Q. How do organizational members
14 participate in technical committees?
15 A. The same way as participating
16 members, individual members.
17 Q. Can you elaborate on that?
18 MR. FEE: Objection. Vague.
19 THE WITNESS: I don't think I
20 can. There's no difference.
21 BY MR. BECKER:
22 Q. Do organizational members
23 designate an individual to participate on
24 their behalf?
25 MR. FEE: Objection. Asked and
Page 167

1 answered.
2 THE WITNESS: No. Organizations
3 designate a member, an employee to
4 participate on technical committees.
5 BY MR. BECKER:
6 Q. What's the difference between
7 what you just said and an organizational
8 member designating an individual to
9 participate on technical committees on its
10 behalf?
11 MR. FEE: Objection.
12 Mischaracterizes his testimony to the
13 extent it purports to summarize it.
14 You can answer.
15 THE WITNESS: An organizational
16 member is an individual, it's not the
17 organization. So the organization
18 designates a member, an employee to be
19 a member to represent it on a
20 technical committee.
21 BY MR. BECKER:
22 Q. When you say the organization
23 designates an employee to be a member to be a
24 representative on a technical committee, when
25 you say representative, do you mean a
Page 168

1 representative of that organization?
2 A. Maybe.
3 Q. Does ASTM have any knowledge as
4 to whether organizational members, when they
5 designate an individual to participate in a
6 technical committee, whether those
7 organizations are designating that individual
8 on the organization's behalf?
9 MR. FEE: Objection. Vague.
10 May call for a legal conclusion.
11 THE WITNESS: I think it varies.
12 I think organizational -- again,
13 organizations that choose to support
14 ASTM through an organizational
15 membership designate an individual to
16 participate on a technical committee.
17 That individual may be contributing to
18 the content of ASTM standards as an
19 individual even as an organizational
20 member, not necessarily representing
21 the organization's -- the
22 organizational views.
23 BY MR. BECKER:
24 Q. For organizational memberships,
25 does the organization itself typically pay
Page 169

1 the \$400 fee?
2 MR. FEE: Objection. Calls for
3 speculation.
4 THE WITNESS: I don't know for
5 sure. Not necessarily. But probably
6 in most cases, probably.
7 BY MR. BECKER:
8 Q. Do you know of any instance
9 when a person indicated that he or she
10 disagreed with his or her organization's
11 position with respect to an action on a
12 technical committee?
13 A. No.
14 Q. Do you know of any instance
15 when an individual indicated that he or she
16 was specifically speaking on his or her own
17 behalf as apart from the organization that he
18 or she is part of?
19 A. No.
20 Q. Are any U.S. federal agencies
21 organizational members of ASTM?
22 A. I don't know.
23 Q. Who would know if any federal
24 agencies are organizational members of ASTM?
25 MR. FEE: Objection. Calls for
Page 170

1 speculation. Also beyond the scope of
2 his designation.
3 THE WITNESS: We have an
4 organizational member directory on the
5 Web site.
6 BY MR. BECKER:
7 Q. And where on the Web site is
8 that organizational member directory located?
9 A. I think it's on the membership
10 page.
11 - - -
12 (Exhibit 1292, Check, Bates
13 ASTM049368, was marked for
14 identification.)
15 - - -
16 BY MR. BECKER:
17 Q. I'm handing you what's been
18 marked as 1292. This is the document
19 produced by plaintiffs as Bates number
20 ASTM049368.
21 Do you recognize this document?
22 A. No.
23 Q. Do you have any reason to
24 believe that this document produced by ASTM
25 is not authentic?
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1 MR. FEE: Objection. This is
2 beyond the scope of his designation.
3 THE WITNESS: No.
4 MR. BECKER: For the record, I
5 don't believe that this is beyond his
6 designation as this concerns an
7 organizational membership renewal.
8 MR. FEE: I don't think he was
9 designated to authenticate checks from
10 2013, but we'll agree to disagree.
11 BY MR. BECKER:
12 Q. Does this document indicate to
13 you that the Department of Consumer Affairs
14 from the State of California had paid for an
15 organizational membership renewal with ASTM?
16 MR. FEE: Objection. Calls for
17 speculation. Beyond the scope of his
18 designation.
19 THE WITNESS: I guess you could
20 assume that. I don't know for sure.
21 BY MR. BECKER:
22 Q. Do you have any reason for
23 thinking this -- that's not what this
24 document shows?
25 MR. FEE: Same objections.
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1 THE WITNESS: No, no reason not
2 to believe.
3 - - -
4 (Exhibit 1293, 2011 Membership
5 renewal invoices, Bates ASTM086030 -
6 ASTM086031, was marked for
7 identification.)
8 - - -
9 BY MR. BECKER:
10 Q. I'm handing you what's been
11 marked as Exhibit 1293. This is the document
12 produced by plaintiffs as ASTM086030 to
13 086031. Can you tell me what this document
14 is?
15 A. It is a 2011 membership renewal
16 invoice.
17 Q. It is a different 2011
18 membership renewal invoice on each side.
19 Correct?
20 A. Yeah. For different persons,
21 yeah.
22 Q. And these persons are employees
23 of NIST. Is that correct?
24 MR. FEE: Objection. Calls for
25 speculation. Beyond the scope of his
Page 173

1 designation.
2 THE WITNESS: It says here
3 they're from NIST.
4 BY MR. BECKER:
5 Q. NIST is a federal agency.
6 Correct?
7 MR. FEE: Same objections.
8 THE WITNESS: I believe. Sorry.
9 I believe so.
10 BY MR. BECKER:
11 Q. And they both give their NIST
12 e-mail addresses. Is that correct?
13 MR. FEE: Objection. Calls for
14 speculation. Beyond the scope of his
15 designation. You can answer.
16 THE WITNESS: The e-mail
17 addresses are on this piece of paper.
18 BY MR. BECKER:
19 Q. And the e-mail addresses say
20 @nist.gov. Correct?
21 A. Yes.
22 Q. And the addresses that they
23 provide are for NIST. Correct?
24 MR. FEE: Objection. Calls for
25 speculation. Beyond the scope of his
Page 174

1 designation.
2 THE WITNESS: Yes, the NIST
3 address is on these pieces of paper.
4 BY MR. BECKER:
5 Q. And did -- the credit card
6 information and payer is the same for both
7 renewal invoices. Correct?
8 MR. FEE: Objection. Beyond the
9 scope of his designation.
10 THE WITNESS: It appears that
11 the names are the same.
12 BY MR. BECKER:
13 Q. And that name appears to be
14 Aruella Kuehl, K-U-E-H-L. Aruella is spelled
15 A-R-U-E-L-L-A -- excuse me, that's Arvella,
16 A-R-V-E-L-L-A.
17 MR. FEE: Objection. Beyond the
18 scope of his designation.
19 BY MR. BECKER:
20 Q. Is that correct?
21 MR. FEE: Same objection.
22 THE WITNESS: If that's -- yeah,
23 that's the way you want to spell it.
24 BY MR. BECKER:
25 Q. Could you, please, indicate
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1 where on these renewal invoices, if anywhere,
2 language exists that would assign any
3 copyright that Charles E. Gibson or Benjamin
4 K. Tsai, the individuals listed on these
5 membership renewal invoices, might have
6 granted to ASTM?
7 MR. FEE: Objection. Calls for
8 a legal conclusion. Compound. You
9 can answer if you know.
10 THE WITNESS: No, there's
11 language in the middle of both pages
12 beginning with "You agree...."
13 BY MR. BECKER:
14 Q. Is that where it says, "You
15 agree, by your participation in ASTM and
16 enjoyment of the benefits of your annual
17 membership, to have transferred and assigned
18 any and all interest you possess or may
19 possess, including copyright, in the
20 development or creation of ASTM standards or
21 ASTM IP to ASTM. For additional information,
22 please see the ASTM IP Policy, available at
23 www.astm.org"?
24 A. Yes.
25 Q. For these membership renewal
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1 invoices, are individuals required to check
2 any box showing that they have read and
3 understand the provision that I just read out
4 loud?
5 MR. FEE: Objection. Vague.
6 Compound.
7 THE WITNESS: I don't see here
8 where there's a box to check off.
9 BY MR. BECKER:
10 Q. For the membership renewal
11 invoices, are the members required to sign
12 anywhere on the renewal invoice?
13 MR. FEE: Same objections.
14 THE WITNESS: I don't see
15 anywhere else other than the signature
16 for where the credit card information
17 is.
18 BY MR. BECKER:
19 Q. And if an individual pays by
20 some other means that doesn't require a
21 credit card, would it not be necessary to
22 sign this membership renewal invoice at all
23 in order to get a membership renewal?
24 MR. FEE: Objection. Calls for
25 speculation. Form.
Page 177

1 THE WITNESS: I don't know. I
2 guess you could sign a check. The
3 only other way you could pay is
4 through a check, so you could sign a
5 check.
6 BY MR. BECKER:
7 Q. It also lists electronic
8 payments. Correct?
9 A. Yes.
10 Q. So if somebody were to provide
11 an electronic payment, then they would not
12 need to sign anywhere on this form. Is that
13 correct?
14 MR. FEE: Objection. Calls for
15 speculation.
16 THE WITNESS: I suppose.
17 BY MR. BECKER:
18 Q. Is there any means through the
19 membership renewal invoice that ASTM ensures
20 that it has the understanding and assent of
21 the individual renewing his or her membership
22 that any copyright he or she has in the
23 development or creation of ASTM standards is
24 to be assigned to ASTM?
25 MR. FEE: Objection. Vague and
Page 178

1 confusing. Calls for speculation.
2 Calls for a legal conclusion.
3 THE WITNESS: Through the
4 original membership application,
5 through the work item registration
6 process, and through the collaboration
7 registration process.
8 BY MR. BECKER:
9 Q. My question was with regards to
10 the 2011 membership renewal invoice. I'll
11 read it again.
12 Is there any means through the
13 membership renewal invoice that ASTM ensures
14 that it has the understanding and assent of
15 the individual renewing his or her membership
16 that any copyright he or she has in the
17 development or creation of ASTM standards is
18 to be assigned to ASTM?
19 MR. FEE: Objection to form.
20 Vague and confusing. Compound. Calls
21 for speculation and calls for a legal
22 conclusion.
23 THE WITNESS: Within the 2011
24 membership renewal invoice, the only
25 thing that is there is this language
Page 179

1 that we read.
2 BY MR. BECKER:
3 Q. And my question is, is there
4 any means through the membership renewal
5 invoice that ASTM ensures that it has the
6 understanding and assent of the individual
7 who is renewing his or her membership that
8 any copyright he or she has in the
9 development or creation of ASTM standards is
10 to be assigned to ASTM?
11 MR. FEE: Same objections. Plus
12 asked and answered.
13 THE WITNESS: Plus what?
14 MR. FEE: Asked and answered.
15 THE WITNESS: Same answer.
16 BY MR. BECKER:
17 Q. It's a yes or no answer.
18 MR. FEE: No. Answer it however
19 you want to answer it.
20 THE WITNESS: Within the 2011
21 membership renewal invoice, there is
22 this clause that we feel is -- informs
23 the members that they're assigning
24 their copyright to us within their
25 participation at ASTM.
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1 BY MR. BECKER:
2 Q. How does ASTM know that a
3 member has read that clause?
4 A. We don't.
5 Q. How does ASTM know that a
6 member agrees with that clause?
7 MR. FEE: Objection to the
8 extent it calls for a legal
9 conclusion. Also calls for
10 speculation. You can answer.
11 THE WITNESS: We don't know for
12 sure.
13 - - -
14 (Exhibit 1294, Organizational
15 Membership Directory, was marked for
16 identification.)
17 - - -
18 BY MR. BECKER:
19 Q. I'm handing you what's been
20 marked as Exhibit 1294. It's a document
21 titled: "Organizational Membership
22 Directory." This is two separate printouts
23 combined. It is the A to K listing and the L
24 to Z listing. It's something -- it's over
25 100 pages long.
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1 THE WITNESS: They make
2 contributions at the meetings.
3 BY MR. BECKER:
4 Q. And do those contributions end
5 up in the final approved standards?
6 MR. FEE: Objection. Vague.
7 THE WITNESS: I don't -- I can't
8 say specifically.
9 BY MR. BECKER:
10 Q. What kind of contributions do
11 they provide at these meetings?
12 MR. FEE: Objection. Vague.
13 THE WITNESS: Oral contributions.
14 BY MR. BECKER:
15 Q. Do they provide any written
16 contributions?
17 MR. FEE: Objection. Vague.
18 THE WITNESS: They may through
19 the balloting process.
20 BY MR. BECKER:
21 Q. Do they vote on standard drafts
22 or revisions?
23 MR. FEE: Objection. Form.
24 THE WITNESS: They may. They
25 have the opportunity to.

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1 - - -
2 (Exhibit 1295, E-mail chain with
3 attachment, Bates ASTM025633 -
4 ASTM025640, was marked for
5 identification.)
6 - - -
7 BY MR. BECKER:
8 Q. I'm handing you what's been
9 marked as Exhibit 1295.
10 Could you, please, take a
11 moment to try to put the pages for the
12 previous exhibit back in the same order that
13 they were provided to you, if possible?
14 MR. BRIDGES: I'll do that.
15 Hand them to me, I'll do that.
16 THE WITNESS: I think that's the
17 order.
18 BY MR. BECKER:
19 Q. Do you recognize this document
20 that has been provided to you as
21 Exhibit 1295? It is Bates number ASTM025633
22 to 025640.
23 A. No.
24 Q. Are you copied on this e-mail
25 that's Exhibit 1295?

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1 A. Yes.
2 Q. Did you ever receive this
3 e-mail that's Exhibit 1295?
4 A. I may have.
5 Q. Do you have any reason to think
6 that if you had -- that you did not receive
7 this e-mail produced by ASTM that has your
8 name listed under the cc line?
9 A. No.
10 Q. Do you have any reason to
11 believe that this document provided by ASTM
12 is not authentic?
13 MR. FEE: Objection. Calls for
14 a legal conclusion.
15 THE WITNESS: I have no idea.
16 BY MR. BECKER:
17 Q. Is that a yes or a no?
18 A. I don't know. I don't see any
19 reason why it wouldn't be.
20 Q. If you turn to the second page,
21 it says -- this is an e-mail from Sarah
22 Petre, P-E-T-R-E, to Jeff Grove that says --
23 in which you are cc'd at dsmith@astm.org. Is
24 that correct?
25 A. Yes.

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1 Q. And it says, "Jeff: Attached
2 is a summary of all the potentially relevant
3 standards related to the UE's efforts that
4 focus on the environmental footprint of
5 products and services. This list is more
6 over inclusive. I also included a list of
7 the EPA members that participate in E50 or
8 E60." Is that correct?
9 A. That's what it says.
10 Q. Then if you turn to Bates
11 number ASTM025637, the second paragraph from
12 the top says, "The following representatives
13 from EPA participate on the relevant ASTM
14 committees...," and then lists a number of
15 individuals. Is that correct?
16 A. Yes.
17 Q. Do you know any of these
18 individuals that are listed?
19 A. Yes.
20 Q. Which individuals do you know?
21 A. I know Deb Goldblum. I know
22 Sven-Erik Kaiser. And I know Patricia
23 Overmeyer.
24 Q. Who is Deborah Goldblum?
25 A. She works in the EPA. It's --

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1 marked for identification.)
2 - - -
3 BY MR. BECKER:
4 Q. I'm handing you what's been
5 marked as Exhibit 1300. Could you, please,
6 identify this document?
7 A. It says at the top "Laboratory
8 Inspection Program," but it would appear to
9 be a membership application.
10 Q. I'll note that this document is
11 produced by ASTM as ASTM067024. Is there any
12 mention of copyright assignment or ASTM's IP
13 Policy on this document?
14 MR. FEE: Objection to form.
15 THE WITNESS: I don't see that
16 language on here, no.
17 - - -
18 (Exhibit 1301, Membership
19 applications, Bates ASTM066871,
20 ASTM069213, ASTM069058, ASTM080176,
21 ASTM061450, ASTM063146, ASTM063147,
22 ASTM065682 & ASTM066345, was marked
23 for identification.)
24 - - -
25 BY MR. BECKER:

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1 Q. I'm handing you what's been
2 marked as Exhibit 1301. This is a
3 compilation of documents that were provided
4 by ASTM as single pages. It is one example
5 from each year from which ASTM has provided a
6 membership application starting with the 2007
7 membership application and ending with the
8 2014 membership application. And the Bates
9 numbers are ASTM066871, ASTM069213,
10 ASTM069058, ASTM080176, ASTM061450,
11 ASTM063146, ASTM063147, ASTM065682 and
12 ASTM066345.
13 Are these the ASTM membership
14 application forms for the years 2007 through
15 2014?
16 MR. FEE: Objection to the
17 extent the witness has cherry picked
18 pages of membership applications that
19 were produced to you; to form as well,
20 and compound.
21 THE WITNESS: These are versions
22 of the application from these years.
23 BY MR. BECKER:
24 Q. Were there multiple versions of
25 the ASTM membership applications for these

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1 respective years, 2007 through 2014?
2 MR. FEE: Objection to form.
3 THE WITNESS: There probably
4 was, yes.
5 BY MR. BECKER:
6 Q. How do you know that?
7 A. Well, because I know our
8 applications, we have applications that have
9 the language that we spoke about earlier that
10 was on, was it 1293, Exhibit 1293? We have
11 copies of membership applications that have
12 that language on there.
13 Q. Exhibit 1293 is a membership
14 renewal invoice. Correct?
15 A. Yes.
16 Q. And a membership renewal
17 invoice is different from a membership
18 application. Correct?
19 A. Yes.
20 Q. So when you say that there are
21 different versions, do you mean that there is
22 different versions of the membership
23 applications for each year or that there is a
24 membership application and there also is a
25 membership renewal invoice --

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1 MR. FEE: Objection. Form.
2 BY MR. BECKER:
3 Q. -- for each year?
4 A. We have membership applications
5 for these years that have that language from
6 Exhibit 1293 on them.
7 Q. How do you know that there are
8 membership applications for all of the years
9 2007 through 2014 that have the same language
10 that is from the 2011 membership renewal
11 invoice Exhibit 1293?
12 MR. FEE: Objection to form.
13 THE WITNESS: Because I believe
14 we put the language on the renewal
15 forms and the application forms at the
16 same time.
17 BY MR. BECKER:
18 Q. Why would there be membership
19 applications that do not have the language
20 that you're referring to? And to -- let
21 me -- hold on. Let me clarify.
22 By the language that you're
23 referring to on Exhibit 1293, you're
24 referring to the purported copyright
25 assignment language that starts with "You

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1 agree. By your participation in ASTM...."
2 Correct?
3 A. Yes.
4 MR. FEE: Hold on. Objection to
5 form.
6 THE WITNESS: Sorry.
7 MR. FEE: It's compound. Calls
8 for a legal conclusion.
9 THE WITNESS: The language that
10 I'm talking about is on Exhibit 1293
11 that begins with "You agree, by your
12 participation...."
13 BY MR. BECKER:
14 Q. Why do you believe that ASTM
15 put the language that you're referring to on
16 the renewal forms and the application forms
17 at the same time?
18 A. That's what I recall.
19 Q. Recall from what?
20 MR. FEE: Objection. Vague.
21 THE WITNESS: Just what I
22 remember.
23 BY MR. BECKER:
24 Q. Do you know when ASTM first
25 used the language that you're referring to

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1 from Exhibit 1293?
2 A. Not exactly sure.
3 Q. Do you have any idea as to what
4 year ASTM first started using that language
5 that appears on Exhibit 1293?
6 A. I thought it was in about 2005.
7 Q. Do you have any way to confirm
8 when ASTM began using that language that was
9 featured on Exhibit 1293?
10 MR. FEE: Objection. Vague.
11 THE WITNESS: Not right here,
12 now.
13 BY MR. BECKER:
14 Q. How would you go about
15 confirming that?
16 A. I would ask our general counsel.
17 Q. Is there any other way that you
18 would confirm that?
19 A. Not right now.
20 Q. Is there anyone who would know
21 other than ASTM's general counsel when the
22 copyright assignment language that you're
23 referring to from 1293 was first used by ASTM
24 on membership forms?
25 A. I'm not sure.

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1 Q. How many different forms of
2 membership application existed in 2007?
3 A. I don't know.
4 Q. Do you know how many different
5 forms of membership application ASTM had for
6 the year 2008?
7 A. No.
8 Q. Do you know how many forms of
9 membership application ASTM had for the year
10 2009?
11 A. No.
12 Q. Do you know how many forms of
13 membership application ASTM had for 2010?
14 A. No.
15 Q. How about for 2011?
16 A. No.
17 Q. Or 2012?
18 A. No.
19 Q. Or 2013?
20 A. No.
21 Q. Or 2014?
22 A. No.
23 Q. Do you know why ASTM has
24 different membership application forms?
25 MR. FEE: Objection. To the

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1 extent that your answering that
2 question would disclose
3 attorney-client communications, you
4 shouldn't disclose that. You can
5 answer otherwise.
6 THE WITNESS: No. My experience
7 has been that if we go to a very
8 focused individual conference, there
9 may be a -- it could be the staff
10 manager prepares an application for
11 that particular committee and did not
12 use the most current application.
13 BY MR. BECKER:
14 Q. Is there a difference between
15 ASTM membership application forms and ASTM
16 committee membership application forms?
17 MR. FEE: Objection. Vague.
18 THE WITNESS: We have a type of
19 membership that's called a
20 participating membership where you
21 join technical committees. And then
22 we also have informational members
23 that just joined ASTM but they do not
24 join a particular technical committee.
25 But I'm not aware of a difference

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1 BY MR. BECKER:
2 Q. On the next page, ASTM063147,
3 it has different language concerning the ASTM
4 Intellectual Property Policy than the 2012
5 membership application that we were just
6 discussing. Is that correct?
7 MR. FEE: Hold on one second.
8 You can answer.
9 THE WITNESS: Yes, that language
10 is different.
11 BY MR. BECKER:
12 Q. The language that's on
13 ASTM063147 is similar to the language that's
14 on Exhibit 1293, the 2011 membership renewal
15 invoice. Is that correct?
16 MR. FEE: Objection. Vague.
17 THE WITNESS: Yep, that looks
18 correct. Slightly different.
19 BY MR. BECKER:
20 Q. Why is this language different
21 for the 2012 committee membership application
22 than for the 2012 membership application?
23 MR. FEE: Objection. To the
24 extent that would require you to
25 disclose attorney-client

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1 communications, you shouldn't do so.
2 If you can answer otherwise, go ahead.
3 THE WITNESS: My perspective is
4 that they're the same thing. They're
5 both intended for an individual to
6 join a particular committee.
7 BY MR. BECKER:
8 Q. Why is the copyright -- you say
9 they're the same thing, the copyright
10 assignment language?
11 MR. FEE: Same objection and
12 instruction.
13 THE WITNESS: No, I believe the
14 form is the same thing. It serves the
15 same purpose. It's an application so
16 an individual can join the technical
17 committee.
18 BY MR. BECKER:
19 Q. And my question was about the
20 actual language that ASTM believes concerns
21 copyright assignment. Why is there a
22 difference in the language concerning ASTM's
23 IP Policy on ASTM063146 as opposed to the
24 language concerning ASTM's IP Policy on
25 ASTM063147?

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1 MR. FEE: Objection to form. I
2 also object to the extent it calls for
3 attorney-client communications. You
4 shouldn't disclose any communications
5 between you and counsel, but you can
6 answer otherwise.
7 THE WITNESS: I believe the
8 language that is at the top of
9 ASTM063146 was language that we used
10 prior to the language that we used
11 that's contained on ASTM063147.
12 BY MR. BECKER:
13 Q. But if you then turn the page
14 to ASTM065682, that's a 2013 membership
15 application, and it has the same language
16 concerning the ASTM Intellectual Property
17 Policy as on ASTM063146. Correct?
18 A. That's what it looks like.
19 Q. If you turn the page to the
20 following page, the 2014 membership
21 application also has that same language.
22 Correct?
23 A. Yes.
24 Q. So ASTM has continued to use
25 this language into 2014?

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1 MR. FEE: Objection. Vague.
2 THE WITNESS: That's what it
3 would appear to me.
4 BY MR. BECKER:
5 Q. Who knows how many different
6 versions exist for the membership
7 applications during each year from 2007 to
8 2014?
9 A. I don't know if anybody knows.
10 Q. Why is that?
11 MR. FEE: Objection. Calls for
12 speculation.
13 THE WITNESS: My experience as
14 being a staff manager is I don't think
15 people think about the version of an
16 application that's being used. I
17 think it's viewed as a tool that
18 enables an individual to join a
19 technical committee.
20 BY MR. BECKER:
21 Q. Who creates the membership
22 applications such as the 2014 membership
23 application ASTM066345?
24 A. I'm not sure who creates it.
25 Maybe our customer relations. Maybe it's our

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1 I just want to say that Mr. Smith has
 2 been available to be deposed since
 3 10:00 a.m. this morning. It's now
 4 7:00. We have about 55 minutes left.
 5 We're not staying past 8:00. So if
 6 you're going to take any other breaks,
 7 it better be short. That was a
 8 20-minute break and I think a complete
 9 waste of time. Go ahead.
 10 BY MR. BECKER:
 11 Q. Mr. Smith, I've handed you
 12 what's marked as Exhibit 1311. This is a
 13 document produced by ASTM as 003501 to 3522.
 14 Could you, please, identify it?
 15 A. It says, "RECORD RETENTION
 16 POLICY."
 17 Q. Is this ASTM's record retention
 18 policy?
 19 A. Yes, I believe it is.
 20 Q. Have you -- did you review
 21 ASTM's record retention policy in preparation
 22 for the deposition today?
 23 A. I reviewed it very briefly.
 24 Q. Do you know what category under
 25 the record retention policy that membership

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1 application forms would qualify as?
 2 MR. FEE: Objection. It's
 3 beyond the scope of his designation.
 4 THE WITNESS: Are you referring
 5 to any particular pages?
 6 BY MR. BECKER:
 7 Q. Yes. If you look at ASTM 3502
 8 and 3503, it says, "Types of Records." That
 9 includes "Temporary Records," "Final Records"
 10 and "Permanent Records." And then it also
 11 has B is -- section B, "Types of Records That
 12 have Legal or Regulatory Periods of
 13 Retention," "Accounting and Corporate Tax
 14 Records," "Corporate Records," "Employment
 15 and Employee Records," "Bank Records," and
 16 "Legal Records."
 17 A. I don't know what category
 18 membership application would fall under,
 19 would just -- I'm not sure.
 20 Q. Do you know what category the
 21 ASTM IP Policy would fall under?
 22 MR. FEE: Objection. Beyond the
 23 scope.
 24 THE WITNESS: No, I don't know.
 25 I'm not very familiar with the "Types

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1 of Records," section III.
 2 - - -
 3 (Exhibit 1312, 11/21/08 E-mail
 4 with attachment, Bates ASTM088320 -
 5 ASTM088325, was marked for
 6 identification.)
 7 - - -
 8 BY MR. BECKER:
 9 Q. I'm handing you what's been
 10 marked as Exhibit 1312. This is the document
 11 produced by ASTM as ASTM088320 to ASTM088325.
 12 It is an e-mail with an attachment that says,
 13 "ASTM International Author/Copyright Owner
 14 Agreement." Is this attachment a correct
 15 copy of the ASTM International
 16 Author/Copyright Ownership Agreement?
 17 MR. FEE: Objection. Vague as
 18 to time. Beyond the scope of the
 19 designation as well.
 20 THE WITNESS: I'm not sure.
 21 BY MR. BECKER:
 22 Q. Who would know whether this
 23 attachment is a correct copy of the ASTM
 24 International Author/Copyright Ownership
 25 Agreement?

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1 MR. FEE: Objection. Beyond the
 2 scope.
 3 THE WITNESS: I would have to
 4 read it first to possibly give you an
 5 answer.
 6 Our publications department
 7 might be able to tell you whether or
 8 not this is the correct
 9 Author/Copyright Owner Agreement since
 10 it's a journal paper, relevant to a
 11 journal paper.
 12 - - -
 13 (Exhibit 1313, Web site
 14 screenshots, Bates ASTM001792 -
 15 ASTM001800, was marked for
 16 identification.)
 17 - - -
 18 BY MR. BECKER:
 19 Q. I'm handing you what's been
 20 marked as Exhibit 1313. This document was
 21 produced by ASTM with Bates number ASTM001792
 22 to 1800. What is this document?
 23 A. This looks like it is
 24 screenshots from our Web site for how an
 25 individual would renew their membership.

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1 that I've provided here as Exhibit 1315?
2 MR. FEE: Same objections, plus
3 lack of formation -- or foundation.
4 Sorry.
5 THE WITNESS: I'm not aware of
6 whether there was or there was not.
7 - - -
8 (Exhibit 1316, Regulations
9 Governing ASTM Technical Committees,
10 was marked for identification.)
11 - - -
12 BY MR. BECKER:
13 Q. I'm handing you what's been
14 marked as Exhibit 1316. Could you, please,
15 tell me what this document is?
16 A. The front page says the
17 "REGULATIONS GOVERNING ASTM TECHNICAL
18 COMMITTEES."
19 Q. What are the Regulations
20 Governing ASTM Technical Committees?
21 A. It's essentially this entire
22 document if it's all included here.
23 Q. Does it appear to be all
24 included there?
25 A. I'd have to go through it, but

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1 it could. Looks like it.
2 Q. What is the purpose of the
3 Regulations Governing ASTM Technical
4 Committees?
5 MR. FEE: Objection. Beyond the
6 scope. Vague.
7 THE WITNESS: Technical
8 committees follow the regulations and
9 develop member standards.
10 BY MR. BECKER:
11 Q. Do you use the Regulations
12 Governing ASTM Technical Committees in the
13 course of your work with ASTM?
14 A. Yes.
15 Q. How do you use them?
16 A. As staff people, we advise our
17 technical committees on the regulations so
18 that they -- the regulations can be followed
19 in the development of their standards.
20 Q. Do staff members do other
21 things to assist the members of the technical
22 committees?
23 MR. FEE: Objection. Vague.
24 THE WITNESS: Yes.
25 BY MR. BECKER:

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1 Q. What do staff members do to
2 assist the members of technical committees?
3 MR. FEE: Objection. Vague.
4 THE WITNESS: General
5 assistance. Provide them with advice
6 on regulations, on our form and style
7 manual. We have interlaboratory study
8 program that assists our members. A
9 variety of things. I don't know if
10 there's anything specific that you
11 want me to focus on.
12 BY MR. BECKER:
13 Q. Does -- how does ASTM staff
14 members assist individual -- assist technical
15 committee members in the drafting or revision
16 of standards?
17 MR. FEE: Objection. Vague.
18 THE WITNESS: We have -- we
19 provide them with editorial
20 assistance, so we'll provide editorial
21 help within the documents. Our
22 interlaboratory study program is
23 responsible for organizing round-robin
24 studies for collecting the data and
25 doing the number crunching in order to

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1 produce precision statements. Our ILS
2 team will produce the research reports
3 which are referenced in the standard.
4 We will help -- we have a graphics
5 department that will create graphics
6 for the standards, for committee
7 members. We have an up-front editor
8 that provides a great deal of
9 assistance if we have a draft that
10 needs to be put into proper ASTM form
11 and style. We provide them with
12 assistance on language for caveats
13 that are placed in the ASTM standards.
14 BY MR. BECKER:
15 Q. Anything else?
16 A. We provide an awful lot of
17 assistance, but nothing else that comes to
18 mind at this particular time.
19 Q. When you say editorial
20 assistance, what do you mean by that?
21 A. Grammatical things. We'll
22 inform members if they have mandatory
23 language in a non-mandatory section, that
24 that's outside the form and style policy. Or
25 vice versa, if they have non-mandatory

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1 language in a mandatory section, we'll
2 provide assistance in tweaking that language
3 so that it's within the form and style
4 guidelines.
5 Q. Anything else in terms of
6 editorial assistance other than grammatical
7 assistance?
8 A. We could take a document and
9 place it and organize it so that it has the
10 relevant sections as defined in the form and
11 style manual.
12 Q. Do you mean to reorganize a
13 draft standard, is that what you're saying?
14 A. Yes.
15 Q. What are -- excuse me.
16 Anything else in terms of
17 editorial assistance?
18 A. Our editors will also take a
19 document that's been approved through our
20 balloting process, if it's a new standard,
21 they'll put it into publication format and
22 work with the technical contacts to make sure
23 that everything looks good prior to
24 publication.
25 Q. When you say they put it into

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1 publication format, does that involve any
2 changes to the content of the draft standard?
3 MR. FEE: Objection. Vague.
4 THE WITNESS: It involves taking
5 what was balloted in the Word format
6 and placing it into our XML format
7 that we use for producing PDFs.
8 BY MR. BECKER:
9 Q. Is that a no?
10 MR. FEE: Objection. You can
11 answer the question however you like.
12 You don't have to answer it yes or no.
13 THE WITNESS: Did you ask me is
14 that a no?
15 BY MR. BECKER:
16 Q. Yeah.
17 A. What was -- can you repeat the
18 original question?
19 Q. The question was, when you say
20 you put it into publication format, does that
21 involve any changes to the content of the
22 draft standards?
23 MR. FEE: Objection. Vague.
24 THE WITNESS: It could,
25 editorial changes, yes.

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1 BY MR. BECKER:
2 Q. Is that the same grammatical
3 changes that you were referring to before?
4 MR. FEE: Objection.
5 Mischaracterizes his testimony.
6 Vague.
7 BY MR. BECKER:
8 Q. I'm sorry, what did you say?
9 A. The editors could work with the
10 technical contacts to incorporate editorial
11 changes, grammatical or reorganization of
12 content.
13 Q. Who are the technical contacts?
14 A. Who are they?
15 Q. Yeah.
16 A. They are individuals that take
17 the lead in developing a new standard or in
18 developing a revision to an existing
19 standard.
20 Q. Are those volunteers or are
21 those employees of ASTM?
22 MR. FEE: Objection. Vague.
23 Calls for a legal conclusion.
24 THE WITNESS: They're
25 volunteers.

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1 BY MR. BECKER:
2 Q. What did you mean when you said
3 precision statements?
4 A. Precision statements are
5 included in test methods.
6 Q. What are precision statements?
7 A. Precision statements include
8 statements on repeatability and reproducibility.
9 Q. What do you mean by that?
10 A. For a test method, a statement
11 of repeatability would be a laboratory taking
12 the ASTM test method and running the test in
13 the laboratory several times. And they take
14 the results of that test and they see how
15 close each iteration is. And if the results
16 are very close, then that would indicate good
17 precision. If it's -- if the results are not
18 close, then that would indicate poor
19 precision. So that's what repeatability is.
20 Then reproducibility is at least six labs
21 doing the same thing as what I just described
22 as that one lab. And then the
23 reproducibility is a statement that analyzes
24 the results from all six or more labs.
25 Q. Do the same precision

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1 statements appear in different standards?
2 A. In test methods.
3 Q. For test methods they do?
4 A. Yes.
5 Q. What is the work that the
6 graphics department does?
7 MR. FEE: Objection. Vague.
8 THE WITNESS: Graphics, I don't
9 know exactly everything that they do,
10 but they will take figures that are
11 perhaps old from years ago and we will
12 use them in our technology, update
13 them to make them more user friendly.
14 BY MR. BECKER:
15 Q. Are these figures that were
16 created by committee members or how are these
17 figures created that the graphics department
18 would update?
19 MR. FEE: Objection to form.
20 THE WITNESS: I would assume by
21 the committee members.
22 BY MR. BECKER:
23 Q. Do members -- do committee
24 members vote on the changes that -- or
25 additions that you just described?

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1 MR. FEE: Objection.
2 Mischaracterizes his testimony. Vague
3 and ambiguous.
4 THE WITNESS: Yes.
5 BY MR. BECKER:
6 Q. Do committee members vote on
7 the final versions of ASTM standards?
8 A. I'm not sure what you mean by
9 "final versions."
10 Q. Do committee members vote on
11 ASTM standards, on the final appearance of
12 ASTM standards?
13 MR. FEE: Objection. Vague.
14 THE WITNESS: The final
15 appearance, the published format?
16 BY MR. BECKER:
17 Q. Yes.
18 A. No.
19 Q. Do ASTM committee members vote
20 on the content that appears in the final form
21 of ASTM standards?
22 MR. FEE: Objection. Vague.
23 THE WITNESS: The content that
24 is balloted and approved through our
25 consensus process is not changed

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1 significantly when it's transformed
2 into the published version.
3 BY MR. BECKER:
4 Q. When you say it's not changed
5 significantly, what do you mean?
6 A. There could be editorial
7 changes. So that's a service that our
8 editors perform. When they're putting it
9 into the published version, they will work
10 with the technical contact to incorporate any
11 editorial changes that may have been agreed
12 upon by the committee.
13 Q. You mentioned caveats in ASTM
14 standards. What are those?
15 A. There are caveats that are in
16 our form and style manual.
17 Q. Are those -- what exactly are
18 the caveats in the form and style manual?
19 MR. FEE: Objection. Vague.
20 THE WITNESS: I wouldn't be able
21 to name all of them for you, but there
22 are caveats related to the use of
23 units, so the standard will -- the --
24 there will be a caveat that will
25 identify the use of units within a

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1 particular standard. We have certain
2 safety caveats and hazardous caveats.
3 I think we have a caveat that deals
4 with mercury being used in the
5 standard. I'm sure there are some
6 others.
7 - - -
8 (Exhibit 1317, Participating
9 Membership Applications, Bates
10 ASTM064686 - ASTM064692, was marked
11 for identification.)
12 - - -
13 BY MR. BECKER:
14 Q. I'm handing you what's been
15 marked as Exhibit 1317. This document has
16 been produced by ASTM as ASTM064686 to 64692.
17 What is this document?
18 A. This looks like a copy of an
19 old application that was downloaded and saved
20 from our Web site and that was filled out by
21 hand. Best guess.
22 - - -
23 (Exhibit 1318, E-mail chain with
24 attachment, Bates ASTM087493 -
25 ASTM087497, was marked for

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1 identification.)
 2 - - -
 3 BY MR. BECKER:
 4 Q. I'm handing you what's been
 5 marked as Exhibit 1318. Does this exhibit
 6 appear to show an individual who was
 7 attempting to renew his application,
 8 membership application with ASTM by phone --
 9 A. I'd have to read it.
 10 Q. -- and e-mail?
 11 A. [Reviewing document.] Looks
 12 like, based on what I'm reading here, they
 13 were trying to renew the membership by phone,
 14 but it doesn't say that it actually happened.
 15 Q. Can ASTM members renew their
 16 membership by phone or e-mail?
 17 A. They could. It's not -- I
 18 don't think it's very common, but they could.
 19 - - -
 20 (Exhibit 1319, 2011 ASTM
 21 International Committee Membership
 22 Application, Bates ASTM061183, was
 23 marked for identification.)
 24 - - -
 25 BY MR. BECKER:

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1 Q. I'm handing you what's been
 2 marked as Exhibit 1319, document produced by
 3 ASTM as Bates number ASTM061183. What is
 4 this document?
 5 A. It says, "2011 ASTM...Committee
 6 Membership Application."
 7 Q. Does this document appear to
 8 have a line crossed through the language
 9 concerning the ASTM IP Policy?
 10 MR. FEE: Objection. The
 11 document speaks for itself.
 12 THE WITNESS: I can't say that
 13 that's a line or whether that's an
 14 indicator towards the individual's
 15 account number.
 16 - - -
 17 (Exhibit 1320, How To Standards
 18 Writing 101 New Standards, was marked
 19 for identification.)
 20 - - -
 21 BY MR. BECKER:
 22 Q. I'm handing you what's been
 23 marked as Exhibit 1320. What is this
 24 document?
 25 A. I'm not sure. It says

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1 Standards Writing 101 How To [as read]. It
 2 looks like something that was written in
 3 Standardization News back in 2000.
 4 Q. Does this document accurately
 5 reflect the way that standards were developed
 6 at ASTM in approximately March of 2000?
 7 MR. FEE: You're going to have
 8 to read the whole document to answer
 9 that question.
 10 THE WITNESS: This was, I
 11 believe, a way that an individual
 12 could request the development of a new
 13 standard.
 14 BY MR. BECKER:
 15 Q. So there were other ways that
 16 an individual could request the development
 17 of a new standard as of March 2000?
 18 A. Yeah, they could make a request
 19 from the subcommittee or by the subcommittee
 20 chairman.
 21 - - -
 22 (Exhibit 1321, How Standards are
 23 Developed article, was marked for
 24 identification.)
 25 - - -

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1 BY MR. BECKER:
 2 Q. I'm handing you what's been
 3 marked as Exhibit 1321. This document was
 4 printed from the ASTM Web site at
 5 www.astm.org/MEMBERSHIP/standardsdevelop.HTML.
 6 What is this document?
 7 A. It looks like maybe an article.
 8 MR. FEE: Objection. Lack of
 9 foundation.
 10 THE WITNESS: Maybe an article
 11 we have on our Web site that helps
 12 provide guidance for our members.
 13 BY MR. BECKER:
 14 Q. Do you know what a US TAG ISO
 15 list is?
 16 A. A US --
 17 Q. US TAG ISO list.
 18 A. United States Technical
 19 Advisory Group ISO list, I don't know if that
 20 refers to the list of members that are
 21 serving on the technical advisory group.
 22 - - -
 23 (Exhibit 1322, 8/13/08 E-mail,
 24 Bates ASTM073852, was marked for
 25 identification.)

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1 IP Policy or assignments?
 2 MR. BECKER: Object as to form.
 3 THE WITNESS: There is
 4 additional language. This document
 5 identifies membership renewal Web
 6 screenshots for different types of
 7 members. So I identified page 2, and
 8 then there's also additional language
 9 on page ASTM001796 as well as
 10 ASTM001798. And I believe that's it.
 11 MR. FEE: I have no other
 12 questions.
 13 Do you have any other questions
 14 or is he done?
 15 MR. BECKER: No, no redirect.
 16 MR. FEE: Great. Thank you.
 17 THE WITNESS: Thanks.
 18 VIDEOGRAPHER: The time is now
 19 7:57. This concludes the videotape
 20 deposition of Dan Smith.
 21 - - -
 22 (Witness excused.)
 23 - - -
 24 (Deposition concluded at 7:57
 25 p.m.)

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1 I declare under penalty of perjury
 2 under the laws that the foregoing is
 3 true and correct.
 4
 5 Executed on _____, 20____,
 6 at _____, _____.
 7
 8
 9
 10
 11 _____
 12 DANIEL SMITH
 13
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1 CERTIFICATE
 2
 3
 4 I do hereby certify that I am a Notary
 5 Public in good standing, that the aforesaid
 6 testimony was taken before me, pursuant to
 7 notice, at the time and place indicated; that
 8 said deponent was by me duly sworn to tell
 9 the truth, the whole truth, and nothing but
 10 the truth; that the testimony of said
 11 deponent was correctly recorded in machine
 12 shorthand by me and thereafter transcribed
 13 under my supervision with computer-aided
 14 transcription; that the deposition is a true
 15 and correct record of the testimony given by
 16 the witness; and that I am neither of counsel
 17 nor kin to any party in said action, nor
 18 interested in the outcome thereof.
 19
 20 WITNESS my hand and official seal this
 21 7th day of August, 2015.
 22
 23
 24
 25

 Notary Public

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