Lockheed Martin Specialty Components

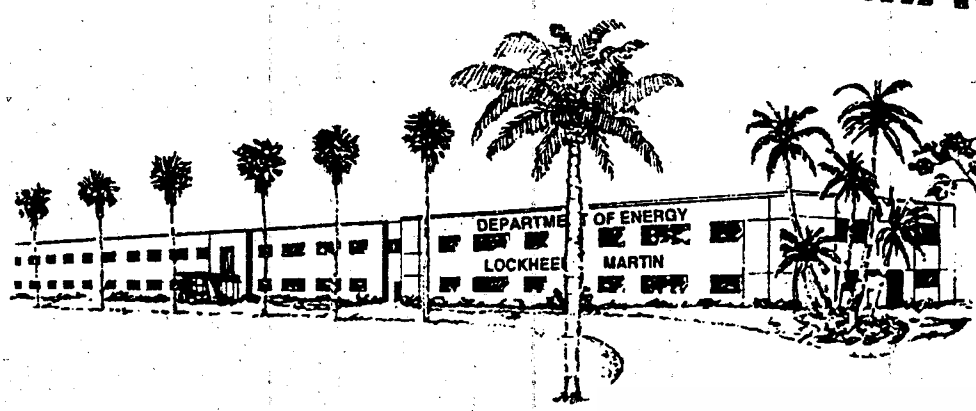
U.S. Department of Energy

Pinellas Plant

Environmental Baseline

Report

June 1997



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Pinellas Area Office

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TABLES

ACRONYMS

ACM	Asbestos Containing Material
AHERA	Asbestos Hazard Emergency Response Act
AHU	Air Handling Unit
AIP	Agreement In Principle
ALARA	As Low As Reasonably Achievable
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFC	Chlorofluorocarbon
CFR	Code of Federal Regulations
CMS	Corrective Measures Study
CMIP	Corrective Measures Implementation Plan
CMTS	Chemical Material Tracking System
D&C	Deactivation and Compliance
DI	Deionized Water
DOE	Department of Energy
DOT	Department of Transportation
EBR	Environmental Baseline Report
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ER	Environmental Restoration
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FPC	Florida Power Corporation
GE	General Electric
GEND	GE Neutron Devices
HAP	Hazardous Air Pollutant
HEPA	High Efficiency Particulate Air
HFC	Hydrofluorocarbon
HCFC	Hydrochlorofluorocarbon
HRS	State of Florida Department of Health and Rehabilitative Services
HSWA	Hazardous and Solid Waste Amendment
ICP	Inductive Coupled Plasma
IWNF	Industrial Wastewater Neutralization Facility
LAC	Lightning Arrestor Connector
LAMB	Lithium Ambient Battery

ACRONYMS (Continued)

M&O	Management and Operating
MCL	Maximum Contaminant Level
MDA	Methylene Dianiline
MSDS	Material Safety Data Sheets
NFPA	National Fire Protection Association
OC	Organic Compound
OSHA	Occupational Safety and Health Administration
PAO	Pinellas Area Office
PCB	Polychlorinated Biphenyls
PCIC	Pinellas County Industry Council
PCU	Pinellas County Utilities
PM	Particulate Matter
POTW	Publicly Owned Treatment Works
RAP	Remedial Action Plan
R&D	Research and Development
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RMMA	Radioactive Materials Management Areas
RTG	Radioisotopically-powered Thermoelectric Generator
RTV	Room Temperature Vulcanizing Rubber
SARA	Superfund Amendment and Reauthorization Act
SDWA	Safe Drinking Water Act
SECS	Stack Emission Control System
STP	Site Treatment Plan
SWMU	Solid Waste Management Unit
TCLP	Toxicity Characteristic Leaching Procedure
TIG	Tungsten Inert Gas
TRS	Tritium Recovery System
UPS	Uninterruptible Power Source
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank

1.0 OVERALL SUMMARY

The Pinellas Plant has been part of the Department of Energy's (DOE) nuclear weapons complex since the plant opened in 1957. In March 1995, the DOE sold the Pinellas Plant to the Pinellas County Industry Council (PCIC). DOE has leased back a large portion of the plant site to facilitate transition to alternate use and safe shutdown. The current mission is to achieve a safe transition of the facility from defense production and prepare the site for alternative uses as a community resource for economic development. Toward that effort, the Pinellas Plant Environmental Baseline Report (EBR) discusses the current and past environmental conditions of the plant site.

Information for the EBR is obtained from plant records. Historical process and chemical usage information for each area is reviewed during area characterizations. The information obtained is documented in an Area Characterization and Closeout Report. The area characterization and closeout process is described in more detail in Section 7.0. Updated information from area characterizations and closeout reports published through May 30, 1997 is included in this report.

More detailed information can be obtained from the documents referred to throughout the EBR, as well as from the documents listed in the Reference Section of this report. Specifically, the Pinellas Plant Annual Sitewide Environmental Report for Calendar Year 1996, the Pinellas Plant Environmental Monitoring Plan, and the Pinellas Plant Statement of Basis for Twelve Solid Waste Management Units (SWMUs) Recommended for No Further Action contain additional environmental information surrounding the Pinellas Plant. These three documents, as well as characterization and closeout reports finalized after May 30, 1997, may be requested from Mr. David Ingle, DOE's Pinellas Area Office (PAO) Environmental Restoration Program Manager, c/o Pinellas County Industry Council, 7990 - 114 Avenue North, Suite 1, Largo, Florida 33733, telephone (813) 541-8943.

The Pinellas Plant EBR is intended to satisfy the Comprehensive Environmental Response, Compensation, and Liability Act's (CERCLA's) requirements stated in Section 120(h) for property transferred by Federal Agencies.

1.1 Historical Operation

General Electric (GE) constructed the Pinellas Plant in 1956 for the production of neutron generators for the nation's nuclear weapons program. The Atomic Energy Commission purchased the Pinellas Plant from GE in 1957 and contracted them to manage and operate the site. GE Neutron Devices (GEND) served in this capacity until June 1992, at which time Lockheed Martin Specialty Components, Inc., (Specialty Components) (formerly Martin Marietta Specialty Components, Inc.) assumed operation of the plant. The major product lines at the plant included the following: neutron generators and detectors, Radioisotopically-powered Thermoelectric Generators (RTGs), specialty capacitors, vacuum switch tubes, electromagnetic devices, thermal batteries, thermal ambient temperature batteries, frequency control devices, quartz digital accelerometers, Lightning Arrestor Connectors (LACs), ceramics, ferroelectric ceramics, foam support pads, and optoelectronics.

1.2 Plant Property

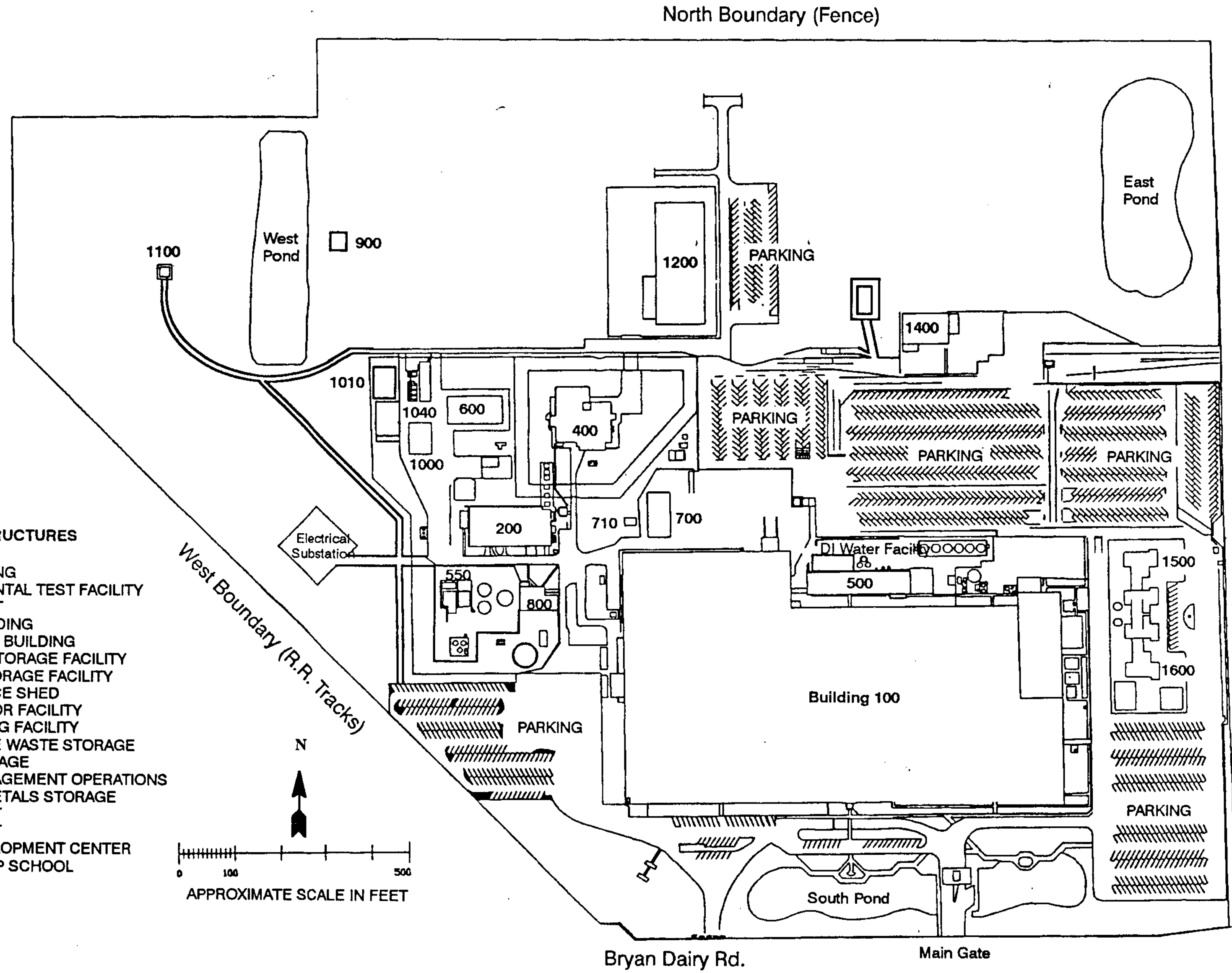
The Pinellas Plant is located on approximately a 100-acre site [Ref. 1] in the center of Pinellas County, Florida. Approximately 35 acres of the plant site are occupied by buildings and other developed areas. The remaining acreage consists of parking lots and undeveloped cleared grassy lands and three man-made ponds. Two of these ponds, the East and West, are identified as designated wetlands on the National Wetlands Inventory by the U.S. Fish and Wildlife Service (USFWS). A USFWS correspondence, dated July 25, 1991 (see Appendix A), identified the Federally listed species that may be on the Pinellas Plant site. These included three endangered and one threatened species. However, during a survey of the site in March 1992, no State or Federally listed threatened or endangered species were observed. The habitat at the Pinellas Plant site is therefore not considered critical to protected species due to their low dependence on the site [Ref. 2]. No historic or archaeological sites are located on the plant site based on correspondence, dated September 12, 1991, from the Florida Department of State Division of Historical Resources (see Appendix B).

1.3 Buildings

Approximately 24 buildings and structures are on the Pinellas Plant site (as shown in Figure 1-1). The plant occupies over 700,000 square feet of interior space, including manufacturing, laboratory, office, and support facilities. Building 100 is the largest of the plant facilities, with a total area of over 550,000 square feet on two stories. The other buildings are smaller, single-story masonry structures. Refer to Sections 2.0, 3.0, and 4.0 for more detailed descriptions of the buildings on the plant site.

1.4 Environmental Monitoring and Protection

The environmental monitoring program is specifically designed to detect radiological and nonradiological releases to the air, soil, and water and to determine the potential impacts to the public and environment. Environmental data are trended to verify progress of contaminated site cleanup and to provide early warnings of problematic operational releases. All monitoring is in accordance with Florida Department of Environmental Protection (FDEP) approved procedures and quality assurance protocols. Both DOE and Specialty Components review these procedures regularly and update them to incorporate the latest technical and regulatory developments.



BUILDINGS & STRUCTURES

100	MAIN BUILDING
200	ENVIRONMENTAL TEST FACILITY
400	PCIC TENANT
500	UTILITY BUILDING
550	OPERATIONS BUILDING
600	CHEMICAL STORAGE FACILITY
700	VEHICLE STORAGE FACILITY
710	MAINTENANCE SHED
800	ACCELERATOR FACILITY
900	FIRE TRAINING FACILITY
1000	RADIOACTIVE WASTE STORAGE
1010	90-DAY STORAGE
1040	WASTE MANAGEMENT OPERATIONS
1100	REACTIVE METALS STORAGE
1200	PCIC TENANT
1400	PCIC TENANT
1500	CHILD DEVELOPMENT CENTER
1600	PARTNERSHIP SCHOOL

Figure 1-1. Pinellas Plant Site Layout

1.4.1 Environmental Radiological Monitoring Program

Until March 30, 1997, the radiological monitoring program was conducted in accordance with the Pinellas Plant Environmental Monitoring Plan [Ref. 3]. The radiological monitoring program at the Pinellas Plant will be phased out by the end of the DOE's presence on September 30, 1997. With the removal of radiological materials from the site, the DOE approved reductions in the monitoring program in accordance with local, State, and Federal regulations.

Both on site and in the environment surrounding the Pinellas Plant, the radiological monitoring program included the sampling and analysis of: 1) air for tritium and plutonium, 2) wastewater and surface water for tritium, and 3) soil for plutonium. Plant personnel used this information to determine potential impacts to the public and the environment from plant operations. The plutonium monitoring program was terminated after March 1997. Off-site surface water and air are no longer monitored. The on-site air monitoring stations are being phased out to coincide with the removal of radioactive waste from the site by September 30, 1997.

The Pinellas Plant also maintains an active As Low As Reasonably Achievable (ALARA) program for environmental releases of radioisotopes that sets emission goals significantly lower than the amounts permitted by regulations.

In 1990, the DOE executed an Agreement In Principle (AIP) [Ref. 4] with the State of Florida Department of Health and Rehabilitative Services (HRS) for oversight of environmental radiological monitoring at the Pinellas Plant. The HRS operates an on-site sampling station that continuously samples the ambient air for tritium and plutonium and collects and analyzes on- and off-site surface water samples for tritium and on-site soil samples for plutonium.

1.4.2 Environmental Nonradiological Monitoring Program

The nonradiological monitoring program includes routine characterization of groundwater and wastewater. The program is designed to: 1) verify compliance with the plant wastewater discharge permit, 2) detect contamination of groundwater, 3) determine the effectiveness of groundwater cleanup actions, and 4) demonstrate compliance with applicable regulations.

1.4.3 Superfund Amendments and Reauthorization Act (SARA) Title III Reporting

The Pinellas Plant reports annual toxic chemical inventories and release quantities as required by Sections 312 and 313 of the Superfund Amendments and Reauthorization Act (SARA) of 1986, Title III. These reports disclose plant chemical inventories, usage rates, and release quantities and are provided to Federal, State and local emergency planning committees and local fire authorities. Additionally, plant personnel submit Material Safety Data Sheets (MSDSs) to the local emergency planning committee, State Emergency Response Commission, and local fire departments according to Section 311 of SARA.

1.4.4 Quality Assurance

The Pinellas Plant Environmental Monitoring Plan [Ref. 3] identifies the environmental monitoring quality assurance activities that meet the requirements of 10 Code of Federal Regulations (CFR) 830.120 and DOE 5700.6. The Environmental Monitoring Plan identifies specific requirements to manage, perform, assess, and continuously improve environmental monitoring. This plan provides a systematic approach to satisfy DOE and regulatory agency requirements.

1.5 Environmental Restoration

1.5.1 Previous and Present Conditions

Environmental Restoration (ER) has been ongoing at the Pinellas Plant since the mid 1980s. The ER Program is focused on identifying and evaluating all areas of potential environmental concern and remediating those areas that warrant cleanup. The ultimate program goal is to restore the facility to a state suitable for industrial use. The Pinellas Plant is progressing rapidly toward achieving this goal, with activities currently initiated and/or planned at all sites where contaminants are detected above regulatory standards.

2.0 OVERVIEW OF BUILDINGS 400, 1200, AND 1400

Based on the Pinellas Plant's transition to alternate use, parts of the facility will be used by the PCIC, and other parts will be leased by the DOE until the end of its presence at the Pinellas Plant. Figure 2-1 shows the planned facility usage. Section 2.0 includes an overview of Buildings 400, 1200, and 1400. Figure 2-2 shows the historical Pinellas Plant growth and details each building's square footage and the year it was built.

2.1 Building 400

Building 400 is centrally located on the plant site and contains approximately 15,000 square feet. The original building had about 2,500 square feet and was built in 1968. Additions were made in 1978 (1,500 square feet), 1982 (7,000 square feet), and 1986 (3,500 square feet) (see Figure 2-2). It formerly contained facilities for the assembly and testing of RTGs. Production of these devices at the Pinellas Plant was stopped in 1992, and all plutonium heat sources were removed and shipped off site.

During 1994, activities were initiated to prepare Building 400 for occupancy by a commercial tenant. These activities included removing the utilities and communications that supported the building's independent security system, slightly modifying and increasing the size of the parking lot, flushing and characterizing drains, and abating all asbestos in the facility.

To date, Specialty Components personnel have not detected any lead-based paint inside or outside of Building 400. An indoor radon study, from late 1989 to early 1990, showed radon levels in Building 400 to be below the action levels of the Indoor Radon Abatement Act [Ref. 5]. The radiation exhaust ducting and stacks from past manufacturing processes were removed and properly disposed of. Radiological surveys of the building were performed by Specialty Components and the HRS, Office of Radiation Control. The results of these surveys show agreement between the two sets of data and radiation levels within regulatory limits. The facility was upgraded to meet Federal, State, and local codes, such as National Fire Protection Association (NFPA) and Occupational Safety and Health Administration (OSHA) codes. There are no electrical transformers containing Polychlorinated Biphenyls (PCBs) in or around the building. Building 400 has been released to the PCIC for occupancy. Commercial tenants presently reside in Building 400.

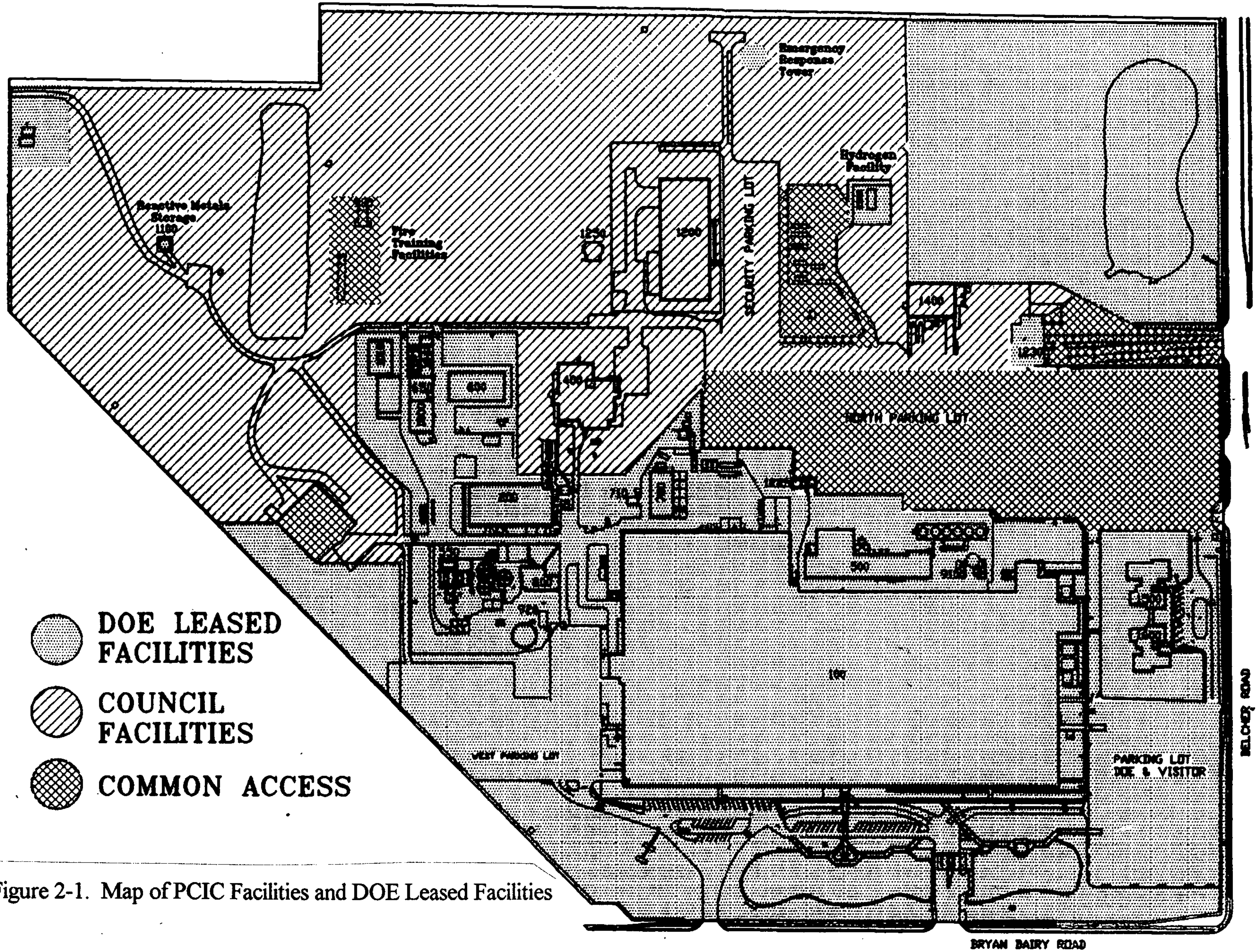


Figure 2-1. Map of PCIC Facilities and DOE Leased Facilities

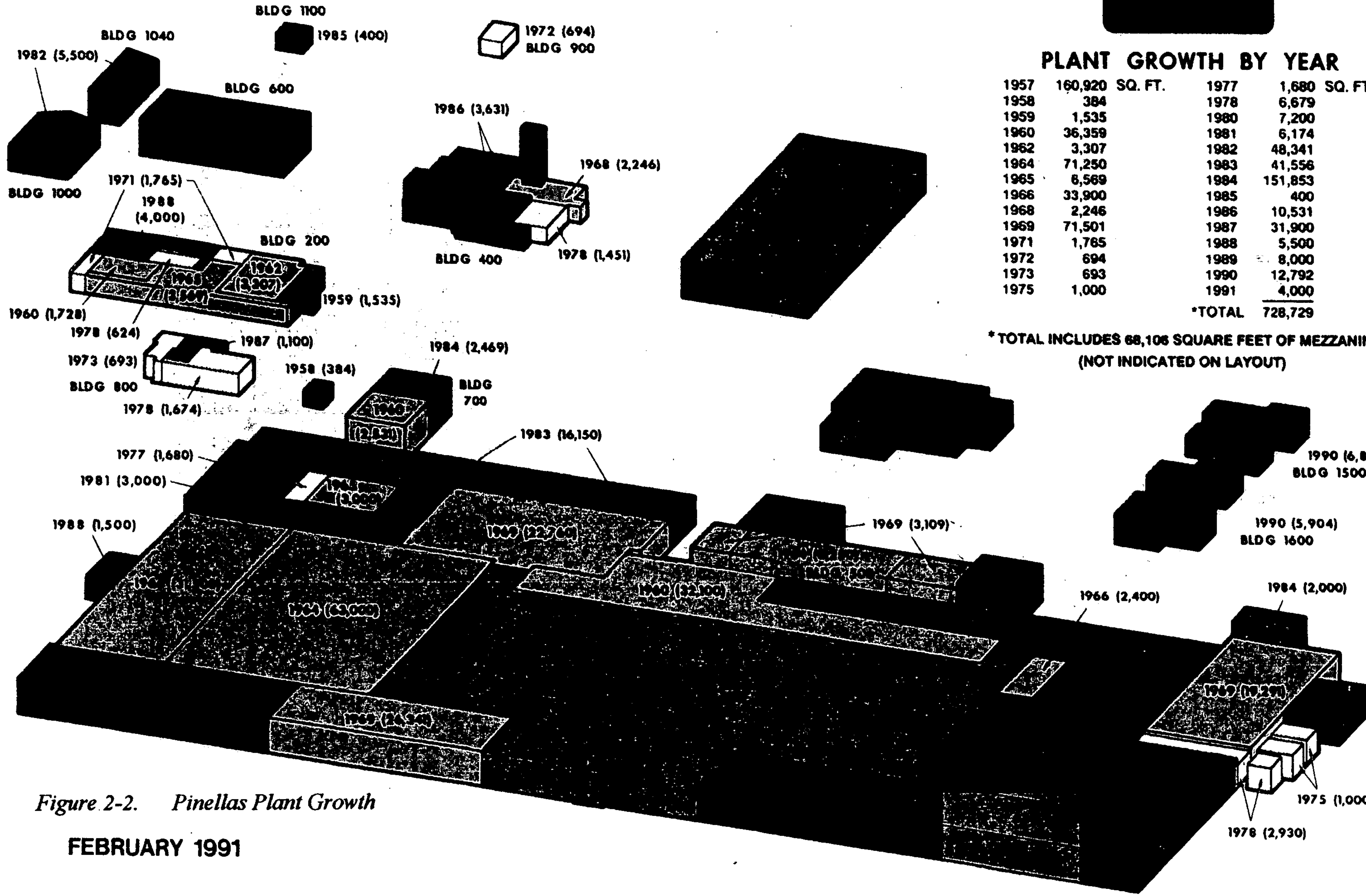
PINELLAS PLANT GROWTH
LARGO, FLORIDA

BUILDINGS ARE NOT IN PROPER GEOGRAPHIC PERSPECTIVE

PLANT GROWTH BY DECADE

1970 - 79

1960 - 69



PLANT GROWTH BY YEAR

1957	160,920 SQ. FT.	1977	1,680 SQ. FT.
1958	384	1978	6,679
1959	1,535	1980	7,200
1960	36,359	1981	6,174
1962	3,307	1982	48,341
1964	71,250	1983	41,556
1965	6,569	1984	151,853
1966	33,900	1985	400
1968	2,246	1986	10,531
1969	71,501	1987	31,900
1971	1,765	1988	5,500
1972	694	1989	8,000
1973	693	1990	12,792
1975	1,000	1991	4,000
		*TOTAL	728,729

* TOTAL INCLUDES 68,106 SQUARE FEET OF MEZZANINES (NOT INDICATED ON LAYOUT)

Figure 2-2. Pinellas Plant Growth

FEBRUARY 1991

2.2 Building 1200

Building 1200 housed the Pinellas Plant security and communications operations, which included the following areas: locker rooms, shower, fitness room, eating/break room, meeting and office areas, indoor firing range and armory, and covered garages. Building 1200 was completed in 1988 and is approximately 28,250 square feet in size. This building formerly provided the security force with centralized operations. A commercial tenant presently resides in Building 1200.

Building 1200 included an armory containing weapons storage lockers, a workstation for the armorer, weapons cleaning equipment and solvents, and an ammunition storage vault. The indoor six-man firing range contains an auxiliary ventilation system, which becomes operational when the range is in use to maintain airborne lead levels below the OSHA personal exposure limit of 50 micrograms per cubic meter. This system has a flow rate of approximately 20,000 cubic feet per minute that exhausts air to the outside through a stack. This stack extends approximately 10 feet above the roof of the building. The ventilation system is considered an insignificant source of air pollution. It has not operated since October 1993. The firing range and ventilation ducts contain some surface contamination from unburned gun powder and lead, and the bullet trap contains lead from spent bullets; however, it is still serviceable as a small arms range.

To date, lead-based paint has not been detected inside or outside of Building 1200. An indoor radon study from late 1989 to early 1990 showed radon levels in Building 1200 to be below the action levels of the Indoor Radon Abatement Act [Ref. 5]. No radiological material has ever been present in Building 1200. In addition, there are no electrical transformers containing PCBs in or around the building. The only sources of asbestos were identified in putty on floor drains and mastic behind the baseboard. These are considered nonfriable and not a hazard to human health [Ref. 6].

The interior of the building also contains an emergency generator and a 30-gallon and a 15-gallon diesel fuel tank for the generator. An exterior 1,000-gallon diesel fuel tank, which currently contains fuel, resides on the north side of the building [Ref. 7].

All drains from the building run into the plant's sanitary drain system. Analyses of the building's discharge to the sanitary drain were within the limits set by the Pinellas County Utilities (PCU).

Building 1200 has been released to the PCIC for occupancy.

2.3 Building 1400

Constructed in 1989, Building 1400 is a 7,175-square foot concrete block facility formerly used for shipping and receiving materials at the Pinellas Plant. This facility was built to enhance plant security by allowing full on-site inspection of incoming material remote from sensitive and secure storage or manufacturing areas. The area around the building has ample parking and turn around space for deliveries.

The building had a conveyor system for automatic routing of packages to designated inspection stations. Building 1400's conveyor system has been removed, and portions of the building were remodeled for occupancy by a commercial tenant. There are no electrical transformers containing PCBs in or around the building.

Specialty Components personnel have not detected any lead-based paint inside or outside of Building 1400. An indoor radon study from late 1989 to early 1990 showed radon levels in Building 1400 to be below the action levels of the Indoor Radon Abatement Act [Ref. 5]. In addition, Building 1400 does not contain any asbestos [Ref. 6].

Also, Building 1400 has a drum storage area that was built to contain any releases from receipt of leaky drums. The containment for this area drains into a holding tank on the outside of the building. According to interviews with employees who worked in Building 1400, this containment system was never used.

Building 1400 has been released to the PCIC for occupancy.

3.0 OVERVIEW OF BUILDING 100

Section 3.0 includes an overall summary of the Pinellas Plant's Building 100 areas that have been characterized. Building 100 is the largest of the Pinellas Plant facilities, with a total area of 550,000 square feet on two stories. Building 100 area information includes processes and operations, chemical usage, exhausts, drains, and the area's current status. A list of chemical name synonyms is presented in Section 10 because the same chemicals were listed by various names in the chemical lists used to compile the Area Closeout Reports.

3.1 Building Summary

Building 100 provides space for manufacturing, engineering, and administrative support services. The basic structure of Building 100 consists of a steel frame with moment resisting trusses; some portions have a cross-braced frame. Perimeter shear walls are vertically reinforced approximately every 4 feet. The roof system is metal deck with insulation and built-up roofing. Interior walls are a combination of concrete masonry unit, metal steel, and gypsum wallboard.

Lead-based paint is also assumed to be present in Building 100. Internal abatement of lead-based paint is performed as it is discovered. All lead-based paint on the exterior of Building 100 was removed in 1991.

An indoor radon study from late 1989 to early 1990, showed radon levels in Building 100 to be below the action levels of the Indoor Radon Abatement Act [Ref. 5]. There are no electrical transformers containing PCBs in or around the building.

Chlorofluorocarbon (CFC) refrigerants are used in heat pumps, air conditioners, freezers, refrigerators, and other similar equipment that support Building 100 operations. The Clean Air Act Amendments of 1990 require a cessation in production of CFCs in the United States by the end of 1995. The affected CFC refrigerants used in the above mentioned equipment are: R-11, R-12, R-13, R-22, R-114, R-123, R-134A, R-502, and R-503. As CFC refrigerant shortcomings occur, the Pinellas Plant will use the remaining new and recovered refrigerants and will convert to alternate or approved substitute refrigerants when appropriate [Ref. 8].

Radioactive materials existing in Building 100 are associated with laboratory activities for product testing. One area within Building 100 is considered a Radioactive Materials Management Area (RMMA), which indicates the potential for unconfined radioactive materials or emissions [Ref. 9]. See Figure 3-1, which shows the one RMMA that is located on the first floor of Building 100.

Area 182 has ceased production and has undergone closure activities. Areas 107, 108 and 109 ceased production in 1996, and the last tritium bed (source of tritium for production) was shipped from the plant on June 19, 1996. For more information regarding cleanup of these areas, see Section 3.2.

The following processes were conducted in Building 100:

Neutron generator manufacturing
Neutron detector manufacturing
Thermal battery manufacturing
Specialty capacitor manufacturing
Calcium chromate manufacturing
Crystal resonator manufacturing
LAC manufacturing
Vacuum switch tube manufacturing
Ceramics manufacturing
Magnetics manufacturing
Foam support pad manufacturing
Resonant accelerometer manufacturing
Clock oscillator manufacturing
Iron disulfide processing
Resin casting
Machine shop operations
Tool room operations
Spray painting (in booth)
Research and development (R&D)
Test equipment construction
Metalizing, plating, chemical processing, and furnace firing

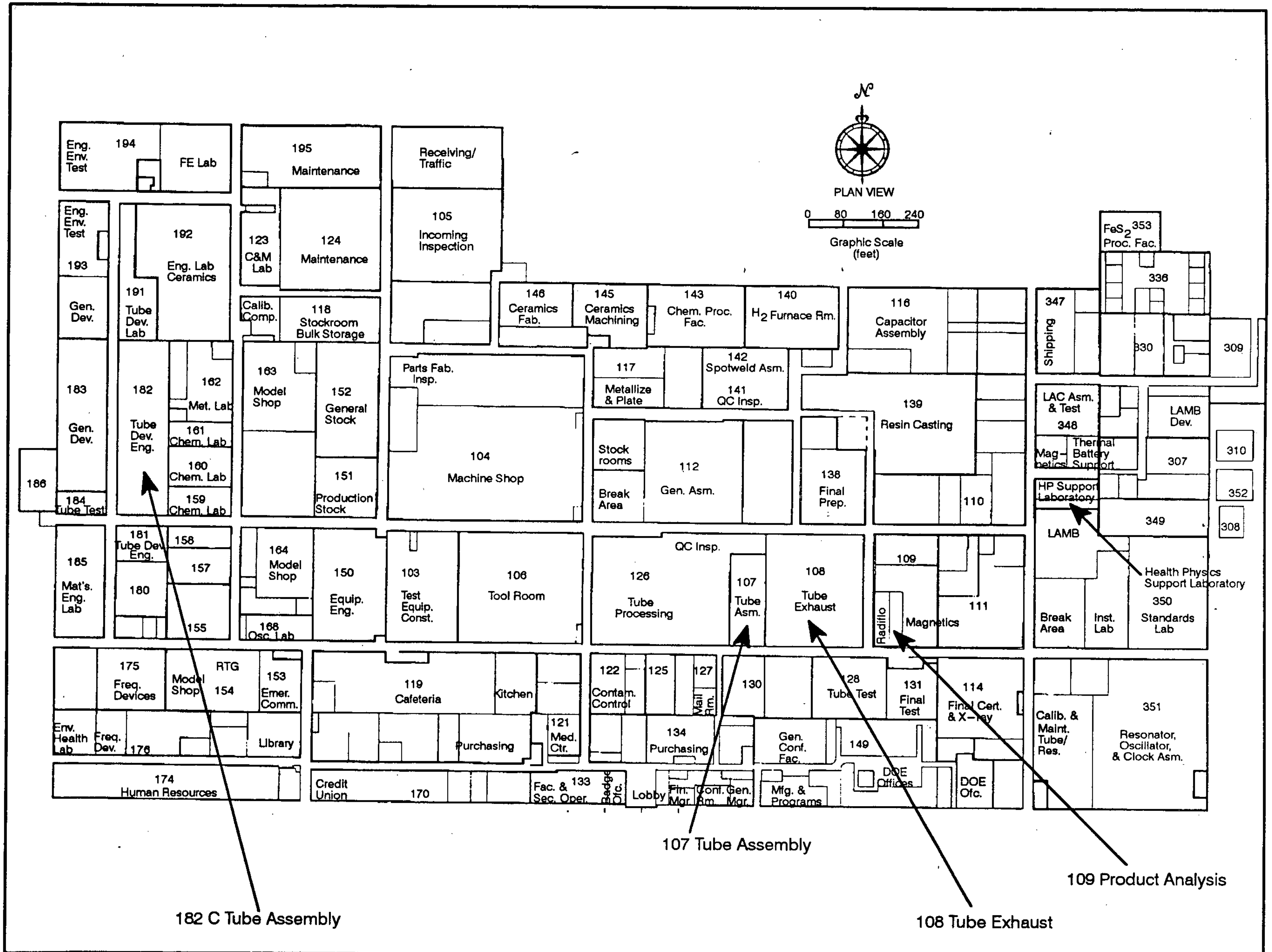


Figure 3-1. Pinellas Plant RMMAs in Existing First Floor Layout

3.2 Historical Information and Present Status of Building 100 Areas

Some areas within Building 100 do not warrant a detailed description due to their low hazard activities (i.e., offices, cafeteria, storage, etc.); such areas would not pose any greater impact to the environment than a standard office complex. These nondescript areas include personnel offices, telephone equipment rooms, records storage, food service areas, break rooms, janitorial supply areas, restrooms, conference rooms, and copier and computer rooms. Janitorial supplies include, but are not limited to, detergents, cleaners, bleach, and floor stripper. Standard office supplies used in these areas include, but are not limited to, copier toner and printer cartridges, correction fluid, marker board cleaner, and glue. Area Characterization and Closeout Reports were prepared for these areas, but no detailed information is provided in this report. These areas, however, are identified in Table 3-1.

Table 3-1. Building 100 Areas that Pose No Impact to the Environment

Area	Rooms	Closeout Report Date	Report Status
105	M	February 21, 1997	Final
106	JJ	November 25, 1996	Final
106	MA-MG	July 16, 1997	Final
112	JJ	December 19, 1996	Final
113	JJ	July 9, 1996	Final
114	JJ	September 27, 1996	Final
119	A-L, N, R1, R2	November 27, 1996	Interim
123	R1, R2	February 26, 1996	Final
129	A,B,C	April 18, 1997	Final
132	JJ, JK, R1, R2		
133	A-I	April 18, 1997	Final
134	A-L, N-W, JJ, R1, R2, V V	May 28, 1997	Final
135	A-E, H-K	October 31, 1996	Interim
136	A-L, N-AD, JJ, R1, R2, V V	March 11, 1997	Final
141	JJ	November 8, 1996	Final
145	JJ, R1, R2	October 22, 1996	Final
146	JJ	October 22, 1996	Final
147	A-L, N-P	October 31, 1996	Interim
148	JJ, R1, R2		
149	A	October 14, 1996	Final
149	B, C	January 10, 1997	Final
149	D-L, N-AE, R1, R2, JJ, VV	September 16, 1996	Interim

Area	Rooms	Closeout Report Date	Report Status
153	A-D, R1, R2	July 26, 1996	Final
154	D	July 26, 1996	Final
159	B-D	June 7, 1996	Final
169	A,B,R1,R2	June 19, 1996	Final
170	A-L, N-Z, R1,R2	March 31, 1997	Final
171	A-L, N-V	May 28, 1997	Final
172	A	February 28, 1997	Final
173	A	February 28, 1997	Final
173	B	February 21, 1997	Final
174	A-L, N-AD	March 7, 1996	Final
176	R1, R2	February 5, 1996	Final
179	JJ, R2	January 17, 1996	Final
188	H-L, N-P	May 28, 1997	Final
189	A-K	February 26, 1996	Final
190	A-D, O, P, R	June 24, 1996	Final
190	E-L, N, Q ,S, U	March 26, 1996	Final
190	T	January 17, 1997	Final
194	JJ, R1, R2	February 12, 1996	Final
325	JJ, R1, R2	May 29, 1997	Final
351	R1, R2		
357	A-L, N-T, JJ, R1, R2	March 11, 1997	Final
		March 26, 1997	Env. Health
102 Mezzanine	A-F, JJ	May 17, 1996	Final
103 Mezzanine	A-G	July 16, 1996	Final
104 Mezzanine	A-F	July 22, 1996	Final
105 Mezzanine	A-J, V V	February 21, 1997	Final
106 Mezzanine	A-G	July 16, 1996	Final
112 Mezzanine	A-D	July 16, 1996	Final
150 Mezzanine	A-L, N, South Maintenance Chase	May 23, 1996	Final
191 Mezzanine	VV		

This subsection provides historical information on the areas that have been characterized, to date, within Building 100. Processes that may impact the environment are discussed. The information regarding the areas is provided for assessment and evaluation of the area. Discussed below is an explanation of, and the sources of information used for, each category describing the areas.

Area Number - The area number is the current designation of the area as indicated on Building 100 layout plans (see Figures 3-2 and 3-3). Only areas with environmental impacts are included. Areas Numbered 306 through 353 are located in the former Building 300, which is now considered part of Building 100. Most areas are divided into subareas and are also indicated on the layouts.

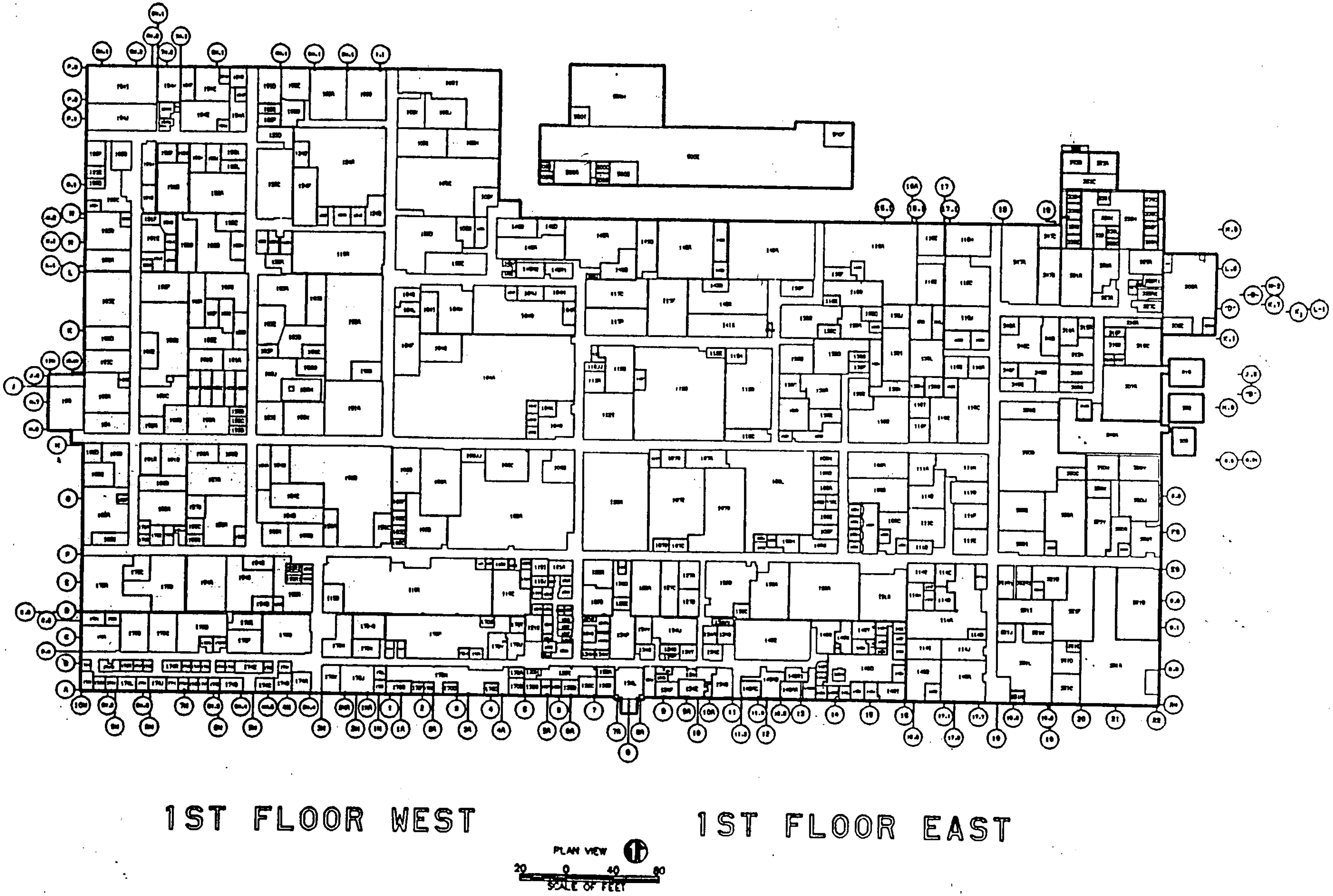


Figure 3-2. Building 100 Layout – First Floor

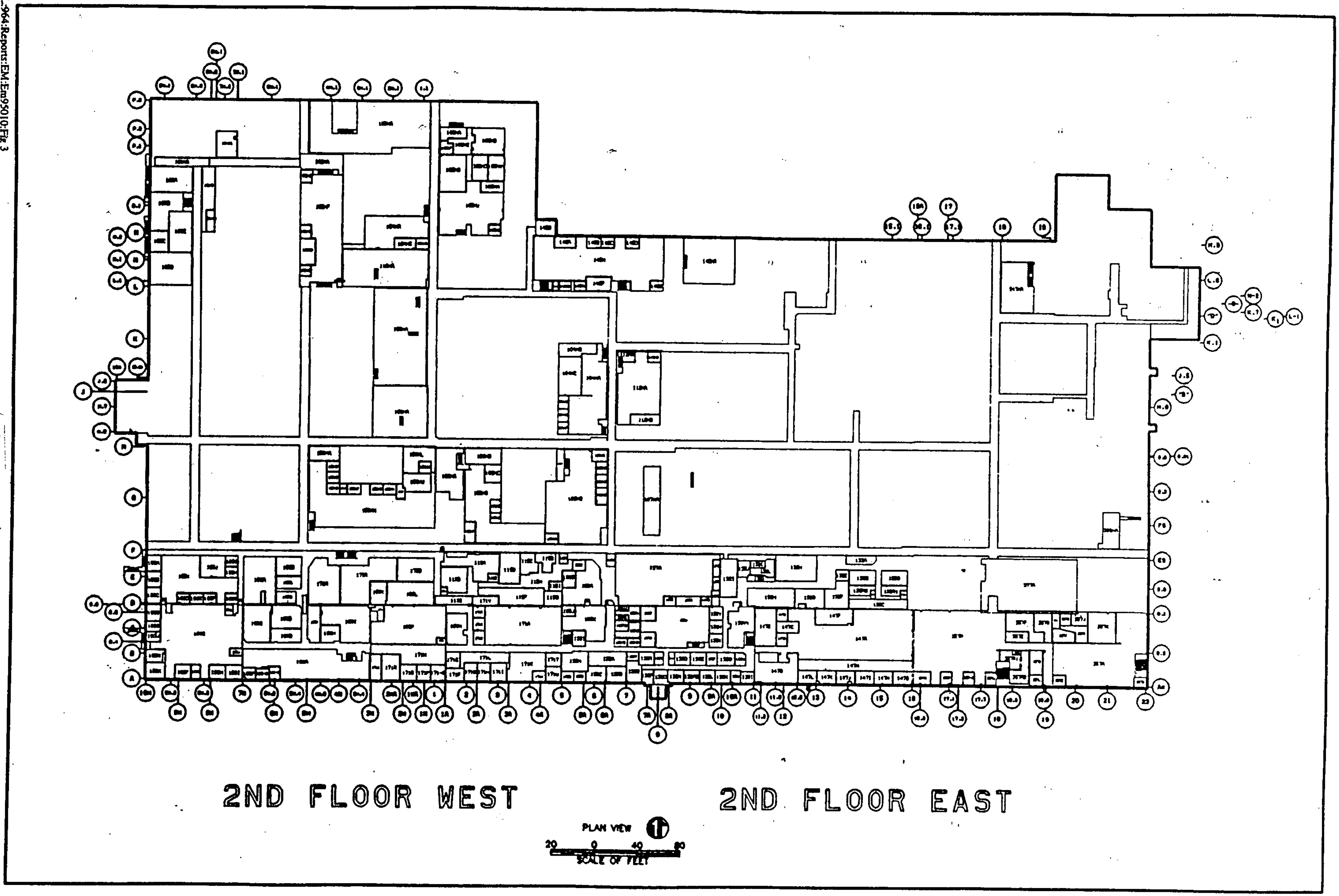


Figure 3-3. Building 100 Layout - Second Floor

Processes and Operations - This is a description of the types of processes and operations performed in the area during years representative of normal production (pre 1992). This is not intended to be a chronological perspective of all activities performed in a given area since it was built. Some areas have changed operations many times, making a chronological history difficult. In general, the operations and process descriptions include the most recent and significant use of the area. This information was obtained primarily through personnel interviews and from the building characterization files.

Chemical Usage - The chemical usage list information is primarily from the building characterization files. It is not intended to be a complete list of all the chemicals ever used in a particular area. However, this report does include a list of all the chemicals known to have been used in significant quantities and those that are known to have the greatest toxicity or hazard associated with their use. Also, the chemicals were not necessarily used at the same time as the processes and operations described above. Knowledge of chemical uses is important for characterization of potential contamination of equipment and area surfaces. For more information regarding chemical usage, refer to the building characterization files.

Exhausts - This information describes the roof openings that were used for discharging air emissions from the area. The information gives a general idea of the number of chemical and radiological exhaust connections present during years representative of normal production. It does not give an accurate description of the current configuration of the chemical and radiological exhaust systems, as these are very dynamic, changing with plant rearrangements and with preparations of areas for future use. Exhaust information was obtained from the Air Construction Permit Application [Ref. 10], which was submitted to the FDEP in October 1992, and from area drawings prepared for Area Closeout Reports.

Drains - The Pinellas Plant had four drain systems: the storm drains, sanitary drains, chemical drains, and radiological drains (also known as health physics drains). In 1994, an above-ground radiological drain system was installed to replace the old underground system, but was removed in 1997. The old underground radiological drain system has been flushed, sampled, permanently sealed with grout, and labeled. A project to install an above-ground chemical drain system is complete. The underground chemical drains have been flushed, capped, and abandoned. For more information on chemical and radiological drain decontamination, see Chapter 7. Storm drains collect and drain precipitation from the roofs and paved areas of the plant. All process wastewater discharges to the storm drain and storm water collection systems were eliminated. For more information about the storm drain system, refer to the Pinellas Plant National Pollutant Discharge Elimination System Storm Water Discharge Permit Application submitted to the Environmental Protection Agency (EPA) in 1992 and revised in 1994 [Ref. 11].

Status - Status is a summary of each area, including its current or planned use. For additional information on Deactivation and Compliance (D&C) activities and the Area Characterization and Final Closeout Report, see Section 7.

3.2.1 Area 103A-G

Processes and Operations

Area 103A-G operations involved subassembly of mechanical and electrical components, including printed circuit boards, for product testers prior to final assembly in Area 150. A portion of the area was also a stockroom for mechanical and electrical components. Processes included electroplating, electroless plating, photolithography developing, drilling, routing, engraving, bead blasting, spray painting, aluminum anodizing (Iridite), etching, and oven curing and drying.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

trichloroethane	sodium hydroxide
diethanolamine	hydrochloric acid
sulfuric acid	chromic acid
nitric acid	ammonium persulfate
ammonium hydroxide	potassium hydroxide
flammable liquids	lead
mercury	silver vanadate
photographic developer	alkaline strippe
methylene chloride	solder
tritium	trichloroethylene
ammonia	alcohol
acetic acid	hydrofluoric acid
acetone	Metex Etchant 9110
ammonium chloride	methylethyl ketone
amyl acetate	peptone solution
barium carbonate	phosphoric acid
barium nitrate	plating chemicals (Cu, Ni, Sn/Pb, Au)
copper chloride	potassium permanganate
copper oxide powder	sodium bichromate
Cuposit 328	sodium gluconate
ethanolamine	stannuous chloride
fluoboric acid	potassium ferricyanide
gold cyanide	asbestos (insulation in overhead-abated)

Exhausts

Exhaust from the paint spray booth discharged through a filter to roof opening 535. Other equipment was exhausted through roof opening 285.

Drains

Connections to the chemical drain system were above floor level and have been removed back to Area 150, where the drain pipes entered the underground chemical drain system.

Status

In 1996, Area 103A-G (Equipment Fabrication and Test, Areas 103 and 150) was relocated to Areas 325, 327, 330, 331, and 336. Area 103 has been cleaned, characterized, and closed out as part of D&C. Characterization and Final Closeout Report for Area 103A was issued July 16, 1996. Rooms 103B-F have been consolidated into a single Room B as a result of D&C cleanup activities. The Area Characterization and Final Closeout Report for Areas 103B-G was issued October 17, 1996.

3.2.2 Area 104A-L, N-R

Processes and Operations

The Machine Shop was used to fabricate metal components for many Pinellas Plant product lines. Processes included cutting, milling, grinding, deburring, sandblasting, vapor blasting, solvent degreasing, aqueous degreasing, hydroforming, soldering, brazing, welding, electropolishing, and oven drying.

In 1988, a trim (machine coolant) treatment process was installed in Subarea 104H to eliminate machine coolant waste. An acid is added to precipitate heavy metals, the pH is adjusted, and then a coagulant is added to bind the metals. The coolant is then filtered and the wastewater is tested and discharged into the chemical drain system. The solid residue is tested for and passes the Toxicity Characterization Leaching Procedure (TCLP) test and is disposed of as a nonhazardous waste.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

sulfuric acid	mercury
methylene chloride	trichloroethane
lead	sodium hydroxide
methyl ethyl ketone	trichlorotrifluoroethane (Freon®)
phosphoric acid	boron nitrite
hydrofluoric acid	nitric acid

acetic acid
acetone
alcohol
aluminum oxide
cadmium dioxide
potassium ferricyanide
asbestos
trichloroethylene
hydrochloric acid
tritium
phosphorous
photoresist
diala oil
Gulf Harmony 68
Gulf Harmony 46
Mobilrama
Vacauline oil
dental ply
Nyoil
flux
plastic polish
Armstrong adhesive
electrolyte Super Edge lube
Speedfam lapping compound
Moly Dee tapping compound
honing oil
Actrel
epoxy polymide
resin polymide
surface plate cleaner
Trim
aluminum cln.nst
Duralube MP moly
DTE oil medium
gear oil
Vaculine 1409
Gulfway 68
Vactra #1
Gulf Spin #15
transmission fluid
eye saver
Dryerase surface cleaner
micro finish
Safe Tap
Tapmatic
Vactra #2
hydraulic oil
Gulf cutting oil
Hexan
Cindol 3103
anti-wear hydraulic oil
Cool Tool
Cut Max 105
anti-sieze compound
PVC cement
Winslomatic oil
blackening solution
Kling
black silicon carbide powder
grease
Alconox powder
Chemtrol
sludge buster tablets
Dykem dye

Exhausts

Chemical exhaust was vented through roof openings 153, 292, 295, 366, 367, 372, and 375.

Drains

There are connections to the sanitary drain system. Chemical Liftstation Number 9 is located in the area. Connections to the chemical drain system have been flushed, sampled, and capped.

Status

Area 104A-L, N-R has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued November 26, 1996.

3.2.3 Area 105A-K

Processes and Operations

Area 105 had multiple uses. In Subareas A-D, ceramic logs were manufactured for use in other products throughout the plant. Ceramic powders were mixed and weighed in an exhaust hood and processed (mixed with water) in a ball mill. The resulting powder slurry was then pressurized and fed to a spray dryer, where it was atomized, using compressed air and dried to a powder with hot air from a natural gas fired burner. The dry ceramic powder was then formed into pellets and logs, using stokes (punch and die) and isostatic (wet process) presses. Additional processes performed in the area included pre-firing, green machining (machining prior to firing), and oven drying. Further ceramics processing (metalizing, firing, and final machining) was performed in Areas 117, 145, and 146. Subareas E-H were used for incoming test and inspection (mechanical and electrical testing), and Subareas I-K were used for shipping and receiving. Subarea L was used for incoming test and inspection.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

silica	aluminum oxide
magnesium hydroxide	calcium carbonate
amyl acetate	Freon®
trichloroethane	silicone fluid
trichloroethene (trichloroethylene)	alcohol
methylene chloride	acetone
butyl carbitol acetate	antifoam fluid
butyl stearate	crystalline silica (Si02)
dimethylsiloxane	dispersing agent
hydraulic fluid	mercury
methyl cellulose	hydroxypropyl cellulose
mill powders	perfluoropolyether
polyethylene glycol	primers
polyglycol	moly powder
primers	stearic acid
wax emulsion	Klucel
alumina powder	95ND2 alumina
polypropylene glycol	

These chemicals were used in the ceramics area. Chemicals passing through Shipping and Receiving are not listed.

Exhausts

Equipment was exhausted through roof openings 234, 352, 353, 354, 392 and 393.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped.

Status

The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued October 16, 1996 for Subarea A and was issued May 29, 1997 for Subareas B-L.

3.2.4 Area 106A-C

Processes and Operations

The Tool Room was used to store, clean, and repair tools that were utilized throughout the plant. Specific processes included grinding, machining, vapor degreasing, soldering, and brazing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

methylene chloride	trichloroethene (trichloroethylene)
beryllium	mercury
acetone	lead
alcohol	flux
asbestos	plastic polish
trichloroethane	Armstrong adhesive
aluminum CLN.NST	anti-sieze compound
alconox	PVC cement
Chemtrol	Winslomatic oil
eye saver	blackening solution
Dryerase surface cleaner	Kling
micro finish	black silicon carbide powder
Dykem dye	grease
Mobilrama	electrolyte super edge lube
Vaculine oil	Speedfam lapping compound
dental ply	Moly Dee tapping compound
honing oil	Cut Max 105

Actrel	diala oil
epoxy polymide	Gulf harmony 68
resin polymide	Gulf harmony 46
surface plate cleaner	Duralube MP moly
sludge buster tablets	DTE oil medium
Safe Tap	gear oil
Tapmatic	Vaculine 1409
Vactra #2	Gulfway 68
hydraulic oil	Vactra #1
Gulf cutting oil	Gulf Spin #15
Hexan	transmission fluid
Cindol 3103	7-11 spray oil
anti-wear hydraulic oil	tritium
cool tool	Nyoil
Trim	

Exhausts

Chemical exhaust was vented through roof opening 88A.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Area 106A-C has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued November 25, 1996.

3.2.5 Area 107A-G

Processes and Operations

This was the neutron generator tube assembly and component preparation area, and contained a clean room (Subarea 107B) and a downflow room (Subarea 107E). Processes included mechanical assembly, Tungsten Inert Gas (TIG) and plasma welding, x-ray analysis, metal evaporation, and vacuum firing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol	tritium
oxalic acid	amyl acetate
titanium	vanadium pellets
trichlorotrifluoroethane (Freon®)	Fluorinert

acetone	mercury
hydrofluoric acid	nitric acid

Exhausts

Radiological exhaust in the area was discharged through roof opening 82, which was the main radiological exhaust stack. There was a potential for tritium or tritium oxide release.

Drains

Connections to the above-ground radiological drain systems have been removed. Connections to the old underground radiological and chemical drain systems have been flushed and permanently sealed with grout.

Status

Operations in this area ceased in 1996. A project to dismantle and clean the area by September 1997 is in progress. For additional information, see Section 7.2.5, Area 108 Cleanup Project, and Appendix C, Pinellas Plant Radiological Area Disposition Program Plan.

3.2.6 Area 108A-L, N

Processes and Operations

The Tube Exhaust area performed vacuum processes to tritium load neutron tubes. Processes included tritium film loading, deuterium film loading and bulk sample loading, trace gas analysis, tritium bed loading/tank unloading, tritium bed sample analysis, tritium loaded thin film analysis, loading and unloading of special tritium storage fixtures that contained depleted uranium, uranium bed oxidation, and laser welding.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol	tritium
scandium	silicone
boric acid	toluene
tapping compound	desiccant silica gel
methylene chloride	trichlorotrifluoroethane (Freon®)
hydrochloric acid	hydrofluoric acid
sulfuric acid	nitric acid
titanium	acetone
mercury	depleted uranium
	deuterium

Exhausts

Loaders and other exhaust systems were vented through the TRS to the main radiological exhaust stack. Room air was vented directly through the main radiological exhaust stack. The area was maintained under negative pressure to prevent the spread of radiological contaminants.

Drains

Connections to the above-ground radiological drain system have been removed. Connections to the old underground radiological and chemical drain systems have been flushed and permanently sealed with grout.

Status

Operations in this area ceased in 1996. A project is in progress to dismantle and clean this area by September 1997. For additional information, see Section 7.2.5, Area 108 Cleanup Project, and the Pinellas Plant Radiological Area Disposition Program Plan (Appendix C).

3.2.7 Area 109A-J

Processes and Operations

This area was used for the production of magnetics. Parts and materials manufactured in this area were sent to other areas for assembly and testing. Processes included chemical mixing, vacuum de-aerating, encapsulating, oven curing, machining, laser marking, and component testing. The area was also used for radiological components leak testing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

trichloroethene (trichloroethylene)	tritium
Freon®	methylene dianiline (MDA)
polyurethane encapsulant	urethane casting elastomer
urethane resin	toluene diisocyanate
N-Methylpyrrolidinone	lead
Isoverre (chemical stripper)	thinner
krypton-85	

Exhausts

There were chemical and radiological exhausts in the area. The chemical exhaust was discharged through roof openings 527 and 528; the radiological exhaust vented to the main stack.

Drains

Connections to the above-ground radiological drain system have been removed. Connections to the old underground radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Specialty Components continues to occupy this area. Subareas 109 F, G, H, I, and J are being cleaned as part of the Area 108 Cleanup Project. Equipment is being removed from the remaining subareas of 109 to make the area available for D&C.

3.2.8 Area 110A-L

Processes and Operations

This area had multiple uses. Subareas A-D were used as an optoelectronics production facility. Processes included vapor degreasing, ultrasonic degreasing, assembly, laser welding, laser engraving, hydrogen firing, helium leak detection, epoxy encapsulation, and soldering. Subarea 110C contains a downflow tent. Subareas E, F, G, and I were used for magnetics development. Processes included coil winding, lead stripping and tining, lead cleaning of solder residue, soldering, resin casting, curing, assembly, and testing. Subareas H, J, K, and L served as production stockrooms and were used to receive, store, and issue war reserve production parts, explosives, and refrigerated chemicals. Subarea 110F contained a calcium chromate waste tank prior to 1984.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

trichloroethane	Isoverre (chemical stripper)
polyurethane encapsulant	iron disulfide
polysiloxane	flammable liquids
lithium chloride	trichloroethene (trichloroethylene)
fluorocarbon release agent	trichlorotrifluoroethane (Freon®)
heat powder	toluene
calcium chromate	methylene chloride
hydrofluoric acid	xylene
triethylenetetramine	toluene diisocyanate
diethanolamine	mercury
ESD hand lotion	non-contaminating hand cleanser
cho-bond adhesive	aremco bond
bar solder	solder paste
solder	alcohol
acetone	explosive

flux remover	methylene dianiline
polysulfide	Sylgard
TETA	uranium glass
flux	loctite sealing compound primer
loctite 404	diacetone alcohol
isopropyl alcohol	D-limonene
antistatic spray	sealing locking & retaining compound grade H and grade CV

Exhausts

Equipment exhaust discharged through roof openings 90, 520, 521, 522, 523, 524, 525, 526, 527, 528, 637, and 1287.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Operations have ceased. Subareas 110A-L have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Reports have been issued as follows:

Subareas 110E, F and I - February 26, 1996

Subareas 110A-D, H, K, and L - December 13, 1996

Subarea 110J - January 31, 1997

Subarea 110G - April 9, 1997

3.2.9 Area 111A-H

Processes and Operations

This area was used for magnetics production. Processes included coil winding, encapsulation (resin mixing, de-aerating, mold pouring, and curing), soldering, machining, cutting, laser marking, assembly, spray coating, ultrasonic cleaning, plasma cleaning, lead stripping and tining, and thermal testing. Processes in Subarea 111H used MDA, a suspected carcinogen.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

methylene chloride	Adiprene
toluene diisocyanate	Isoverre (chemical stripper)
halogenated degreasers	trichloroethene (trichloroethylene)
Freon®	methylene dianiline (MDA)
polyurethane coating	ammonium bifluoride

polysiloxane	alcohol
acetone	trichlorotrifluoroethane (Freon®)
Fluorinert	toluene
flammable liquids	mercury
lead	xylenes
formaldehyde	

Exhausts

Chemical exhausts discharged through roof openings 528, 532, 533, 534, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 645, 646, and 903.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Area 111B-G has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 19, 1997.

3.2.10 Area 112A-K

Processes and Operations

This area had multiple uses. Subareas B, C, D, E, F, and H were used for the assembly of neutron generators and for the production of subassemblies for generators. Processes included vapor blasting, pencil blasting, ultrasonic cleaning, ink and epoxy curing, laser engraving, soldering and flame spraying. Subareas A, G, and K served as stockrooms and were used to receive, store, and issue war reserve production parts and for records retention. Subarea I was an employee breakroom.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

methyl alcohol	Adiprene
tritium	quartz abrasive
trichloroethylene (trichloroethene)	methylene chloride
toluene diisocyanate	flammable liquids
Freon®	heat powder
toluene	tin/lead solder
methylene dianiline (MDA)	cyanides
acetone	Sylgard
amyl acetate	triethylenetetramine

methyl ethyl ketone	piperidine
diethanolamine	isopropyl alcohol
CIBA	explosive
gold arsenide	hydrochloric acid
lead	mercury
nitric acid	potassium permanganate
TETA ethane	tricloroethane
gold cyanide	sulfuric acid

Exhaust

Chemical exhausts discharged through roof openings 42, 43, 82, 99, 108, 166, 202, 244, 245, 270, 344, 364, 443, 541, 574, 641, 649, 530B, 1263, 1264, and 1265.

Drains

Chemical drains in Subarea 112B have been flushed and capped.

Status

Operations have ceased. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Reports were issued as follows:

Subareas B, D, E, F and H - May 30, 1996

Subareas A, C, G, I, and K - December 19, 1996

The Final Radiological Status Report for Subareas A, C, G, I, K, and JJ was issued March 11, 1997.

3.2.11 Area 113A-C

Processes and Operations

This second floor area was used as an environmental chemistry laboratory, contamination control laboratory, and later as a solder training facility.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol	D-limonene
lead solder	toluene
Freon® 113	acetone
asbestos (floor tile mastic)	tritium
acids	Plutonium 242 (trace amounts)
liquid scintillation fluid	chromerge

Exhausts

Chemical exhausts were discharged through roof openings 1 and 1249.

Drains

There are connections to the sanitary drain system.

Status

Operations have ceased. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued July 9, 1996.

3.2.12 Area 114A-J

Processes and Operations

The operation of this area was final inspection and test. Processes included x-ray analysis, film developing, and film reading. Subarea 114E contains a silver recovery unit for processing photographic chemicals prior to release to the chemical drain system. Subarea I was used for product storage and Subarea J was a shelf life room used to store products under the Shelf Life and Stockpile Evaluation Programs.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

explosives	Freon®
Industrex Developer and Replenisher, Part A	EDTA
Industrex Fixer and Replenisher, Part A	calcium hydroxide
Intervent Fixer Additive	hydrochloric acid
Industrex Developer Starter	hydrobromic acid
Industrex Fixer and Replenisher, Part B	acetic acid
Industrex Developer and Replenisher, Part C	silver nitrate
Simichrome polish	lead nitrate
bromine	potassium dichromate
nitric acid	sodium nitrite
sulfuric acid	magnesium perchlorate
phosphoric acid	pH 4.0 buffer solution
toluene alcohol	pH 7.0 buffer solution
ammonium hydroxide	potassium iodate
potassium hydroxide	manganese dioxide
sodium hydroxide	methyl purple
diethanolamine	lead acetate
ferric ammonium sulfate	sodium chromate

ammonia
aluminum oxide
DETA
ethanolamine
ammonium bifluoride
barium chloride
lithium metaborate
potassium chloride
soluble starch
potassium hydrogen phthalate
lithium carbonate
cesium chloride
zirconium selenide
ammonium dihydrogen phosphate
zirconium bromide
zirconium nitride
benzoic acid
magnaflux spray developer
sodium thiosulfate
mercuric chloride
potassium sulfate
sodium oxalate
static free spray
barium chloride
zinc metal
p-methoxyphenol
n-vinyl pyrollidone
zirconium fluoride
zinc sulfate
thyodene
pH 10 buffer
ZnBrCrO4 heat source powder
isopropyl alcohol
hexane
kerosene
m-xylene
toluene/isopropyl alcohol
n-nonane
isopentyl acetate
glycerol
butyl acetate
trichloroethylene
chlorobenzene
ethyl alcohol
toluene
thyodene
mannitol
stannous chloride
potassium hydrogen sulfate
potassium iodide
potassium phosphate
bromothymol blue
potassium chromate
diphenylamine
magnesium sodium-EDTA
arsenic trioxide
zirconium carbide
carbon tetrachloride
potassium sodium tartrate
potassium nitrate
methylene chloride
sodium bicarbonate
2-pyrollidone
sodium borate
potassium phosphate
ammonium thiocyanate
sodium iodide
tris buffer
potassium thiocyanate
silver nitrate
carbon tetrachloride
ammonium chloride
sulfur
tetrachlorotehylene
ethylene glycol
chloroform
hydrochloric acid
acetic acid
methyl alcohol
pyridine
isooctane
dibutyl amine
acetone
acetonitrile
p-xylene
pentyl acetate
Karl Fischer reagent
tetrahydrofuran
2-propanol
1-methoxy, 2-propanol

Exhausts

Chemical exhausts discharged through roof openings 615, 1271, 1272, 1273, 1274, and 1276.

Drains

There are connections to the new, above-ground chemical drain system.

Status

Area 114A-J has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued September 27, 1996.

3.2.13 Area 115A-J

Processes and Operations

This second floor area was a laboratory for photographic developing, layout, and photo finishing. Adhesive spray was applied to posters prepared for visual presentation. Equipment included developer tanks, film processors, and an adhesive spray station.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- photographic chemicals
- activators
- fixers
- alcohol
- developers

Exhausts

Equipment vented through roof openings 2, 92, 94, and 615.

Drains

Connections to the chemical drain system were flushed and capped.

Status

Area 115A-J has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued March 19, 1997.

3.2.14 Area 116A-I

Processes and Operations

The operations in this area included capacitor production, LAC potting and assembly, and storage retrieval. Processes included capacitor winding, filling, and testing; LAC assembly; resin encapsulation; vacuum curing; contact resistance testing; laser welding; metal spraying; and Freon® vapor degreasing. Subareas 116A and B contain downflow tents. Subarea 116H contains an automatic storage and retrieval system.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- ceramic powders
- Freon®
- acetone
- flammable liquids
- alcohol
- titanium dioxide granules
- silane coupling agent
- diethanolamine
- hydrofluoric acid
- sulfuric acid
- amyl acetate
- trichloroethane
- methylene dianiline (MDA)
- methylene chloride
- polyurethane encapsulant
- Varistor granules
- toluene diisocyanate
- explosives
- mold release

Exhausts

Equipment exhaust discharged through roof openings 77, 80, 444, 531, 577, 578, 579, 592, 595, and 1325.

Drains

Connections to the sanitary and chemical drain system were flushed and capped.

Status

Area 116A-I has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 18, 1997.

3.2.15 Area 117A-E

Processes and Operations

This area was used for ceramics production and subassembly. The south half of Subarea C (formerly 117P) was a downflow room, where ceramic parts were plated with nickel, gold, and copper. Subarea D and north half of C (formerly 117C) were for metalizing, a process where liquid slurry is applied to ceramic parts in preparation for plating. Subarea F (now divided into Subareas A and B) was the furnace room, where hydrogen firing, vacuum firing, and sintering were performed. Other processes performed in Area 117 included gold stripping and screen printing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

methlyene chloride
alcohol
amyl acetate
methyl ethyl ketone
ammonium bifluoride
potassium gold cyanide
sulfuric acid
nitric acid
potassium hydroxide
toluene diisocyanate
boric acid
ammonium fluoride
ammonium persulfate
arsenic
butyl alcohol
formaldehyde
phosphoric acid
sodium hydroxide
thinner solvent
trichloroethane
mercury
gold cyanide
lead
oxalic acid
barium
glacial acetic acid
cadmium
chromium
trichloroethene (trichloroethylene)
acetone
Bright Dip
potassium permanganate
nickel cyanide
hydrochloric acid
hydrofluoric acid
flammable liquids
toluene
copper pyrophosphate
ammonium hydroxide
silver
nickelous chloride
potassium dichromate
cuposit copper mix
alumina
dispersing agent
kerosene
surfactant
ethyl acetate
ethylene glycol
machine oil
tungsten powder
Nyoil
spray lubricants
lubricating grease
delrin sheet, rods
ceramic logs

cellosolve acetate	ceramic blanks
selenium	metallize powder

Exhausts

Equipment vented through roof openings 114, 136, 381, 385, and 389.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain systems have been flushed and capped.

Status

Area 117A-E has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued October 11, 1996.

3.2.16 Area 118A and MA

Processes and Operations

This area is a maintenance stockroom with a mezzanine (118MA) for additional storage space and it also contains a laundry area. At one time, it was also used for incoming test and inspection. No production activity occurred in the area.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

Freon®
methyl ethyl ketone

Exhausts

There are no chemical exhausts in the area.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Areas 118 and 124 have been converted into a large storage area occupied by Specialty Components. The mezzanine (118MA) was removed.

3.2.17 Area 119O

Processes and Operations

This area was used to house a silver recovery system to process photographic chemicals from the Area 115 Photolab.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

photographic chemicals (fixer, developer)
asbestos (nonfriable floor tiles)

Exhausts

There are no chemical exhausts in the area.

Drains

Connections to the chemical drains system have been flushed and capped.

Status

The area has been cleaned, characterized, and closed out as part of D&C. An Interim Characterization and Closeout Report was issued November 27, 1996.

3.2.18 Area 122A-E

Processes and Operations

Subarea B was a laboratory involved in air sampling and analysis, particulate identification, and contamination control. Other areas were used for offices and storage.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

Freon®	alcohol
uranyl acetate	diethanolamine
epoxy resin and hardener	chloroform
glutaraldehyde	SAE30 motor oil
spray paint	marker board cleaner
methanol	copier toner
polychlorinated biphenyls (oil leaked from Area 137; has been remediated)	tapmatic lubricant

Exhausts

Chemical exhaust vented through roof opening 404, 657, and 1254.

Drains

There are connections to the sanitary drain system. Connections to the old underground radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Subarea B has been relocated in Area 348D to support D&C cleanup. Subareas A-C have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued October 3, 1996. Specialty Components continues to occupy Subareas 122D and E. An Area Characterization Report and Interim Certificate of Conformance for Subareas 122D and E was issued October 3, 1996.

3.2.19 Area 123A-D

Processes and Operations

Subareas A and B were offices for utilities personnel. The Equipment Calibration and Maintenance Shop was located in Subareas C and D. Equipment Calibration and Maintenance repaired, calibrated, and maintained electromechanical and vacuum equipment used throughout the plant.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

acid	adhesive
mercury	potassium hydroxide
acetone	propenoic acid, butyl ester
alcohol	sodium hypochlorite
developer	silicon dioxide
dimethyl polysiloxne silane	lead solder
ethanediamine	styrene butadiene copolymer
hydrogen sulfide	toluene
ferric oxide	

Exhausts

Chemical exhaust discharged through roof opening 307.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped.

Status

In 1996, Computer Services was relocated to Area 131. This area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 26, 1996.

3.2.20 Area 124A-G

Processes and Operations

Facilities Maintenance was responsible for operation, maintenance, and repair of equipment and systems (air conditioning, piping, electrical, etc.). They also performed small construction projects and plant rearrangements. This area contained a carpentry shop, sheet metal shop, weld shop, electrical shop, and office space for the Facilities Maintenance organization. Processes included cutting, drilling, laminating, painting, metal bending, metal braking, metal shearing, hole punching, pipe cutting and threading, welding (arc, mig, and TIG), metal burning, and soldering. There was also a mezzanine (Areas 124 MA, MB, and MC) above the south end of the shop, which provided office space for maintenance personnel.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

lead	adhesives
methylene chloride	mercury
Freon®	methyl ethyl ketone
trichloroethane	various acids
toluene	alcohol
asbestos	

Exhausts

Equipment exhaust was discharged through roof openings 306, 307, and 313.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped.

Status

This area was converted into a large storage area. The mezzanine was removed. Facilities Maintenance was relocated to Area 116 in 1995. Subarea A has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Subarea A was issued April 24, 1997.

3.2.21 Area 125A

Processes and Operations

Originally, this area was a health physics laboratory and later a chemistry laboratory. More recently, it has been used as office space for various departments.

Chemical Usage

Many chemicals were used in small quantities when the area served as a laboratory. However, this was many years ago (1957 to 1964). A review of Specialty Components records indicated that the following chemicals may have been used or handled:

acetone
ammonia
developers
tritium
fixers
methyl ethyl ketone
toners

Exhausts

There is currently no chemical exhaust in the area.

Drains

There are connections to the sanitary drain system. Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Area 125A has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued April 22, 1997.

3.2.22 Area 126A

Processes and Operations

This area was used as a glass shop and for neutron generator tube processing. Processes included vacuum firing, vapor blasting, and ultrasonic cleaning. The operation was moved to Area 107 in 1988, and the area was then used for storage and as a construction staging area for subcontractors.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol	acetone

Exhausts

There is currently no chemical exhaust in the area.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Specialty Components continues to use the area for equipment storage. In 1994, a liftstation was installed in the north east corner, as part of the new above-ground radiological drain system. The liftstation received radiological wastewater from various sumps on the east end of Building 100 and pumped it to the health physics storage tanks west of Building 100. The liftstation and the above-ground radiological drain system have been removed. The project was completed in March 1997.

3.2.23 Area 127A-C

Processes and Operations

Subarea A was used as a mailroom from 1962 to 1997. Subarea B was used as a polymer lab from 1960 to 1964, as a technical support office area from 1965 to 1995, and as a mail services and reprographics area from 1996 to 1997.

Subarea C was part of the Standards Laboratory (from 1960 to 1964) and was used for calibrating optoelectronic devices (e.g., laser detectors and photo diodes). Subarea C was used for offices.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

methyl ethyl ketone	acetone
toners	ammonia
developers	fixers
tritium	

Exhausts

There is currently no chemical exhaust in the area.

Drains

Connections to the old underground radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Area 127A-C has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued April 22, 1997.

3.2.24 Area 128A/131A

Processes and Operations

Final Test and Assembly was used for testing neutron tubes, neutron generators, and electronic components.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

lead	Freon®
alcohol	Fluorinert
toluene	methylene chloride
tritum	trichloroethane
thrichloroethene	

Exhausts

There were no chemical exhausts in the area.

Drains

Area 131 has connections to the sanitary drain system.

Status

The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued May 5, 1997.

3.2.25 Area 130A-C

Processes and Operations

There were several operations in this area. Subarea 130A was an instrumentation lab from 1957 to 1958, a chemical cleaning/tube lab/standards lab from 1959 to 1963, a test lab/calibration lab from 1964 to 1976, a quartz crystal fabrication/resonator area from 1977 to 1984, and a product tester support area from 1985 to 1994. Subarea 130B was an engineerng tube lab/standards lab from 1957 to 1983, a resonators/clocks/frequency devices process area from 1983 to 1988, and an office area from 1983 to 1994. Subarea 130C was used as a conference room.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- acetone
- alcohol
- ammonia
- ammonium bifloride
- developers
- Freon®
- methylene chloride
- toluene
- toners
- tritium
- trichloroethane
- trichloroethene
- mercury

Exhausts

There were no chemical exhausts in the area.

Drains

There are no connections to the drain systems.

Status

The area has been cleaned, characterized, and closed out as part of D&C. An Area Characterization and Final Closeout Report was issued April 30, 1997.

3.2.26 Area 132 J, K, L, and N

Processes and Operations

Subareas J, K, and L contained TRS equipment for monitoring Areas 107, 108 and 109 and for monitoring air exhausted through the main (east) radiological stack. Subarea N was the east stack fan/room.

Chemical Usage

There are no records available for chemical usage in this area.

Exhaust

There are no connections to the exhaust systems.

Drains

Connections to the above-ground radiological drain system have been removed.

Status

This area will be dismantled and cleaned as part of the Area 108 Cleanup Project. For more information, see Section 7.2.5, Area 108 Cleanup Project, and the Pinellas Plant Radiological Disposition Program Plan (Appendix C).

3.2.27 Area 137 A-G

Processes and Operations

This area housed electrical transformers, switchgears, telephone batteries and rectifiers, and the public address support system.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

friable asbestos (in overhead)	transformer oil
polychlorinated biphenyls	lead/sulfuric acid batteries
potassium hydroxide	nickel/cadmium batteries

Exhausts

There is currently no chemical exhaust in the area.

Drains

There are connections to the sanitary drain system.

Status

The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Interim Closeout Report was issued July 26, 1996. The Final Closeout Report was issued September 6, 1996, following completion of wall repairs.

3.2.28 Area 138A-G

Processes and Operations

There were several operations in this area. Subareas A-C were used for final assembly of neutron generators. Processes included electron beam welding, vapor blasting, adiprene potting (encapsulation), laser engraving, ink stamping, painting, and final machining. Subarea D was used for classified parts production and Subarea F was a liquid nitrogen filling station. Subareas E and G were the defect analysis laboratory for LACs, capacitors, optoelectronics, and electronic component analyses.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- alcohol
- methylene dianiline (MDA)
- toluene diisocyanate
- lead
- acetone
- tritium
- trichloroethane
- paints
- methylene-bis-orthochloroaniline
- methylene chloride
- flammable liquids
- epoxy resin
- piperidine
- diethanolamine
- aluminum oxide
- Freon®
- nitric acid

Exhausts

Equipment was vented through roof openings 85, 116, 117, 169, 274, 648, 922, 923, 924, and 1330.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 24, 1997.

3.2.29 Area 139A-L, N-S

Processes and Operations

The primary operations were neutron generator and magnetics production. Processes included encapsulation, oven curing, flame spraying, sandblasting, vapor blasting, mold cleaning, timer/driver assembly, support pad assembly, machining, and testing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- epoxy
- methlyene chloride
- butanediol
- toluene diisocyanate
- flammable liquids
- Freon®
- lead
- alcohol
- benzene
- trichloroethene
- titanium dioxide
- aluminum oxide
- paints
- tritium
- methyl ethyl ketone
- methylene dianiline (MDA)
- acetone
- silane
- calcium chromate
- epoxy resin
- explosives
- diethanolamine
- methylene-bis-orthochloroaniline
- zinc chromate
- trichloroethane
- battery acid
- zinc metal powder
- aluminum metal powder
- TETA

Exhausts

Equipment exhausts discharge through roof openings 23, 74, 75, 80, 119, 120, 225, 229, 237, 365, 368, 371, 386, 390, 478, 650, 651, 652, 655, 849, 852, 854, 857, 861, 1239, and 1240.

Drains

There are connections to the sanitary drain systems. Connections to the chemical drain system have been flushed and capped.

Status

The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Subarea P was issued May 14, 1997. The Area Characterization and Final Closeout Report for the remaining subareas was issued February 24, 1997.

3.2.30 Area 140A/141A/142A and B

Processes and Operations

The operation of these areas was subassembly of metal and ceramic parts. Area 140 is the furnace room, where hydrogen and electric furnaces are used for brazing, vacuum firing, sintering, and annealing of ceramics and other parts. Area 141 was for inspection and testing of subassemblies after firing, and later for metals processing and welding. Area 142 was the subassembly area, where metal and ceramic parts were assembled prior to firing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol	acetone
nitric acid	trichloroethane
trichloroethene (trichloroethylene)	amyl acetate
hydrochloric acid	acetic acid
phosphoric acid	copper oxide powder
Ruby fluid	Epoxi-patch
potassium permanganate	Tapmatic
asbestos insulation	aluminum oxide
methyl isobutyl ketone	

Exhausts

Equipment exhaust was discharged through roof openings 66, 68, 71, 72, 84, 265, 374, 375, 376, 377, 398, and 399.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

In 1995, plant consolidation projects moved ceramics metalizing operations into Area 142A (from 117C), created a metals processing shop (including laser welding) in Area 141A, and consolidated furnace operations from other areas of the plant into Area 140. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Area 140A was issued October 30, 1996. The Area Characterization and Final closeout Report for Areas 141A, 142A, and 142B was issued November 8, 1996. The area is occupied by a PCIC tenant.

3.2.31 Area 143A-E, 143M(A)

Processes and Operations

The chemical process area cleaned ceramic and metal parts and subassemblies to support defense production. Processes included ultrasonic cleaning, acid cleaning, cascade rinsing, aluminum etching, alcohol rinsing, and vapor degreasing. Subarea 143 contains a downflow tent.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

trichloroethene (trichloroethylene)	trichloroethane
Freon®	methylene chloride
sulfuric acid	alcohol
hydrochloric acid	hydrofluoric acid
toluene	methyl ethyl ketone
acetone	cyanides
mercury	acetic acid
ammonium bifluoride	nickel chloride
ammonium hydroxide	nickel sulfamate
ammonium persulfate	nitric acid
amyl acetate	oxalic acid
copper etchant	phosphoric acid
gold cyanide	plating chemicals (Cu, Ni, Sn/Pb, Au)
copper oxide powder	potassium dichromate
metex etchant 9110	potassium permanganate
metex MU-14	sodium hydroxide
stannous chloride	

Exhausts

Equipment in Subarea 143A, C, and E vented to roof opening 387 and then through Scrubber Number 1. Other equipment exhausts discharged through roof openings 382 and 383. Scrubber Number 2 was relocated to the roof over Subarea 143B (roof opening 382).

Drains

Connections to the chemical drain system have been flushed and capped.

Status

In 1995, plating and chemical cleaning operations were relocated from Areas 103, 117, and 163 into Area 143. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 5, 1997.

3.2.32 Area 145A and B/146A

Processes and Operations

These areas are used for the production and testing of ceramic parts. Subarea 145A is a machine shop for slicing, grinding, polishing, degreasing, and ultrasonic cleaning of ceramics. Subarea 145B is for inspection of ceramics after metalizing and plating processes are performed. Subarea 146A is primarily offices and Subareas 146B and D are used for powder batching, powder pressing, air firing, hydrogen firing, and inspecting.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- Freon®
- ceramic powders
- butyl carbital acetate
- nitric acid
- lead
- amyl acetate
- ceramic powders
- Ultemate cleaner
- tumbling media
- modeling compound
- parafine
- stacking wax
- Trim coolant
- Oakite Citridet
- way lubricant
- Dyken spray - steel blue
- 77 spray adhesive
- dry erase cleaner
- Dyken steel blue liquid
- Chesterton spray grip
- Nyoil
- Spulkonzentrat
- Tapmatic cutting fluid
- Coors USA ceramic marking ink
- trichloroethane
- alcohol
- hydrofluoric acid
- trichloroethene (trichloroethylene)
- acetone
- magnesium hydroxide
- 711 demoisturant
- Lime A Way
- Dupont electronic comp thinner
- Starrett cleaner
- Alconox detergent
- Hydrolubic 120-B
- boron carbide
- US 40B abrasive for lapping
- Loctite
- dielectric composition 5704
- conductor composition 7095
- thick film conductor comp 5956
- Dupont electronic composition
- Micro Lap
- Hyprez W lubricant
- Aquasol
- lapping lubricant
- Turco Dy-Chek remover #3

rust inhibitor NR18	Turco Dy-Chek penetrant

Exhausts

Chemical exhaust discharged through roof openings 130, 223, 441, 673, 1267, and 1268.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

These area have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued October 16, 1996 and updated on October 22, 1996.

3.2.33 Area 150A-C

Processes and Operations

The operation in this area was final assembly and testing of mechanical and electrical product testers. Processes included soldering, milling, drilling, mechanical assembly, and electronic testing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

tritium	lead
toluene diisocyanate	alcohol
hydrochloric acid	hydrofluoric acid
methylene chloride	sodium hydroxide
acetone	Freon®
trichloroethane	sulfuric acid
isopropyl alcohol	

Exhausts

Chemical exhaust discharged through roof openings 568 and 759.

Drains

There are connections to the sanitary drain. Connections to the chemical drain system have been flushed and capped.

Status

In 1996, Equipment Fabrication and Test (Areas 103 and 150) was relocated to Areas 325, 327, 330, 331, and 336. Operations have ceased. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued April 11, 1996. A correction to the Closeout Report was issued October 1, 1996, to include a list of chemicals.

3.2.34 Area 151A and MA/152A, B, and MA

Processes and Operations

Area 152 was the general stockroom and Area 151 was the war reserve production stockroom. Both areas have mezzanines (151MA and 152MA), which provide additional storage space.

Chemical Usage

A review of Specialty Components records indicated the following chemicals may have been used or handled:

acetone	gold cyanide
lead	methyl ethyl ketone
trichloroethane	metal bar stock
standard office supplies, including toner	

Exhausts

There are no chemical exhausts in either areas.

Drains

There are connections to the sanitary drain system in both areas. Connections to the chemical drain system in Area 151 have been flushed and capped.

Status

The general stockroom (Area 152) is planned for relocation to Area 105. Specialty Components continues to occupy Area 151, which was provisionally accepted in an interim characterization and closeout report, dated May 17, 1996. The final report will be published when the relocation is completed and the remaining DOE-owned barstock and racks are sold.

3.2.35 Area 154A-C

Processes and Operations

This area had two uses, transducer production and testing and model shop activities. The processes included grinding, sanding, cutting, and drilling. In addition, there were two small vaults, where neutron devices were detonated by computer control.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

explosives (HMX and PETN)	nitric acid
alcohol	acetone
trichloroethane	lead
tritium	methylene dianiline (MDA)
methyl ethyl ketone	cyanides
hydrochloric acid	hydrofluoric acid
lithium niobate	asbestos (floor tile mastic adhesive)
trichloroethylene (trichloroethene)	Freon®
uranium	methylene chloride
friable asbestos (in overhead)	sulfuric acid

Exhausts

Equipment exhaust was discharged through roof openings 139 and 267.

Drains

There are connections to the sanitary drain systems. Connections to the chemical drain system have been flushed and capped. Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Operations have ceased. Subareas 154 A, B, and C have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for these subareas was issued April 26, 1996.

3.2.36 Area 155A-D

Processes and Operations

The chemistry laboratory activities included sample preparation (acid digestion/dilution) and analyses. The lab had an Inductive Coupled Plasma (ICP) unit for analyses of metals. Other equipment was used for titrations, gas chromatography, and atomic absorption spectrophotometry.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

hydrochloric acid	nitric acid
phosphoric acid	hydrofluoric acid
oxalic acid	silicone
polyurethane encapsulant	boric acid
toluene	flammable liquids
potassium hydroxide	sodium hydroxide
aluminum oxide	Conathane
acetic acid	tritium
mercury	methylene dianiline (MDA)
toluene diisocyanate	Isoverre (chemical stripper)
ISO - amyl acetate	trichloroethane
trichloroethene (trichloroethylene)	glacial acetic acid
methylene chloride	sulfuric acid
perchloric acid	phosphonic acid
phenyl isothiocyanate	phenol
N,N-dimethylformamide	nitric acid
methyl alcohol	magnesium perchlorate
lead nitrate	lead acetate
hydrogen peroxide	acetylene
nitrous oxide	argon
zinc	potassium chromate
potassium cyanide	pyridine
sulfamic acid	tetrahydrofuran
thallium metal	thorium nitrate
uranium (metal)	tritium
asbestos (floor tile mastic)	uranium oxide
carbon tetrachloride	chlorobenzene
arsenic trioxide	bromine
chloroform	ammonium metavanadate
acetic anhydride	chromium trioxide
ammonium dihydrogen arsenate	acetone
fluoroboric acid	cobalt chloride
hydrobromic acid	formic acid
	acetonitrile

Exhausts

Three radiological exhaust hoods were ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project. Other chemical exhaust hoods and equipment vented through roof openings 378 and 379.

Drains

Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

The chemistry laboratory has been relocated to Area 350. Operations in Area 155 have ceased. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued May 3, 1996.

3.2.37 Area 157A and B/158A and B

Processes and Operations

These areas were used as a gas analyses laboratory and for the disassembly of neutron tubes. Processes included gas analyses, using mass spectrometers, solids analyses, using inert gas fusion, thermal desorption analyses, gas monitor calibration, and various machining techniques for tube disassembly.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- hydrochloric acid
- tritium
- methylene chloride
- trichloroethane
- ammonium bifluoride
- magnesium perchlorate
- hydrogen sulfide
- mercury
- trichloroethene (trichloroethylene)
- asbestos (floor tile mastic)
- N-methylpyrrolidinone

Exhausts

Radiological exhaust hoods were ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project.

Drains

There are connections to the sanitary drain system. Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

The laboratory has been relocated to Area 350. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued May 3, 1996.

3.2.38 Area 159A-D

Processes and Operations

Subarea 159A was used as an advanced analyses laboratory, and Subareas B, C, and D were offices. Processes in the analyses laboratory included nuclear magnetic resonance spectrometry, gas chromatography, and mass spectrometry.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

nitric acid	phosphoric acid
hydrochloric acid	hydrofluoric acid
methylene chloride	carbon tetrachloride
phenylene diamine	chrysene
chloroform	benzene
mercury	bismuth
acetone	sodium hydroxide
tetrahydrofuran	n-diethylethanolamine
n-phenylenediamine	endrin
dioxane	hexachlorobutadine
heptachlor	isopropanol
hexane	methyl alcohol
methyl sulfoxide	monoethylamine
methylene dianiline (MDA)	o-xylene
napthalene	phenol
p-xylene	silver nitrate
pyridine	acetic anhydride
acetonitrile	Sylon-CT
dimethylformamide	toxaphene
toluene	triethylamine
trichloroethylene (trichloroethene)	tritium
trimethylphosphite	butanone
cyanides	cyclohexane
carbon disulfide	diethylamine
dichlorobenzene	pentafluoropropionic anhydride

Exhausts

Radiological exhaust hoods were ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project. Chemical exhaust was vented through roof opening 373.

Drains

There are connections to the sanitary drain system.

Status

The laboratory has been relocated to Area 350. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued June 7, 1996.

3.2.39 Area 160A-E

Processes and Operations

The Chemistry Laboratory performed sample analyses using liquid, gas, and ion chromatography. Other processes included thermal analyses of polymers, wet chemistry analyses of plating solutions, and analyses of battery materials.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- methyl ethyl ketone
- lithium tetrachloroaluminate
- methylene dianiline (MDA)
- acetic acid (glacial)
- sulfuric acid
- alcohol
- mercuric chloride
- lithium thionyl chloride
- acetic anhydride
- ammonia
- amyl acetate
- butanol
- cellusolve acetate
- epichlorohydrin
- ethylene glycol
- hydrofluoric acid
- isopentyl alcohol
- magnesium hydroxide
- methyl alcohol
- nonanol
- pentyl acetate
- phosphoric acid
- potassium dichromate
- nitrobenzene
- sodium cyanide
- tetrahydrofuran
- trichloroethene
- methylene chloride
- acetone
- hydrochloric acid
- nitric acid
- potassium cyanide
- tritium
- potassium gold cyanide
- acetonitrile
- ammonium hydroxide
- arsenic trioxide
- butyl acetate
- chloroform
- ethyl benzene
- hexane
- isopentyl acetate
- m-xylene
- mercury
- monoethylamine
- p-xylene
- perchloroethylene
- potassium chromate
- pyridine
- potassium hydroxide
- sodium hydroxide
- asbestos (walls, floor tiles, and overhead)

Exhausts

Radiological exhaust hoods were ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project. Chemical exhaust was vented through roof opening 373.

Drains

There are connections to the old radiological drain system. Connections to the chemical drain system have been flushed and capped.

Status

The chemistry laboratory has been relocated to Area 350. Area 160A has been cleaned by Specialty Components personnel, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Area 160A was issued June 7, 1996.

3.2.40 Area 161A and B

Processes and Operations

This area served as a surface science and x-ray laboratory. Activities included surface analyses, thin film analyses, x-ray analyses, and process development.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

tritium	acetic acid, glacial
asbestos (floor tiles, walls, overhead)	ammonium hydroxide
amyl acetate	butanol
butyl acetate	cellusolve acetate
chloroform	epichlorohydrin
ethyl benzene	ethylene glycol
hydrochloric acid	hydrofluoric acid
isopentyl acetate	isopentyl alcohol
lithium thionyl chloride	m-xylene
mercury chloride	mercury
methyl alcohol	methylene chloride
methylene dianiline (MDA)	methyl ethyl ketone
monoethylamine	nitrobenzene
nonanol	p-xylene
pentyl acetate	perchloroethylene
phosphoric acid	potassium chromate
potassium gold cyanide	potassium dichromate
potassium hydroxide	pyridine

sodium hydroxide	tetrahydrofuran
toluene diisocyanate	trichloroethylene (trichloroethene)
hexane	acetone
acetonitrile	acetic anhydride

Exhausts

Vacuum pump exhaust was ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped.

Status

The laboratory has been relocated to Areas 350 and 114. The area has been cleaned by Specialty Components personnel, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued June 7, 1996.

3.2.41 Area 162A-F

Processes and Operations

This area was used as a metallurgy laboratory. Processes performed included potting, grinding, milling, machining, drilling, sanding, cutting, brazing, welding, spectra analyses, metallographic etching, heat treating, hardness testing, tensile testing, electron microscopy, and target/source scanning electron microscopy analyses.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

trichloroethene (trichloroethylene)	acetone
hydrochloric acid	sulfuric acid
nitric acid	hydrofluoric acid
xylene	cyanides
amyl acetate	tritium
alcohol	alodine
copper sulfate	cyansol
diethanolamine	Freon®
heavy metals (powdered)	lead fluoroborate nickel
methylene chloride	mercury

nickel chloride	nickel sulfate
phosphoric acid	oxalic acid
potassium hydroxide	potassium permanganate
sodium hydroxide	tin fluoroborate
toluene diisocyanate	ammonium bifluoride
acetic acid	gallium

asbestos, nonfriable (in fiberboard wall cores)
asbestos (floor tile and mastic adhesive)

Exhausts

Radiological exhaust hoods were ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project. Chemical exhaust was vented through roof openings 110, 134, and 192.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped.

Status

Operations have ceased. The area has been cleaned by Specialty Components personnel, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued June 7, 1996.

3.2.42 Area 163A-K

Processes and Operations

This area was used as a materials and process technology development laboratory. Subarea 163H is a downflow tent. Processes included plating, sintering, brazing, thin film measuring, electron beam welding, vapor blasting, vapor degreasing, aluminum etching, acid cleaning, ultrasonic cleaning, and ink spraying.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

trichloroethene (trichloroethylene)	sodium hydroxide
nitric acid	zinc oxide
hydrochloric acid	copper sulfate
nickel chloride	tin fluoroborate
lead fluoroborate nickel	phosphoric acid
methylene chloride	tritium
oxalic acid	amyl acetate
chromic acid	mercury

cyanides
various heavy metals (powdered)
alcohol
alodine
cyansol
Freon®
nickel sulfate
gallium
asbestos (floor tile, mastic, baseboard)
diethanolamine
toluene diisocyanate
potassium hydroxide
potassium permanganate
ammonium bifluoride
sulfuric acid
acetic acid
nickel

Exhausts

A radiological exhaust hood was ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project. Chemical exhaust was vented through roof openings 192, 195, 196, 198, 402, 497, 531, 540, 542, 543, and 576. Scrubber Number 2 (roof opening 543) was relocated to the roof over Area 143.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped. Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Operations have been relocated to Areas 141 and 143. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued April 19, 1996.

3.2.43 Area 164A-D

Processes and Operations

This area had multiple uses; Subarea A was a weld shop, Subarea B was a glass shop, and Subareas C and D were encapsulation materials and processing areas. Processes included arc welding, glass blowing, glass forming, glass firing, resin mixing, vacuum de-aeration, grinding, and sanding.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

toluene diisocyanate
acetone
alcohol
trimethylolpropane
adiprene
methylene chloride
silane
butanediol
mica powdered
asbestos

Freon® | solder
tritium

Exhausts

Equipment exhaust discharged through roof openings 536, 537, 545, 546, 547, 548, 549, 560, 570, 571, and 572.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Operations have been relocated. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued April 11, 1996. A correction to the Final Closeout Report was issued October 1, 1996, to include the chemical list.

3.2.44 Area 168A and B

Processes and Operations

The operation in this area was resonator development. Processes consisted of resonator/clock testing, quartz sweeping, hardness verification, parametric measuring, and spin testing. Subarea 168B was a vault, where classified parts were tested.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol	flammable liquids
lead solder	methylene chloride
mercury	benzene
acetone	tritium
barium-133	epoxy stripper

Exhausts

Chemical exhaust was discharged through roof opening 555.

Drains

There are connections to the sanitary drain system.

Status

Operations have ceased. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued April 11, 1996. A correction to the Closeout Report was issued October 1, 1996, to include a chemical list.

3.2.45 Area 175A-C

Processes and Operations

This area served as a quartz devices laboratory to support the design, development, fabrication, and testing of resonators, clocks, sensors, and related products based on the piezoelectric phenomena. Processes included quartz cleaning and etching, plating, photolithography, vapor degreasing, vacuum evaporation, machine welding, laser cutting and trimming, and vacuum sealing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol
acid etching solution
methylene chloride
potassium hydroxide
acetone
Fluorinert
ferric chloride
ammonium fluoride
toluene
ethylene glycol monoethyl
potassium hydroxide
hydrochloric acid
plating solutions (gold, chrome-gold, and cyanide)
Oreotemp 24
layout dye
plastic polish
Lyoll Lube
iodine
freon 113
Dyed System 812L Photores
photoresist
sulfur dioxide
Freon®
trichloroethene (trichloroethylene)
hydrofluoric acid
trichloroethane
methanol
ammonium bifluoride
sulfuric acid
potassium iodide
xylene
silicon tetrachloride
sodium hydroxide
perchloric acid
alconox
solder
711 lube
alkaline liquids (MF 321, 1112A)
Dyken Steel Blue
Chromium Photomsk (CR7, CR12, and CR14)
fomblin
microposit primer
resist aid
microposit photoresist
Liqui Nox

Exhausts

Chemical exhaust was discharged through roof opening 566.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped.

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Final Closeout Report was issued September 21, 1995.

3.2.46 Area 176A-G

Processes and Operations

Area 176 had various uses. Subareas A, I, and H were used for the Environmental Chemistry Laboratory to provide radiological analyses in support of Health Physics, ER, Environmental Compliance, Industrial Hygiene, and Waste Management. In addition, the Environmental Radiological Laboratory performed research to develop new radiological procedures and to insure state-of-the-art analytical capabilities. Subarea B was used for quartz processing (wafer sawing, grinding, lapping, polishing, and cutting). Subarea C was a development area for LACs. Processes included vacuum curing, assembly, and thermal and electrical testing. Subarea D served as an electrical test laboratory. Subareas E and F were offices, and Subarea G was the Technical Information Center.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol	nitric acid
hydrofluoric acid	hydrochloric acid
methylene chloride	ammonium iodide
ammonium molybdate	ammonium sulfate
boric anhydride	Bromthymol Blue
calcium carbonate	D Glucose Anhydrous
Eriochrome Black T	ferric chloride
glutamic acid	Methyl Orange
potassium chloride	KCl/AgCl fill solution
potassium hydrogen sulfate	potassium iodide
potassium sulfate	sodium bicarbonate
sodium chloride	sodium sulfite
thyodene	zinc sulfate heptahydrate
cadmium nitrate	calcium nitrate

potassium dichromate	potassium iodate
potassium nitrate	potassium permanganate
potassium persulfate	silver nitrate
sodium nitrate	lithium hydroxide
sodium hydroxide	boric acid
ammonium hydroxide	sulfuric acid
sodium bisulfite	glycerin
nitromethane	silica gel
Scintillation Mix (long chain alkylbenzenes)	tritium
	plutonium isotopes Pu-238, Pu-239
1-Methyl-2-Pyrrolidinone	
pump oil	air dry plastic coat
Resin: Anion exchange	Balsam Canada
711 Lubricant	Nyoil
Rust-oleum	paint
polyurethane varnish	sodium nitrate
lead acetate test paper	resin
sodium bisulfate	acetonitrile
tetrahydrate	BOD Nutrient Pillows
nitrification inhibitor	dextrose

Exhausts

Chemical exhaust was discharged through roof openings 413 and 414. Other chemical exhaust was vented through roof opening 519 and Scrubber Number 4. Scrubber Number 4 was relocated to the roof above area 350 (roof opening 609).

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped. Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

The Environmental Chemistry Laboratory was relocated to Area 350, and all other operations have ceased. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 5, 1996.

3.2.47 Area 179A-C/180A and B

Processes and Operations

These areas were used as a capacitor development laboratory. Subarea 180A contained a downflow tent. Processes included assembly, winding, field testing, cleaning, arc spraying, bead blasting, soldering, baking, leak testing, liquid filling, and field testing capacitors.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

Freon®	sulfur hexafluoride
chlorotrifluromethane	Mylar® film
alcohol	tin
antimony	copper
lead	arsenic
formaldehyde	tritium
toluene diisocyanate	Fluorinert
epoxy	RTV
diethanolamine	methylene dianiline (MDA)
acetone	mercury

Exhausts

Chemical exhaust was discharged through roof openings 249, 252, 321, and 530.

Drains

There are connections to the sanitary drain system. Radiological drain connections in Area 180 have been flushed, permanently sealed with grout, and labeled.

Status

Operations have ceased, and the areas have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued January 17, 1996.

3.2.48 Area 181A and B

Processes and Operations

The area was used as a surface mounting facility for assembling small electrical parts and for neutron tube development. Processes included wave soldering, printed circuit board cleaning, vapor degreasing, gold and nickel plating, glass/metal bonding, vapor blasting, and ultrasonic degreasing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol
methylene chloride
Freon®
hydrochloric acid
tritium
lead
potassium per manganate
D-limonene
trichloroethane
flammable liquids
nitric acid
sulfuric acid
mold release

Exhausts

Chemical exhaust was discharged through roof openings 259, 260, 261, and 761.

Drains

There are connections to the sanitary drain system.

Status

Operations have ceased and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued January 17, 1995.

3.2.49 Area 182A-F

Processes and Operations

The mission of the Tube Development, Exhaust, and Assembly Area was to assemble neutron tubes, sources, targets, and special samples. These products were used for weapon reserves, special tests, and evaluations for R&D contract work in association with weapons design and other laboratories inside and outside of the DOE complex. Processes included neutron tube assembly, tube exhaust, vacuum processing, source grinding, hydrogen firing, vacuum firing, brazing, laser welding, testing, and inspection. Subarea 182D contained two downflow tents.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

tritium
Freon®
acetone
dielectric oil
boron powder
uranium 238
asbestos (floor tiles-A182E)
alcohol
methylene chloride
rare earth metals
Fluorinert
chromium trioxide
mercury

Exhausts

Radiological exhaust hoods and other equipment were ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project. Chemical exhaust was discharged through roof opening 65.

Drains

There are connections to the sanitary drain system. Connections to the old radiological drain system have been flushed and capped.

Status

Area 182A-F has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued September 27, 1996.

3.2.50 Area 183A-E

Processes and Operations

This area was used for ferroelectric generator development and engineering. Tube storage vaults were located in Subareas A and E. Processes included flame spraying, machining, vapor blasting, sandblasting, oven curing, soldering, and ultrasonic cleaning.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

flammable liquids	alcohol
methylene chloride	trichloroethene (trichloroethylene)
trichlorophenol	Freon®
acetone	dielectric oil
tritium	curing agent
lead solder	Isoverre (chemical stripper)
methylene dianiline (MDA)	epoxy

Exhausts

The paint spray booth was vented to roof opening 1364 and other equipment exhaust was discharged through roof openings 241, 242, 243, 244, 245, 342, and 344.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped. Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Final Closeout Report was issued December 21, 1995.

3.2.51 Area 184

Processes and Operations

This area was used for the final inspection and testing of neutron tubes, using a neutron tube tester.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol	Fluorinert
methylene chloride	toluene
tritium	Freon®
Marcol Oil	

Exhausts

There was no chemical exhaust in the area.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped.

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued January 12, 1996.

3.2.52 Area 185A-F, 185C Pump Shed

Processes and Operations

The mission of the Polymer Technology Laboratory was to provide technical leadership to production and development operations in the area of organic materials technology. Included in this support were the identification and evaluation of organic materials, the development of processes, the transfer of processes to production, and the definition/design of appropriate fixtures and tooling for development and production applications of organic materials. Subarea 185C served as an MDA process area and was isolated from the other 185 areas. Specific processes included encapsulation (MDA and non-MDA), vapor blasting, oven curing, foam encapsulation, foam dispensing, resin mixing, mold cleaning, Tetra-etching, epoxy stripping, vacuum pumping, pellet pressing, hydraulic testing, vapor degreasing, plasma cleaning, cut-off sawing, drilling, belt sanding, gradient curing, ultrasonic cleaning, pencil blasting, viscosity measuring, potting, and testing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

methylene dianiline (MDA)	ester alcohol
methylene chloride	toluene diisocyanate
aluminum oxide	amyl acetate
Freon®	isopentyl alcohol
calcium carbonate	acetone
titanium hydride	potassium gold cyanide
molybdenum metal powder	nitric acid
nickel chloride	manganese powder
polyurethane foam	ethylcellulose aqualon
triethylenetetramine	sodium dichromate
isoamyl acetate	diethanolamine
sealant (liquid chlorinated	hydrochloric acid
parafin with asbestos fibers)	tritium
trichloroethane	RAM 225
N-methylpyrrolidone	ethylene glycol
dimethyl formamide	2-ethoxyethyl acetate
methyl ethyl ketone	sulfuric acid
vacuum oil contaminated with MDA	toluene

Exhausts

The hoods associated with bakeout ovens and MDA were vented through roof opening 530. Other exhaust hoods vented through roof opening 253.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped. Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Area 185A-F was issued January 12, 1996. The Area 185C Pump Shed Characterization and Final Closeout Report was issued June 28, 1996.

3.2.53 Area 186A

Processes and Operations

As an outdoor area, this space was used for radiological decontamination of equipment located in tritium areas. In 1988, the area was constructed as an electrical switchgear room.

Chemical Usage

A review of Specialty Components records indicated the following chemicals had been used or handled:

tritium

Exhausts

There are no chemical exhausts in this area.

Drains

There are no chemical or sanitary drains in this area.

Status

This area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued June 7, 1996.

3.2.54 Area 191A-I

Processes and Operations

The operations in this area were neutron tube development, neutron generator and magnetics engineering, and defect analysis. Subareas A, D, and I were offices, Subarea B was a stockroom, Subarea C was a shelf life vault, Subarea E was for quality assurance inspection, Subarea F was a breakroom, Subarea G was a hood room. Subarea H was a machine shop, and prior to 1984, it was used as a chemical storage pit area.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

flammable liquids	Curing Agent V-40
adhesives	hardeners
resins	acetone
alcohol	methylene chloride
trichlorotrifluoroethane (Freon®)	trichloroethene (trichloroethylene)
tritium	flux
Sylgard	silver
lead	asbestos mastic

Exhausts

There are no chemical exhausts in the area.

Drains

There are connections to the chemical drain system. Connections to the chemical drain system have been flushed and capped.

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 16, 1996.

3.2.55 Area 192A-N

Processes and Operations

This area was the Ceramics and Deposition Technology Laboratory. Processes included alumina machining (milling, drilling, and grinding), powder preparation, powder pressing, tape casting, air and hydrogen firing, spray drying, machining, header assembly (optoelectronics and batteries), particle sizing, injection molding, metalizing, leak testing, vapor degreasing, pencil blasting, and acoustical testing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

lead	copper nitrate
alumina	copper metal powder
trichloroethane	nickel metal powder
methyl alcohol	silver powder
asbestos roofing cement	barium carbonate
acetone	potassium hydroxide
toluene	barium nitrate
tricholoroethylene	aluminum nitrate
Diala Oil	manganous nitrate

Freon®	radioactive waste*
nonchromate	Dearcide
mercury	lead oxide
metal powder	zinc oxide
methylene chloride	iron disulfide
ammonia	sodium nitrite
amyl acetate	calcium chromate
barium carbonate	trichorethane
boric acid	diversey brightener
calcium carbonate	hydrofluoric acid
kerosene	cobalt oxide
nitric acid	lead (II) oxide
hydrochloric acid	phosphonate
iron (III) oxide	gold cyanide
phosphoric acid	acetone (high purity)
dibutyl phthalate	hydraulic fluid
sulfuric acid	barium oxide

*Production debris in sealed drums

Exhausts

Chemical exhaust was vented through roof openings 359, 361, 397, 449, 559, 560, 562, 567, 709, 711, and 712.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Areas A-E and G-N was issued March 4, 1996. The Area Characterization and Final Closeout Report for Area 192F was issued June 7, 1996.

3.2.56 Area 193A-I

Processes and Operations

Subareas A, B and I were the Magnetics Engineering Laboratory for the design, development, and assembly of magnetics components for weapons reserve and field test systems. Processes included magnetic winding, resin curing, baking mold release agents, thermal cycling, and soldering. Subareas C - H were used for defect analysis (scanning electron microscopy and energy dispersive analysis) of electronic components.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

methylene chloride	Isoverre (chemical stripper)
flammable liquids	alcohol
trichloroethene (trichloroethylene)	Freon®
epoxy	lead solder
RTV	tritium

Exhausts

Chemical exhaust was vented through roof opening 411.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued January 30, 1996.

3.2.57 Area 194A-K

Processes and Operations

There were three different operations in this area. Subareas A-D were occupied by the Nondestructive Testing Laboratory. Processes included transducer testing, ultrasonic testing, film and image processing, and x-ray analysis. There was a silver recovery unit for processing photographic chemicals located in a metal shed outside of Subarea 194G. Subareas E-H were used by the Active Ceramics Laboratory for research and process development. Processes included chemical preparation powder processing, LAC powder processing, powder calcination, powder pressing, oven drying, pulse testing, and powder firing and sintering. Subareas I-K were used for components and products evaluation (capacitor acceptance testing, field test products testing, and magnetics testing), environmental testing, and neutron detector monitor acceptance testing. The following testing processes were used in the area: vibration, thermal cycling, thermal shock, mechanical shock, humidity, altitude, and acceleration.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

acetone
alcohol
lead
isopropanol
sodium nitrite
sodium oxalate
sodium sulfite
bismuth metal powder
buffer solutions
$CoCl_2$ hexahydrate
niobium pentoxide
metal oxides
photographic chemicals
Fluorinert
lithium chloride
zinc chloride
barium chloride
silver
RTV
curing agent V-40
hydrochloric acid
asbestos mastic
butyl acetate
isobutanol
lead oxide
methanol
solder
thinner
trichloroethane
aluminum metal powder
Dy-Chek Penetrant
Dy-Chek Remover
Mn Cl_2 tetrahydrate
oxalic acid dihydrate
various acids
various ceramic powders
Freon®
sodium hydroxide
ammonium hydroxide
potassium hydroxide
dental cement hardener and base desiccant
stearic acid
zirconium titanate

Exhausts

Chemical exhaust was discharged through roof openings 514, 515, 516, and 517.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped.

Status

Equipment from Subareas 194A-D have been moved to Area 114 and environmental testing equipment (Subareas 194I-K) was moved to Building 200. The Area Characterization and Final Closeout Report was issued February 12, 1996.

3.2.58 Area 195A-I, Platform MA-MC

Processes and Operations

This area had several different uses: Subarea A was an instrument and computer maintenance laboratory; Subarea B was a dryroom for processing Lithium batteries; Subarea C was a furnace room; Subareas D and G were storage rooms for facilities maintenance; Subarea 195E was a battery room; and Subarea 195F contained Uninterruptible Power Source (UPS) equipment. Area 195 Platform was designated MA-MC. Subarea MA was used to store maintenance equipment. Air handler units were housed in Subarea M3. Subarea MC was used as a mechanical equipment room.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

acid	dimethyl polysiloxane
lead-acid batteries (sulfuric acid)	lithium thionyl chloride
butanediol	solder flux
asbestos	lithium silicon alloy powder
alcohol	Nyoil
lithium bromide	lithium oxide
lithium chloride	iron powder
iron disulfide	magnesium oxide
lithium fluoride	potassium chloride
lead	potassium perchlorate
lithex	sulfur dioxide gas
Li-thionyl chloride	7-11 spray lubricant

Exhausts

A dehumidifier vented through roof openings 435 and 436, and the remaining equipment vented through roof opening 440 to Scrubber Number 3.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Subareas D through G and Mezzanines A and B have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Subareas D, G, and MA was issued March 22, 1996. Subareas E, F, and MB Area Characterization and Final Closeout Report was issued August 30, 1996. Subareas 195A-C, H, I, and MC have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued January 17, 1997.

3.2.59 Area 196A-E

Processes and Operations

This area had several different uses: Subarea 196A was for neutron generator testing; Subarea 196B was for clock/resonator testing; Subarea 196C was a computer room; Subarea 196D was an incoming inspection laboratory; and Subarea 196E was an office.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- mercury
- Freon®
- solder
- methylene chloride
- alcohol

Exhausts

Chemical exhaust was vented through roof opening 410.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 2, 1996.

3.2.60 Area 306A-B

Processes and Operations

This area was used for LAC operations. More recently, it has been used for offices and as a breakroom.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- sealant powder
- hydrochloric acid
- trichloroethene (trichloroethylene)
- hydrofluoric acid

Exhausts

There are no chemical exhausts in the area.

Drains

There are no drain connections in the area.

Status

Specialty Components continues to occupy the area.

3.2.61 Area 307A and 349A and B

Processes and Operations

Both areas contain a dry room for the production and testing of thermal batteries. Thermal batteries are manufactured, using a lithium/silicon (Li/Si) alloy, iron disulfide (FeS_2), potassium perchlorate, and other powder materials. Thermal batteries are reserve sources of power in which the solid-cell electrolyte is nonconducting at ambient temperatures. The battery is activated by melting the electrolyte, thus making it conductive. Activation is achieved by igniting pyrotechnic heat sources within the battery. Processes included powder processing (mixing, fusing, hydraulic pressing (pelletizing), grinding, and vacuum drying), vapor degreasing, header assembly (resistance welding), and final assembly (TIG welding on stainless steel battery casing). Capacitor development testing was also performed in the area.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- iron/potassium perchlorate
- heat paper
- calcium chromate
- trichloroethene (trichloroethylene)
- hydrofluoric acid
- lithium silicon
- alcohol
- heat powder ($FeKClO_4$)
- flammable liquids
- trichloroethane
- hydrochloric acid
- calcium bimetal
- iron disulfide

Exhausts

Chemical exhaust was discharged through roof openings 688 and 689.

Drains

There are no drain connections in the area.

Status

Specialty Components continues to occupy the area.

3.2.62 Area 313A, 314A, and 315A

Processes and Operations

The operations in these areas were in support of classified component production. Subarea 313A was a chemical cleaning room for glass cleaning and etching, and assembly, and subassembly cleaning. Subarea 314A was an inspection room for visual and dimensional analysis using microscopes and a comparator. Subarea 315A was a staking (mechanical process inserting 1 component inside of another component) room.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

methylene chloride	alcohol
acetone	various acids
mercury	trichloroethene (trichloroethylene)

Exhausts

Chemical exhausts were discharged through roof openings 462 and 463.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped.

Status

Specialty Components continues to occupy the area.

3.2.63 Area 316A-C

Processes and Operations

The operation in this area was Lithium Ambient Battery (LAMB) development, assembly, and testing, and double layer capacitor pack development. Processes included mechanical assembly and thermal testing of lithium batteries under varying loads.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

lithium hydride	sulfur dioxide
acetonitrile	thionyl chloride
li-thionylchloride	alcohol

encapsulants
lithium silicon
polyurethane
trichloroethylene
powders
lithium
methyl cyanide
trichloroethane
toluene diisocyanate

Exhausts

Chemical exhausts were discharged through roof openings 486 and 487.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Subareas A and B have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Subareas A and B was issued March 20, 1997.

3.2.64 Area 325A

Processes and Operations

Subarea A was an equipment calibration and maintenance shop. Work performed included mechanical and electrical repair of vacuum pumps, high pressure pumps, hydraulic equipment, leak detectors, and welding machines.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled in the area:

acetone
adiprene
alcohol
calcium carbonate
cutting oil
Freon®
heat powder
hydrochloric acid
iron disulfide
isoverre
lithium chloride
lubricants
V-40
magnesium oxide
mercury
methyl pyrrolidinone
methylene chloride
mineral spirits
natural uranium in glass
paints
photographic chemicals
potassium chloride
potassium hydroxide
solder
trichloroethane
trichloroethene

4.0 OVERVIEW OF ALL OTHER BUILDINGS

Section 4.0 is a summary of the remaining Pinellas Plant buildings, including operations, processes, and building description.

4.1 Building 200

Processes and Operations

Quality control environmental tests designed to simulate operational environments are performed in Building 200. This building occupies approximately 12,000 square feet of floor space. Some of these tests were performed on neutron generators, which contained detonators. To mitigate the potential for accidental detonation, conductive flooring was used throughout the facility.

During testing of DOE products, the Building 200 radiological stack vented very low quantities of tritium oxide and gas from three boom boxes (firing chambers) and one radiological waste drum. The boom boxes were considered a Pinellas Plant RMMA [Ref. 9]. Neutron generator units were detonated in the firing chambers. The chambers were designed for 100 percent containment of the explosion in the chamber and collection barrel. A High Efficiency Particulate Air (HEPA) filter in the exhaust stack prevented particulates from the explosion from entering the environment. The radiological exhaust duct, HEPA filter, and exhaust stack were removed in September 1995.

Chemical Usage

A review of Specialty components records indicated the following chemicals may have been used or handled in Building 200:

alcohol	methylene chloride
asbestos (pipe insulation)	radioactive waste
explosives (Areas A, B, D, E, & L)	resin, curing agent
Fluorinert	solder
Freon	sodium hydroxide
Sylgard	tritium

Exhausts

The radiological exhaust duct, HEPA filter, and exhaust stack were removed in September 1995. All equipment exhausts associated with Subareas A-L, N-Z, AA-AH, AJ, R1, and R2 were removed and capped. The single chemical exhaust for the thermal battery vent test has been removed and capped.

Drains

There are connections to the sanitary drain system.

Status

Subareas 200 A-L, N-Z, AA-AH, AJ, R1, and R2 have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued March 22, 1996. The Area Characterization and Final Closeout Report for Subareas AA-AH, AJ, J, K, N-Z, R1, and R2 was issued March 24, 1997.

4.2 Building 500

Building 500 is the utility support building servicing the Pinellas Plant and occupies over 17,650 square feet. The building houses heating and air conditioning systems, emergency generators, and a demineralization water system. Building 500 is constructed of a steel frame with moment-resisting trusses. During 1993, 2 of the 900-ton chillers in the building were converted to use Hydrofluorocarbon (HFC) R134A. In 1994, a new chiller was installed, which utilizes Hydrochlorofluorocarbon (HCFC) R123. In 1994, Building 500 underwent modifications due to transition activities, including the installation of communications equipment formerly housed in Building 1200. The Deionized (DI) Water Plant was decommissioned on August 14, 1996 and subsequently dismantled.

4.3 Building 550

Building 550 was constructed in 1958 of concrete block and currently serves as the Utilities support building for the Industrial Wastewater Neutralization Facility (IWNF). The building and Subarea A occupy approximately 330 square feet. Subareas C and D are outdoor areas bounding the IWNF neutralization and equalization tanks, wastewater pits, and health physics holding tanks.

4.4 Building 600

Processes and Operations

Building 600 occupies an area of approximately 7,200 square feet and served as the Pinellas Plant Chemical Storage Building. Individual storage rooms, called bays, were established in Building 600 for the following materials:

Room A - Toxic Materials
Room B - Oxidizers
Room C - Acids
Room D - Flammables
Room E - Heat Paper and Powder
Room F - Offices
Room G - Alkalies
Room R2 - Restroom

Production and general stockroom chemicals were stored in rooms segregated by chemical class. Safety systems in Building 600 included automatic high-capacity fire sprinklers, high-capacity portable fire extinguishers, overflow sumps, bonded and grounded storage and pouring systems, explosion proof electrical service, and a lightning protection system.

Concrete floors in each storage room are sloping and graded to contain all spilled material. Most bays contain sumps. Blowout panels (skylights) are in place in all rooms. Telephones and all electrical fixtures in Building 600 are explosion-proof.

Building 600 was redesigned and renovated in 1992, to include storage for all major types of chemicals used at the plant, including those that required storage under a narrow range of temperature conditions.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

acetone	methyl alcohol
amyl acetate	nitric acid
calcium chromate	trichloroethene
methylene chloride	trichloroethane
mercury	toluene diisocyanate
acetic acid	hydrochloric acid

Exhausts

Equipment exhausts associated with Building 600 were 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1247, and 1248.

Drains

There is a connection to the sanitary drain system.

Status

Building 600 has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued April 1, 1997.

4.5 Building 700

Building 700 contains approximately 4,900 square feet. This building has a waste paper shredding machine, a painting booth, and housed various maintenance functions. It formerly housed the plant fire brigade. Specialty Components continues to occupy this area.

4.6 Building 720

Building 720 was constructed in 1983. The total floor area encompassed by the two rooms of Building 720 is 738 square feet. The building was used as a temporary incoming and receiving area from 1983 to 1987, and as a storage area for facilities maintenance materials from 1987 to 1997.

Review of Specialty Components records indicated that aluminum oxide, spray paint, and plumbing adhesive were used in Building 720. The building has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Building 720 was issued May 19, 1997.

4.7 Building 800

Building 800 housed a 200-kiloelectron volt (keV) ion accelerator and contains approximately 2,900 square feet. Test cells in the building are constructed of 3,000 psi reinforced concrete. Access to the test cells from the control room is through a 4- by 8-foot opening in the west wall of the test cell with a door constructed of 3,000 psi reinforced concrete that is framed in steel. The ion accelerator has been removed.

The Building 800 stack vented gaseous tritium or tritium oxide emissions from the Building 800 accelerator. The accelerator primarily accelerated deuterium ions to determine the neutron output of various types of tritium targets. Workstation hoods that vent radiological emissions were located in the accelerator facility and control room. The Building 800 accelerator room is considered a Pinellas Plant RMMA [Ref. 9]. Radioactive Waste Packaging operations now occupies the area.

4.8 Building 900

Building 900 is a concrete block tower designed and operated as a training facility to reproduce, as nearly as possible, the conditions that a fire fighter would encounter during a fire emergency. Minor modifications to this facility include installation of a railing on the top of the building and replacement of existing piping. Due to the nature of this facility, alternate plans are not identified.

4.9 Building 1000

Building 1000 is a concrete block structure set on a reinforced concrete foundation approximately 3 inches above the surrounding surface grade. The design elevation of the building prevents stormwater run-in. The overall area of Building 1000 is approximately 3,200 square feet. The building is divided into three bays for storage of low-level solid radioactive waste, solidified waste oil, mixed radiological and hazardous waste, and used equipment. Specialty Components continues to occupy this area.

4.10 Building 1010

Building 1010 is constructed of concrete block and is set on a reinforced concrete foundation, which slopes to a collection drain and sump system. The building is divided into two bays that are separated by concrete block fire partitions extending from floor to ceiling. Within the building, Bay Number 1 is normally used for empty noncontaminated container storage and is temporarily being used for radioactive waste storage. Bay Number 2 is used for 90-day temporary storage of hazardous regulated waste prior to disposition. Specialty Components continues to occupy this area.

4.11 Building 1040

Building 1040 is a 2,000-square foot concrete block structure set on a reinforced concrete foundation. The foundation slopes to a collection bay and sump. The interior of the building is divided into three bays. Bay Number 1 contains all liquid drummed wastes. Bay Number 2 is used for reactive waste storage. Bay Number 3 contains miscellaneous laboratory chemicals that are stored in the area until they can be properly identified and classified for packaging, shipping, and disposal. Specialty Components continues to occupy this area.

Associated with Building 1040 was a tank storage area, which had the capacity to store ignitable liquids and halogenated waste solvents, machine shop cutting fluids, and waste lubricating oils. The tanks were located on pads with concrete dikes to contain spills and prevent runoff. The tanks were removed in September 1995, in accordance with clean closure requirements. Building 1040 contains one active chemical emissions source, which is connected to a chemical exhaust hood for storing small volumes of Volatile Organic Compounds (VOCs) before disposal.

4.12 Building 1100

Constructed in 1985, this 400-square foot facility stored water-reactive metals. The floor of Building 1100 is constructed of concrete, the walls are concrete block with vertical reinforcing every 4 feet, and the roof is a metal deck with insulation and built-up roofing. Operations have ceased, and the building is available for D&C.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol	magnesium oxide
lithium bromide	lithium oxide
lithium chloride	iron powder
iron disulfide	potassium perchlorate
lithium fluoride	potassium chloride

lithex	lithium silicon alloy powder

Status

Operations have ceased and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued January 15, 1997.

4.13 Building 1500 and 1600

Processes and Operations

Constructed in 1990, this 10,300-square foot facility was the New Directions in Learning (NDL) school. The school was designed as a day-care facility for infants and toddlers and an elementary school for Grades 1 to 4.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

standard office supplies, including toner

Exhausts

There are no exhausts associated with Building 1500 and 1600.

Drains

There is a connection to the sanitary drain system.

Status

Specialty Components continues to occupy this area. An Interim Characterization and Closeout Report was issued November 25, 1996. The Area Characterization and Final Closeout Report was issued May 13, 1997.

5.0 UTILITIES

Section 5 is a summary of Pinellas Plant utilities. Utility systems equipment is primarily located in Building 500 and at the Industrial Wastewater Neutralization Facility (IWNF). Utilities consist of electrical systems; air conditioning, heating, and ventilation systems; water supplies; cryogenic and gas systems; fuel distribution systems; and energy management.

5.1 Electrical Power Distribution System

The Pinellas Plant receives its electrical service from a Florida Power Corporation-(FPC) owned substation that is located on plant property near the west boundary. Transformers receive their power supply via overhead pole lines from FPC's Cross Bayou substation, located 1.2 miles to the south. An alternate feed is brought in from FPC's Largo substation, located 3.2 miles to the north. Emergency electrical power consists of three 844-kilo volt-amps, diesel-driven electrical generators in Building 500, one diesel-driven generator in Building 1200, and a battery-powered emergency lighting system.

5.2 Chilled Water System

The chilled water system provides cooling for air conditioning units (air handling units [AHUs]) and for some process equipment. The chilled water system consists of 6 centrifugal chillers with cooling capacities up to 900 tons each located inside Building 500. During 1993, two 900-ton chillers were converted to use HFC R134A. In 1994, one 900-ton chiller unit was replaced.

5.3 Condenser Water System

The condenser water system is mainly located outside Building 500, except for the condenser piping that supplies the evaporation-cooled water to the chillers and heat pumps. The system includes provisions for the automatic addition of concentrated sulfuric acid to the cooling tower basin for pH control of the condensate. The sulfuric acid is stored in a 200-gallon horizontal plastic tank with secondary containment that is designed to hold its contents without any pressurization.

5.4 Hot Water Systems

Hot water systems at the Pinellas Plant consist of a process water system and domestic hot water system. The process hot water system provides hot water for plant manufacturing operations and equipment, AHUs, and serves as the heat source for the domestic hot water system. The hot water system is located inside Building 500, except for the heating water expansion tank and various loops of the distribution piping. The primary source of heat for the hot water heating system is a boiler with a heat pump for backup.

5.5 Domestic Cold Water System

The domestic cold water system supplies water to each building of the plant from either a Pinellas County Water System 48-inch diameter line at Belcher Road, or a 24-inch diameter line at Bryan Dairy Road. Each main water supply enters the property through a metered pit and into a domestic water main that is 6 inches in diameter.

5.6 Compressed Air System

The compressed air system provides shop-quality air (80 to 90 psi) to production areas of the plant and control air (approximately 20 psi) to instrumentation loops in the plant. The compressed air system is located inside and outside Building 500.

5.7 Deionized Water System

The DI water system was decommissioned on August 14, 1996 and has since been dismantled. DI water was historically necessary for providing high-quality water to many production operations at the plant. The DI water system treated the incoming county water supply to provide DI water suitable for plant process operations. The primary users of DI water were quartz crystal resonator production, tube assembly (cleaning), and tube engineering. The DI water system was located in a building adjoining the north side of Building 500. The system had a 6,000-gallon storage tank for hydrochloric acid, a 6,000-gallon storage tank for sodium hydroxide, and a 3,300-gallon storage tank for waste neutralization.

5.8 Fuel Distribution and Storage Batteries

Energy to power various boilers, stationary engines, and vehicles is produced by diesel fuel, liquid propane, gasoline, natural gas, and lead acid batteries.

5.8.1 Diesel Fuel

Diesel fuel is stored outside in two 6,000-gallon vertical, cylindrical, above-ground tanks north of Building 500, a 2,000-gallon tank west of Building 920, and a 500-gallon horizontal, cylindrical, above-ground tank west of Building 200. Inside Building 500, two smaller tanks store diesel fuel to operate the plant's diesel engines and the hot water boiler for a several-month period. The two 6,000-gallon tanks provide fuel directly to two rectangular day tanks for three stationary diesel engines that drive emergency power generators and to the burners of a hot water boiler inside Building 500. The two rectangular day tanks, located inside Building 500, store a minimum of 1 day's supply of fuel to operate the three emergency power generator diesel engines [Ref. 7].

Inside Building 920, two 100-hp diesel engines are supplied fuel by a 2,000-gallon horizontal cylindrical carbon steel tank with flat ends. A 2-foot high dike is present to contain the entire contents of the tank should it rupture. One 500-gallon fiberglass above-ground storage tank provides diesel fuel for the plant's vehicles through a service station-type pump and hose. This horizontal cylinder is supported 2 feet above grade by two concrete saddles. The tank is designed for atmospheric pressures and has a 12-foot high vent pipe capped by a screen outlet covered tee. The line has a downcomer to provide an overflow into the diked area. The same type of saddle supports two 500-gallon gasoline tanks 3 feet away; one tank is on each side. The area around the tanks is enclosed by a dike to capture any spills from a single tank inside the dike [Ref. 7].

5.8.2 Liquid Propane

Propane gas provides fuel for the pilot burner for an oil-fueled hot water boiler and for industrial, internal-combustion-powered vehicles designed to operate on vapors from Department of Transportation (DOT)-approved transportable containers. Propane is only used in the hot water boiler to ignite the boiler when natural gas is not available, and fuel oil is burned. Liquid propane is stored above ground, outside the north wall of Building 500.

5.8.3 Gasoline

Gasoline for the plant's road vehicles and maintenance equipment is stored in two above-ground tanks that are located west of Building 200. One 549-gallon capacity, above-ground tank contains regular unleaded gasoline, and the other 549-gallon capacity, above-ground tank contains premium unleaded gasoline. An additional 549-gallon capacity, above-ground tank provides diesel fuel for vehicles [Ref. 7]. Each tank is a horizontal cylinder made of fiberglass-reinforced plastic with a 12-foot high vent pipe capped by a tee with outlets screened on each end. Two concrete saddles support each tank 2 feet above the grade elevation. An 8-inch dike surrounds the storage area to contain any possible spills.

5.8.4 Natural Gas

Natural gas is supplied by a local utility through a 4-inch main line from the west side of the plant at Belcher Road; the line surfaces just outside the north wall of Building 500. The natural gas main then divides to reach the areas inside Building 500 and inside the west areas of Building 100.

5.8.5 Battery Power

Nickel-cadmium or lead-acid batteries provide electrical power to operate a 500-pound manlift, a small fire truck, and several four-wheeled, two-seat carts, as well as each of the four emergency electrical power diesel engines.

5.9 Bulk Gas Systems

The Pinellas Plant has bulk gas utilities in the form of argon, hydrogen, nitrogen, and oxygen storage and distribution systems. All the bulk gas tanks, except one nitrogen storage tank, have been removed from the site. The remaining nitrogen tank is a 1.0 million-cubic foot Dewar (Tank Number 2) located east of Building 200. High-pressure nitrogen gas, at approximately 2000 psi, is provided by two arrays of cylinders. Nitrogen is supplied to Building 200.

5.10 Pollutant Storage Tanks

All pollutant storage tanks at the Pinellas Plant are above ground, with secondary containment and administrative controls to prevent a release [Ref. 7]. The tanks include petroleum products (gasoline and diesel fuel), acids, and sodium hydroxide. There are no Underground Storage Tanks (USTs) at the Pinellas Plant. The last UST was removed from the plant in September 1991, in accordance with Pinellas County Public Health Unit regulations.

6.0 OVERVIEW OF THE CURRENT AIR, WATER, SOIL, AND HAZARDOUS WASTE ACTIVITIES

Section 6.0 includes an overall summary of Pinellas Plant current air, water, soil, and hazardous waste activities. This summary is based on 1996 data as presented in the Annual Site Environmental Report for Calendar Year 1996, [Ref. 12].

As part of the downsizing and cleanup of the Pinellas Plant and the removal of plutonium and tritium from the site, the DOE approved reductions in the monitoring of plutonium and tritium in accordance with State and Federal regulations. The plutonium, off-site surface water, and off-site air monitoring programs were stopped at the end of March 1997. The remaining monitoring programs will be phased out by the end of the DOE's presence at the Pinellas Plant on September 30, 1997.

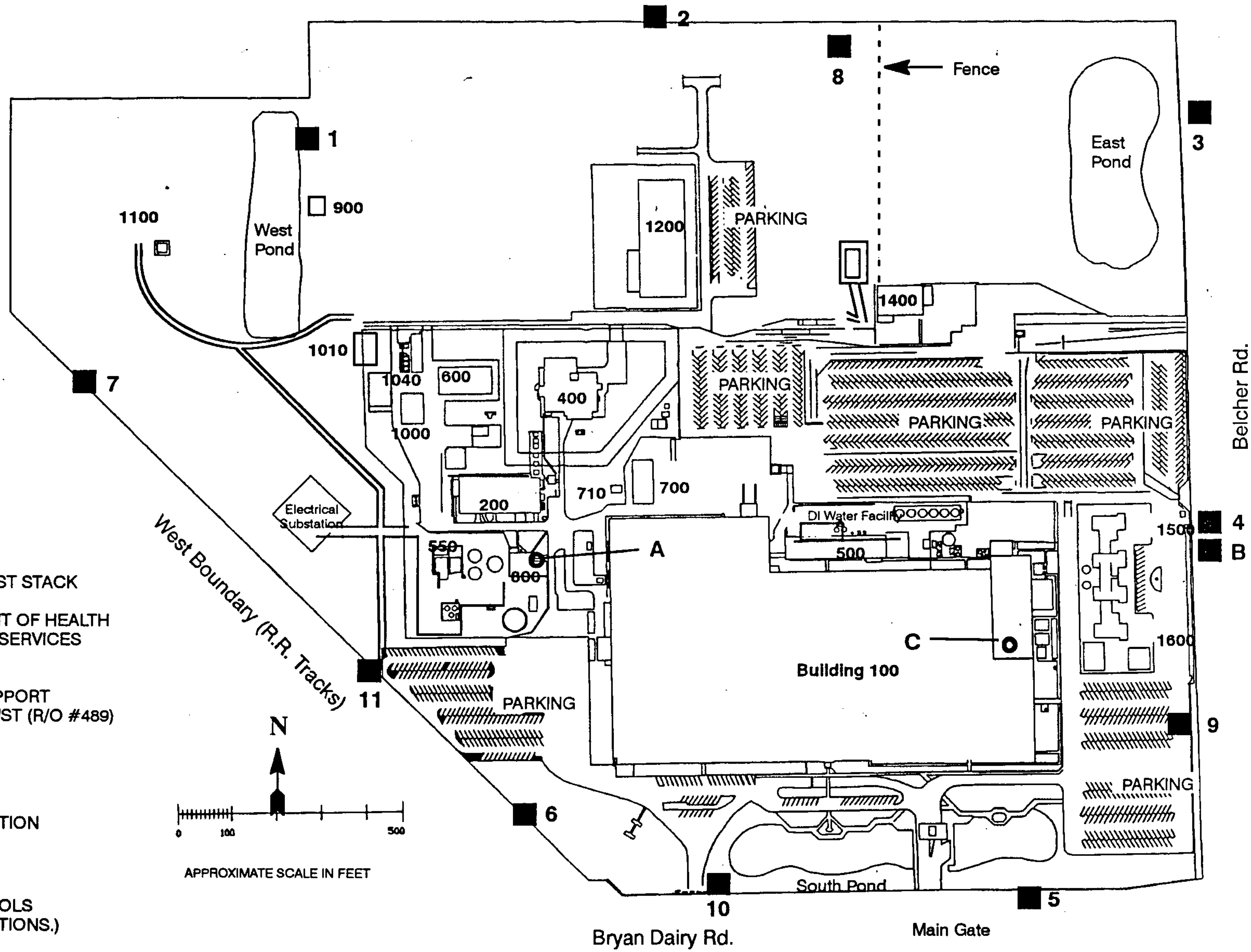
6.1 Radiological Monitoring

Table 6-1 summarizes radiological air, water, and soil monitoring activities.

Table 6-1. Environmental Radiological Monitoring Program

Media	Type of Sample	No. of Sample Locations	Frequency of Samples	Type of Emission Analyzed	Location of Sample	Figure
Air	Rad Exhaust Stacks	2 1	Continuous Once annually	Tritium Tritium	On site	6-1
	Air Monitoring Stations	11	Continuous Discontinued	Tritium Plutonium	On site	6-1
	Air Monitoring Stations		Discontinued Discontinued	Tritium Plutonium	Off site	
Soil	Top Soil and Subsoil		Discontinued	Plutonium	On site	
	Top Soil and Subsoil		Discontinued	Plutonium	Off site	
Water	Wastewater	1 (IWNF)	Continuous	Tritium	On site	6-2
	Surface Water	3 (ponds)	Bi-weekly	Tritium	On site	1-1
	Surface Water		Discontinued	Tritium	Off site	
	Groundwater		Discontinued	Tritium	On site	*

*Split among the 170 groundwater monitoring wells.



KEY

A BUILDING 800 EXHAUST STACK

B FLORIDA DEPARTMENT OF HEALTH AND REHABILITATIVE SERVICES SAMPLING STATION

C HEALTH PHYSICS SUPPORT LABORATORY EXHAUST (R/O #489)

■ – AIR SAMPLING STATION

O – EXHAUST STACK

(SQUARE & CIRCLE SYMBOLS INDICATE APPROX. LOCATIONS.)

Figure 6-1. On-Site Exhaust Stack and Ambient Air Sampling Station Locations

Exhausts

There are no chemical exhausts in the area.

Drains

There are connections to the sanitary drain system.

Status

The area has been cleaned, characterized, and closed out as part of D&C. An Area Characterization and Final Closeout Report was issued May 29, 1997.

3.2.65 Area 327A-C and 330A

Processes and Operations

Subarea 327A was a clean room for fabricating glass piece parts and subassemblies. Lathes and torches were used to assist in glass blowing processes. Subareas 327B and C were nonproduction areas. Area 330A was also a clean room and glass shop. Torches and CO_2 lasers were used for further glass processing. Mechanical assembly was also performed to combine glass parts with other components to be sent to Area 331A for welding.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

acetone
adiprene
alcohol
calcium carbonate
curing agent
cutting oil
Freon®
heat powder
hydrochloric acid
hydrofluoric acid
iron disulfide
isoverre
lithium chloride
trichloroethene
V-40
lubricants
magnesium oxide
mercury
methyl pyrrolidinone
methylene chloride
mineral spirits
natural uranium in glass
nitric acid
paints
photographic chemicals
potassium chloride
potassium hydroxide
solder
trichloroethane

Exhausts

There are no chemical exhausts in the area.

Drains

There are no drain system connections.

Status

Subareas 327A-C have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued May 24, 1997.

3.2.66 Area 331A

Processes and Operations

This area was an electron beam welding shop for fabricating parts and subassemblies in support of classified components and neutron generator production. There was also a wire saw workstation used for glass cutting (some glass contained naturally occurring uranium oxide), a vacuum pump, and an electric oven located in the area.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- Isoverre (chemical stripper)
- mercury
- hydrofluoric acid
- glass containing naturally occurring uranium oxide
- acetone
- methylene chloride
- nitric acid

Exhausts

Equipment exhaust was vented through roof opening 452.

Drains

There are connections to the sanitary drain system.

Status

In 1996, Equipment Fabrication and Test was relocated to this area.

3.2.67 Area 336 A-L, N

Processes and Operations

The area was used for the testing and inspection of classified components. Subarea B was a paint room. Subareas D-K were test cells constructed with reinforced concrete walls for high-pressure testing. Other testing performed included thermal, mechanical shock, vibration, ultrasonic, and vacuum leak. Subareas C, L, and N were used for x-ray inspection and x-ray film processing, respectively, with the latter area containing a silver recovery system.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- acetone
- adiprene
- alcohol
- calcium carbonate
- cutting oil
- Freon®
- glycerol
- heat powder
- hydrochloric acid
- hydrofluoric acid
- iron disulfide
- isoverre
- lithium chloride
- trichloroethene
- V-40
- lubricants
- magnesium oxide
- mercury
- methyl pyrrolidinone
- methylene chloride
- mineral spirits
- natural uranium in glass
- nitric acid
- paints
- photographic chemicals
- potassium chloride
- potassium hydroxide
- silver
- solder
- trichloroethane

Exhausts

Equipment exhaust was vented through roof openings 451 and 992.

Drains

Connections to the chemical drain system have been cleaned and capped. There are connections to the sanitary drain system.

Status

The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued May 24, 1997.

3.2.68 Area 347A-C, and M(A)

Processes and Operations

This area had three different uses: Subareas A and M(A) were used for the packaging and shipping of war reserve parts, Subarea B was an electrical switchgear room, and Subarea C was a utilities room.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

methylene dianiline (MDA)	alcohol
flammable liquids	mold release

Exhausts

There are no chemical exhausts in the area.

Drains

There are connections to the sanitary drain system.

Status

The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued May 16, 1997.

3.2.69 Area 348A-F

Processes and Operations

This area had several different uses. Subareas 348A-C were the optoelectronics development laboratory used to assemble and test prototype devices and to study laser beams. These subareas contained optoelectronic characterization equipment, life test equipment, and lasers. Processes included assembly, soldering, helium leak detection, failure analysis, and visual analysis. Operations in Subarea 348D included production support and process enhancement. This subarea was used primarily for inspecting raw materials, including glass, to be used in other parts of the plant. Lathes and torches were also utilized in this subarea. Subarea 348E was a storage room, and Subarea 348F was used for product acceptance inspection.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol	Freon®
perchloroethane	trichloroethane
methylene chloride	acetone
tritium	Nyoil
duct seal	glass microshperes
marker board cleaner	Reztore cleaner
Buehler Fibermet polishing	zero charge anti-stat
extender	Resque 2 topical anti-stat
Buehler Merimet cerium oxide	Hewlett Packard staticide
polishing compound	Cramolin liquid R-100 anti-oxidant
Nordland optical adhesive	Nova plastic polish #2
Nordland index matching liquid	epoxy patch Hysol 608
water soluble adhesive	epoxy patch Hysol 1C
Duz-all flux	RTV 108
Kodak lens cleaner	RTV 102
red epoxy part A	aero-duster
red epoxy part B	solder
optical coupling gel	Indium corp. solder kit
Tra-bond epoxy BA-F230AMP	Comet cleaner
Epo-tek 353nd part A	Vibri-clean hand cleaner
Epo-tek 353nd part B	staticide wipes
UV curable coating	no clean flux
laser liquid	flux
Fujimi abrasive	flux RMA 185
semichrome polish	Cladding solution part A
isopropyl alcohol	Cladding solution part B

Exhausts

Chemical exhausts were discharged through roof openings 315 and 611.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Area 348A-F has been cleaned, characterized and closed out as part of D&C. The Area Characterization and Final Closeout Report for Area 348A-C was issued October 7, 1996. The Area Characterization and Final Closeout Report for Area 348D-F was issued May 16, 1997.

3.2.70 Area 350A-Y, MA

Processes and Operations

This area had multiple operations. Subareas A, C, and D were occupied by the Equipment Calibration and Instrumentation Laboratory for repairing and calibrating benchtop electronic equipment (i.e., oscilloscopes, digital and analog meters) and instrumentation. Subareas 350B and Q were used for LAMB production and testing. A LAMB battery combines high capacity in a compact size. Processes included lock foam encapsulating, contact assembly deflashing, soldering, resistance welding, cable assembly, cable canister assembly, cell assembly, unit assembly, LAMB cell pack testing, LAMB cell inspection, and LAMB cell storage. There was a walk-in freezer in the southwest corner of the room for storing raw materials. Subarea E was a breakroom and Subarea I was the plant's computer based training room. Subareas R-Y were the Standards Laboratory for high accuracy calibration of other calibration equipment, instrumentation (vacuum gages, temperature gages, thermocouples, pressure gages, flow meters, etc.), tools, and weights used throughout the plant. Processes included soldering and vacuum pumping.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- lithium hydride
- methyl ethyl ketone
- acetonitrile
- Freon®
- sulfur dioxide
- acetone
- lead
- white correction fluid
- resin core solder
- Gentle lotion cleanser
- RTV silicone
- stamp pad ink
- Stay Clean paste flux
- liquid solder flux
- cleaning solution
- potassium carbonate
- Locktite 222
- Chem-Wik 15-5L
- Dow Corning 200
- Drakeol 5 LT mineral oil
- dip seal S-300
- mercury
- sulfur dioxide
- alcohol
- methylene chloride
- toluene diisocyanate
- flammable liquids
- activated detergent
- Static Free
- Elmers Glue All
- Di-2 ethyl hexyl sebacate
- RTG universal grease
- cleanser and polish
- Energrease LS-EP
- Hitempco 1000
- Wite Out
- air dry touch up paint
- Utilac flat black spray enamel
- metal primer
- almond paint
- glass cleaner

Hi-Tek hand and body lotion	flux-off
cleaner/gran. sur. plates	gold guard
711 lubricant	Kontact restorer
stenciling and marking ink	Kontact clean
Dykem steel blue layout fluid	tuner renu
Liquid Paper	Opex MGO black lacquer
Aero-Duster MS-222	acetone
adhesive material	marcol 90
base material	mineral spirits
solder	impression material
trichloroethane	

Exhausts

Chemical exhausts were discharged through roof openings 442, 489, 605, 606, 607, 608, 609, and 699.

Drains

There are connections to the sanitary and new overhead chemical drain systems. Connections to the overhead radiological drain system have been removed.

Status

In 1995, plant consolidation projects moved Chemical Laboratory operations from Areas 155 and 157 through 161 to Area 350 B through E, I, and Q (see Sections 3.2.35 and 3.2.37 through 3.2.39). Specialty Components continues to occupy Area 350. A PCIC tenant is scheduled to occupy this area after October 1, 1996. The Area Characterization and Final Closeout Report for Subareas 350A, X, and MA was issued September 23, 1996. An Interim Characterization and Closeout Report for Subareas 350R-W and Y was issued September 12, 1996.

3.2.71 Area 351A-N

Processes and Operations

There were two operations in this area. Subareas A-H were used for resonator/clock manufacturing and testing. Quartz resonators are high-accuracy timing devices used in weapons production. Processes included quartz etching, quartz cleaning, vacuum firing, polyimide application, resonator/clock assembly, thin film metal deposition, vacuum sealing, epoxy encapsulation, laser marking, laser trimming, soldering, ozone cleaning, and resonator/clock testing. Subareas I-N were occupied by Equipment Calibration and Maintenance. Processes were for repairing, maintaining, and calibrating process and test equipment used throughout the plant. Subarea 351I was used specifically for vacuum maintenance. Five 150-gallon tanks were used to clean vacuum systems and components. The tanks were enclosed, hooded, and exhausted through Acid Scrubber Number 5. Other vacuum maintenance processes included sandblasting to clean parts, vapor degreasing, and ultrasonic degreasing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

nitric acid	hydrochloric acid
hydrofluoric acid	methylene chloride
trichloroethane	ammonium bifluoride
alcohol	diethanolamine
Freon®	flammable liquids
sulfuric acid	trichloroethene (trichloroethylene)
Sylgard	asbestos (floor tile mastic)
toner	acetone
tin/lead solder	mercury

Exhausts

Chemical exhausts were discharged through roof openings 488, 596, 614, 618, 628, and 639. Exhaust from the acid tanks were vented through roof opening 690 to Scrubber Number 5.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed and capped.

Status

Operations have ceased. Subareas 351A through H have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Subareas 351A through H was issued August 26, 1996.

3.2.72 Area 353A-D

Processes and Operations

Iron disulfide used in thermal battery production is processed in this area. The iron disulfide is processed in a vibratory mill to reduce the particle size and then treated with a mixture of acids to remove impurities. The acid treatment is performed in small hooded tanks, which vent to acid-resistant fans on the roof. The tank exhaust is not equipped with a scrubber. There is also a graphite lathe and several other machine tools in the area. Subarea D was an acid storage shed attached to the outside of the building. The acid storage shed was removed in 1997.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

calcium chromate	iron disulfide
heat powder	hydrofluoric acid
hydrochloric acid	acetone
alcohol	trichloroethane
trichloroethene	toluene diisocyanate

Exhausts

Exhaust from the acid storage shed was discharged through roof opening 83 to Scrubber Number 6. Other chemical exhausts discharged through roof openings 484 (Scrubber Number 7) and 485.

Drains

Connections to the chemical drain system have been flushed and capped.

Status

Area 353A-D has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued April 4, 1997.

3.2.73 Area 377A

Processes and Operations

This area housed mechanical equipment and Uninterruptable Power Supply (UPS) batteries.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

lead in wet lead-acid batteries	sulfuric acid
asbestos insulation (remediated)	

Exhausts

There are no chemical exhausts in the area.

Drains

Chemical drains were rerouted to the new overhead chemical drain system.

Status

The area has been cleaned, characterized, and closed out as part of D&C. A Characterization and Final Closeout Report was issued September 27, 1996.

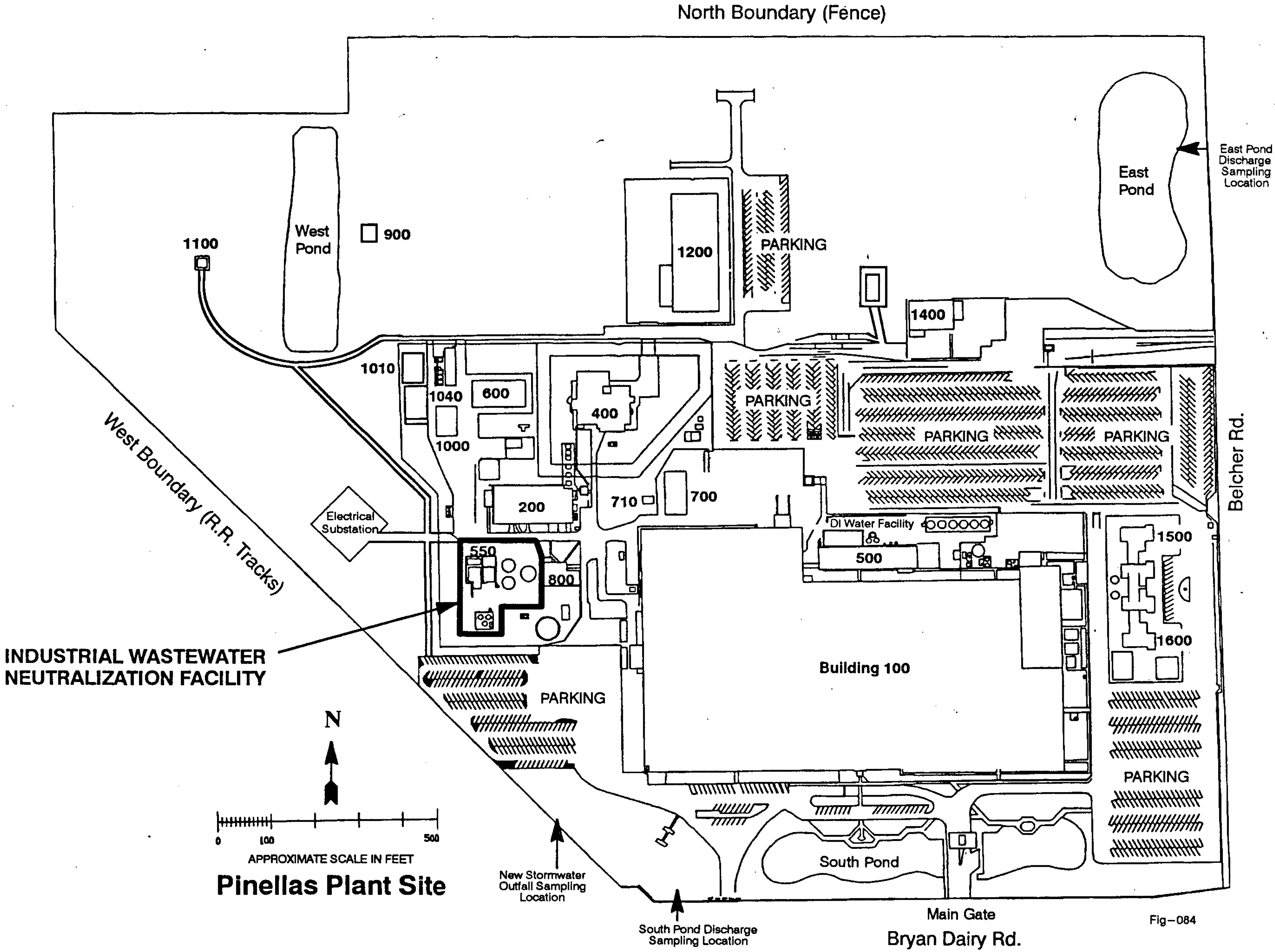


Figure 6-2. Radiological and Nonradiological Liquid Effluent Sampling Locations

6.1.1 Air

The Pinellas Plant started 1996 with three radiological exhaust stacks subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations for radionuclides. By December 1996, the Building 100 Main Radiological Exhaust Stack and associated ducts were dismantled and have since been decontaminated and disposed.

Sampling

During cleanup activities, small quantities of radioactive tritium and krypton-85 are discharged from radiological exhaust stacks. The plant's primary sampling stations quantify the amount of tritium that is discharged. Primary sampling stations collect samples directly from the stacks. Ambient air is collected from secondary sampling stations located around the perimeter of the plant and from tertiary sampling stations located throughout the county in a circular pattern around the plant (see Table 6-1). Krypton-85 releases are estimated from mass balance calculations and reported in the Pinellas Plant Annual Site Environmental Report [Ref. 12]. No plutonium release has ever been detected from past manufacturing. All plutonium-related manufacturing operations ceased in 1991 [Ref. 12]. Tritium and krypton-85 releases continue to be well below standards set by the DOE and the EPA [Ref. 12]. Based on the plant's low emissions and efficient recovery of these emissions, the EPA designated the Pinellas Plant as a minor source of radionuclide emissions. An EPA inspection verified the plant's compliance with 40 CFR Part 61 Subpart H, the National Emission Standards for Emissions of Radionuclides other than Radon from DOE Facilities.

Title V Permitting Activities

During 1996, radionuclide emissions, halogenated solvent degreasing, and chromium anodizing operations were conducted at the Pinellas Plant. Since these processes are regulated by the NESHAP regulations, the plant is designated as a Title V source. Beginning in 1995 and continuing into 1996, the Pinellas Plant's actual and potential air emissions were characterized, and plant personnel developed a Title V Air Operating Permit application. The Title V application was submitted to the FDEP on June 6, 1996. The chromium anodizing and halogenated solvent degreasing processes have since been discontinued.

Plant personnel continue to monitor changes in plant processes and update the Title V permit application when requested by the FDEP. The Pinellas Plant continues to operate within the limits of the existing Air

Operating Permit A052-233355 with no adverse impacts to the environment or human health.

6.1.2 Water

Wastewater

Small quantities of radioactive tritium are present in the plant's sanitary sewage, radiological, and industrial wastestreams; however, as previously stated, tritium releases continue to be well below standards set by the DOE and the EPA. Very small quantities of naturally occurring uranium were previously discharged in rinsewater from glass cutting operations, but this process was terminated in 1994. Just before leaving the IWNF, the sanitary sewage, radiological, and industrial wastestreams are combined and discharged to the PCU's Publicly Owned Treatment Works (POTW). As specified in the Pinellas Plant Environmental Monitoring Plan [Ref. 4], a 24-hour composite sample is collected each day of the year from the sanitary, industrial, and combined wastestreams and analyzed for tritium. The PCU routinely inspects the plant and oversees the discharge self-monitoring efforts. To date, the Pinellas Plant has never exceeded Federal, State, or local discharge standards for radioisotopes. The total tritium discharge for 1996 was less than the permissible discharge [Ref. 12]. Refer to Appendix D for the Pinellas Plant Industrial Wastewater Discharge Permit.

Surface Water

With the right meteorological conditions, airborne tritium can be deposited into surface waters. Prior to April 1997, Pinellas Plant personnel sampled both on-site and off-site surface waters on a regular basis. Off-site monitoring has been discontinued. Plant chemists analyzed the samples for tritium to determine the extent of potential deposition. The 1996 analyses show nondetectable concentrations of tritium in the on-site and off-site ponds. Refer to Reference 12 for more details.

Groundwater

Tritium has been detected in the Pinellas Plant groundwater. Plant personnel sample and analyze groundwater for tritium as needed from selected wells in both the surficial and Floridan aquifers. The highest concentration of tritium detected in samples from the surficial aquifer in 1996 was 2.9 pCi/ml, which is significantly below the Safe Drinking Water Act (SDWA) Maximum Contaminant Level (MCL) of 20 pCi/ml. Therefore, tritium is not a contaminant of concern in the site's ER program. Samples in the Floridan aquifer were below detectable limits. Refer to Reference 12 for more details.

6.1.3 Soil

All plutonium, except small sealed check sources, was removed from the plant in February 1991. In accordance with an Agreement-In-Principle with the HRS and as specified in the Pinellas Plant Environmental Monitoring Plan [Ref. 4], plant personnel continued to collect and analyze soil samples for plutonium annually from on- and off-site locations. Plutonium from plant operations has never been detected in soil samples [Ref. 12]. The plutonium monitoring program was discontinued after March 1997.

6.2 Nonradiological Monitoring

Table 6-2 summarizes the existing nonradiological water monitoring activities.

Table 6-2. Environmental Nonradiological Monitoring Program

Media	Type of Sample	No. of Sample Locations	Frequency of Samples	Type of Emission Analyzed	Location of Sample	Figure
Water	Wastewater	1 (IWNF)	Continuous	See Appendix D for pollutants in Industrial. Wastewater Discharge Permit	On site	6-2
	Surface Water	3 (ponds)	Quarterly	VOCs, Metals	On site	6-2
	Stormwater	3 outfalls	Once	Analysis of pollutants for permit application	On site	1-1
	Groundwater	170 150	Quarterly Biannually	VOCs Metals	On site and Off site	*

*Split among the 170 groundwater monitoring wells.

6.2.1 Air

Sources of nonradiological emissions at the Pinellas Plant include: boilers, acid scrubbers, fume hoods, and other process and testing-related exhausts from production and utility areas located throughout the plant site. The majority (approximately 80 percent) of air emission point sources on the site are associated with manufacturing and engineering operations in Building 100. An operating permit was issued by the FDEP in February 1994. The Pinellas Plant Air Emissions Operating Permit (Appendix E) regulates the quantities of various VOCs, Organic Compounds (OCs), and HAPs that the plant may release to the environment and limits the total VOC/OC emissions to 41.1 tons per year. Total VOC/OC emissions for 1996 were approximately 2.78 tons [Ref. 12]. Compliance oversight is conducted through routine annual inspections by the FDEP. These annual inspections establish that the plant is operated in full compliance with the provisions of the permit and State regulations.

6.2.2 Water

Wastewater

The Pinellas Plant discharges liquid effluent consisting of sanitary sewage and pH-neutralized industrial process wastewaters to the POTW. Samples are automatically collected and subsequently analyzed for the parameters specified in the plant's Industrial Wastewater Discharge Permit (Appendix D). The plant maintains charts to show when permit limits are being approached and proactively implements corrective actions to prevent permit limit excursions.

The PCU maintains a secured sampling station on the Pinellas Plant site. Samples of the plant's combined effluent from this station are collected on an irregular, unannounced basis and analyzed by the county to verify compliance with the permit. The PCU also performs routine site inspections of the IWNF operations, the self-monitoring data and analysis records, and the permit conditions. An excellent compliance history exists due to diligent engineering and administrative controls over all wastewater discharges and pH treatment processes.

Surface Water

Plant personnel sample the three on-site ponds quarterly for VOCs and metal compounds. Analytical results for 1996 showed VOCs and metals below regulatory levels. The only metal parameter detected above standards was iron. It exceeded the standard in both sampling periods and was attributed to natural environmental conditions. All other metal parameters remained below the detection level.

Stormwater

Pinellas Plant personnel sampled and analyzed stormwater discharges from two outfalls, and in September 1992, plant personnel submitted an individual permit application for stormwater discharges associated with industrial activity to the EPA, as required by 40 CFR Part 122 Subpart A. In 1993, an additional outfall was discovered, sampled, and analyzed. Plant personnel revised and resubmitted the application, but a permit has not yet been received.

Groundwater

Plant personnel monitor groundwater and provide evaluations of implemented interim measures and surveillance of potential groundwater contamination sites. These sites include the 4.5 Acre Site and other sites identified in the plant's Hazardous and Solid Waste Amendment (HSWA) Permit. Approximately 170 groundwater monitoring wells are sampled quarterly for VOC analysis. About 150 monitoring wells are sampled and analyzed for metals twice per year. The primary constituents of concern at the plant are solvent compounds and their decomposition products.

6.3 Waste Management

Waste Management activities are conducted in strict compliance with Title 40 CFR, Parts 260-268, as administered by the EPA and the FDEP under Chapter 403.722, Florida Statutes, and Florida Administrative Code (FAC) Rules under Chapter 62; applicable DOE Orders; and the Pinellas Plant Hazardous Waste Operating Permit (see Appendix G).

The Pinellas Plant's Hazardous Waste Facility Permit was renewed by the FDEP in 1994. The effective date of the permit was December 8, 1994. The permit will expire August 15, 1998. All sections of the permit application, except those dealing with Subpart X, Miscellaneous Treatment Units, were approved by the FDEP. Subpart X operations have ceased, and Pinellas Plant personnel submitted the RCRA closure report in October 1996 for the thermal treatment and reactive metals treatment units.

Types of Waste

The types of waste generated at the Pinellas Plant included the following:

- Radioactive wastes, including material contaminated with tritium.
- Hazardous wastes, including containerized liquid waste, laboratory chemicals, and spent hazardous articles, such as batteries.
- Nonhazardous wastes, including general trash, waste oils, and spent material associated with testing.
- Fluorescent light bulbs, printed circuit boards, scrap metal, and cardboard; all these wastes are recycled.
- Mixed wastes, two drums of HEPA filters included in the Site Treatment Plan (STP). This mixed waste was removed from the Pinellas Plant and treated off-site. No other known mixed waste is on-site.
- Water treatment sludge.
- Demolition debris.

6.3.1 Resource Conservation and Recovery Act (RCRA)

The Pinellas Plant's Hazardous Waste operations achieve compliance with the CFR 40, Parts 260-264, 266, 268, and 270, Chapter 403.722 of the Florida Statutes, FAC Rules under Chapter 62, and the plant's Hazardous Waste Facility Permit, H052-228925, issued by the FDEP in December 1994 (Appendix G).

The Pinellas Plant stores hazardous wastes, but no hazardous wastes are disposed of on the plant site. All hazardous wastes are shipped off site for disposal at a RCRA-approved disposal site. Hazardous waste storage at the Pinellas Plant falls under 2 categories, 90-day accumulation for hazardous waste, or permitted storage of hazardous waste not to exceed 1 year. Permitted storage for hazardous waste is identified in the Hazardous Waste Facility Permit. Treatment operations formerly included thermal treatment of small charge explosives and chemical treatment of water reactive compounds, such as calcium metal, calcium bimetals, and solid wastes contaminated with lithium metal. These treatment operations were discontinued in 1995 and was formally closed in October 1996.

The FDEP and/or the EPA inspect the plant's hazardous waste operations at least annually to assure compliance with governing regulations.

6.3.1.a RCRA Permit

The Pinellas Plant currently possesses a dual RCRA Part B Permit, with the FDEP administering the hazardous waste treatment and storage requirements and the EPA administering the HSWA portion for the assessment and remediation of Solid Waste Management Units (SWMUs). A dual permit was issued because the FDEP does not have the EPA's authorization to administer the HSWA provisions of RCRA.

The plant's HSWA Permit, FL6 890-090-008, issued by the EPA, Region IV, on February 9, 1990, requires the permittee to investigate any releases or potential releases of hazardous waste or hazardous constituents from any SWMU at the plant regardless of the time the waste was placed in the unit (Appendix E). The permit requires appropriate corrective actions for any releases.

6.3.1.b Hazardous Waste Functions

<u>Hazardous Waste</u>

Hazardous waste responsibility is mandated by DOE Orders, operating procedures, and Federal regulations, which delineate generator responsibility in compliance with the EPA's Hazardous Waste Management System. Waste Management is responsible for the removal, transport, and transfer of hazardous waste to the Hazardous Waste Management and Storage Facility and for the storage, treatment, and shipping of mixed, radioactive, hazardous, and nonhazardous waste.

Waste reactive metals and lithium-contaminated solids, generated from laboratory and battery production areas, were transferred under oil by WM to the reactive metals treatment area. Explosive materials (i.e., heat powder, heat paper, and primer squibs) were treated at the thermal treatment facility.

<u>Waste Treatment Methods</u>

Chemical and thermal treatment of reactive and division 1.3 and 1.4 explosive materials, in accordance with the plant's Hazardous Waste Operating Permit (Appendix G), were performed in on-site treatment facilities. Reactive metals and lithium-contaminated solids were treated in the reactive metals treatment facility, located north of Building 700. The facility consisted of a concrete basin with 55-gallon steel drum reaction vessels.

The thermal treatment area was located next to the reactive metals facility. The thermal treatment area consisted of a metal reaction pan, 2 feet long and 6 inches deep, used as an open burning area, where explosive materials were burned. The heat paper combustion residue was placed in drums for disposal as a toxic hazardous waste.

Spent machine shop coolant was treated at the point of generation in Building 100. The heavy metals were flocculated and filtered out of the coolant, allowing the liquid filtrate waste to be discharged to the sewer. The filtered solids were not hazardous and were disposed of with the nonhazardous wastes.

Treatment operations were discontinued in 1995 and were formally closed in 1996. Pinellas Plant personnel submitted the RCRA closure report in October 1996 for the thermal treatment and reactive metals treatment units. Hazardous materials will be shipped off site to RCRA-approved disposal facilities.

<u>Waste Minimization</u>

In 1990, the Pinellas Plant formalized a waste minimization program. This program is coordinated by WM and initiates or improves waste minimization technologies and efforts, including, but not limited to, the following:

- Employee training.
- Sale or exchange of reusable excess materials/scrap.
- Process changes and material substitution, including replacement of halogenated and flammable cleaners with aqueous-based cleaners, to reduce and/or eliminate employee exposure to hazardous materials.
- Recycling.
- Decontamination of tools and equipment contaminated with low-level radiation.
- Reuse/recycling of excess office supplies and laboratory equipment that result from cleanup/transition activities.

6.3.2 Low-level Radioactive Waste

The DOE Order 5820.2 regulates Low-Level Waste (LLW). The Pinellas Plant's LLW consists of small quantities of tritium contaminated classified weapons components and compatible solid wastes. These wastes are disposed of at the DOE's Savannah River Site. In support of the DOE reconfiguration process, all radioactive waste will be removed from the Pinellas Plant site by September 30, 1997.

Low-level radioactive waste material, such as scrapped equipment and by-products of decontamination procedures, is packaged into 55-gallon steel drums or B-25 boxes and stored in the WM facility before shipment to another DOE site for permanent storage/disposal. Waste oil contaminated with tritium is generated from routine maintenance of equipment in areas contaminated with tritium. This oil is treated with an absorbent and stored in the WM radiologically controlled storage facility prior to off-site shipment for disposal.

6.3.3 Mixed Wastes

Two drums of HEPA filters, which contain lead above regulatory levels, have been identified and reported to the FDEP. An STP was submitted and approved for the disposal of the wastestream after treatment. The drums were sent to a commercial facility for macroencapsulation and were disposed on August 2, 1996.

Additional streams of mixed waste could be generated during plant closing. The waste will be reported to the FDEP on a case-by-case basis in accordance with the existing contingency plan.

7.0 OVERVIEW OF BUILDING CLEANUP AND CHARACTERIZATION ACTIVITY

Section 7.0 describes the current status and future plans of Pinellas Plant contamination cleanup and characterization activities. The section is divided into two subsections, hazardous contamination cleanup and characterization and radiological contamination cleanup and characterization.

7.1 Hazardous Contamination Cleanup and Characterization

7.1.1 Asbestos Abatement

Table 7-1. Asbestos Abatement Projects Completed Since 1992

Area	Description
103 (Building 100)	Asbestos-containing floor tile was removed from two-thirds of the floor in Area 103B. Non-friable asbestos-containing duct mastic and insulation on water piping in the ceiling was removed from Area 103MA.
132 (Building 100)	Removed asbestos containing pipe insulation from restroom service chase.
153 & 154 (Building 100)	Removed sprayed on fireproofing from ceiling beam.
159, 160, 161 (Building 100)	Friable asbestos-containing thermal systems insulation has been removed.
171 & 188 (Building 100)	Removed sprayed on fireproofing from building columns, roof trusses, and roof deck.
184, 185 (Building 100)	Friable asbestos has been removed.
192 (Building 100)	Friable asbestos-containing thermal system insulation has been removed.
352 (Building 100)	Removed desiccant wheel, which contained asbestos, from dry room air handler.
Building 100 Roof	Removed approximately 4,500 lineal feet of pipe insulation.
117 & 336 (Building 100)	Removed pipe insulation above ceiling.
West Stack (Building 100)	Transite pipe removed. See West Stack Removal Project, Subsection 7.2.1 for more information.
Building 100	Multiple floor tile removal projects, as needed.
Building 200	Removed Transite soundproofing wallboard.
Building 400	Removed pipe insulation and floor tile that contained asbestos.
Building 500	Removed Chiller Number 3 that had insulation containing asbestos.

The Industrial Hygiene Internal Asbestos Survey began in April 1995. The purpose of this survey is to comprehensively locate friable Asbestos Containing Materials (ACMs) found at the Pinellas Plant.

To date, approximately 90 percent of the Building 100 (west end) areas have been assessed by Specialty Components State certified asbestos inspectors, utilizing the Asbestos Hazard Emergency Response Act (AHERA) sampling protocol as a guidance. The AHERA sampling protocol is outlined in the 40 CFR part 763. Small amounts of friable asbestos have been discovered and abated. It is expected that all significant quantities of friable asbestos have already been identified. Assessments are progressing from west to east and are expected to be completed by September 30, 1997. All friable asbestos has been abated from Building 100.

7.1.2 Chemical Drain Decontamination

The below-ground chemical drain lines in Building 100 were abandoned in 1996. The chemical drains in both the west and east sides of Building 100 were flushed, sampled to verify that the discharges were below wastewater discharge standards, and capped by grouting them shut. Any future connections to the chemical drain system in Building 100 will be made to the new above-ground chemical drain system, which was installed in the east side of Building 100 during 1996. Gravity drain lines were installed above the ceiling. A force main transfers the chemical wastewater to the industrial lift station. Chemical drain sumps are located at floor level in the manufacturing areas in the east end of Building 100, as required, to collect wastewater from processes and pump it to the above-ground gravity system. A gravity drain line was added on the roof for future use on the west end of Building 100. This line will run to the IWNF.

7.1.3 West Fire Tank Cleanup

A project to clean the West Fire Tank was completed in 1996. This project encompassed draining water from the tank, sampling and analyzing the interior grease and paint coatings for lead, removing and disposing of all grease and paint coating from the tank interior, preparing and resurfacing the interior with epoxy/polyamide base coating, and rebuilding/upgrading the cathodic protection systems for both tanks.

7.1.4 Area Closeout Program

A building characterization team has been assembled to assess the Pinellas Plant for hazardous chemical and radiological (see Subsection 7.2.7 for discussion on the radiological closeout program) contamination. The

Facilities Transition Planning Department is responsible for the program; the team also consists of representatives from Waste Management and Industrial Hygiene. Areas are selected for characterization on a priority basis, with a general trend in Building 100 from west to east. The program will cover all areas of Building 100 and all out buildings, including areas previously cleaned by other projects. Cleanup is progressing on schedule to meet the completion date of September 30, 1997.

The Area Closeout Program consists of equipment disposition/removal, area cleanup, and area characterization. The work is performed in accordance with the Generic Area Cleanup Activities (Appendix L), General Operating Procedure G.7.45, Area Closeout (Appendix M), and Standard Operating Procedure G.7.45-1 (Appendix N). After an area has been cleaned and characterized, Facilities Characterization and Closeout issues an Area Characterization and Final Closeout Report to Transitions Programs and PAO. Facilities Characterization and Closeout then schedules a final walkthrough with PAO. The Closeout Reports include the following:

- Introduction (including a list of subareas with square footage)
- Description (historical use of space)
- Chemicals used (list of chemicals used in the area)
- Personal property (including a drawing of remaining equipment)
- Facility drawing list
- Industrial Hygiene sampling results
- List of corrective actions performed per characterization walkthrough
- Certificate of Conformance

7.2 Radiological Contamination Cleanup and Characterization

7.2.1 Radiological Drain Decontamination

Each leg of the underground radiological (Health Physics) drain system has been flushed, permanently sealed (grouted and capped), and labeled. The above-ground vents have been removed.

Samples taken during and after flushing indicate that tritium activity levels are well below wastewater discharge permit limits and Pinellas Plant

ALARA objectives. Analysis for metals initially indicated that several samples had copper, zinc, and mercury concentrations slightly above POTW permit limits. However, samples taken after additional flushing indicated that results were below permit limits for all criteria. The project was completed in 1996.

7.2.2 West Stack Removal

The west radiological exhaust stack and all associated ducting and equipment were removed on August 12, 1995. The West Stack served Areas 155, 157, 158, 159, 160, 161, 162, 163, 182, and 191. Figure 7-1 shows the previous location of the stack and its connecting ducting.

In addition, Areas 157, 158, 159, 160, 161, and 182 have been characterized for radiological contamination and cleaned as part of the Area Closeout Program. This work has been performed in accordance with the Pinellas Plant Radiological Area Disposition Program Plan (Appendix C) and the Survey Plan for Determining Final Radiological Status of the Pinellas Plant (Appendix H).

7.2.3 Building 200 Radiological Exhaust System Cleanup

The Building 200 Radiological Exhaust System Cleanup Project characterized, decontaminated, and removed the radiological exhaust stack and associated ducting that served Building 200. The system consisted of approximately 200 linear feet of small diameter ducting, one HEPA filter, one fan, three sets of roughing and prefilters, and an exhaust stack. The affected areas have been characterized and cleaned for radiological contamination as part of the Area Closeout Program. See Section 4.1

7.2.4 Main Stack Removal

By December 1996, the Building 100 Main Radiological Exhaust Stack and associated ducts were dismantled and have since been decontaminated and disposed.

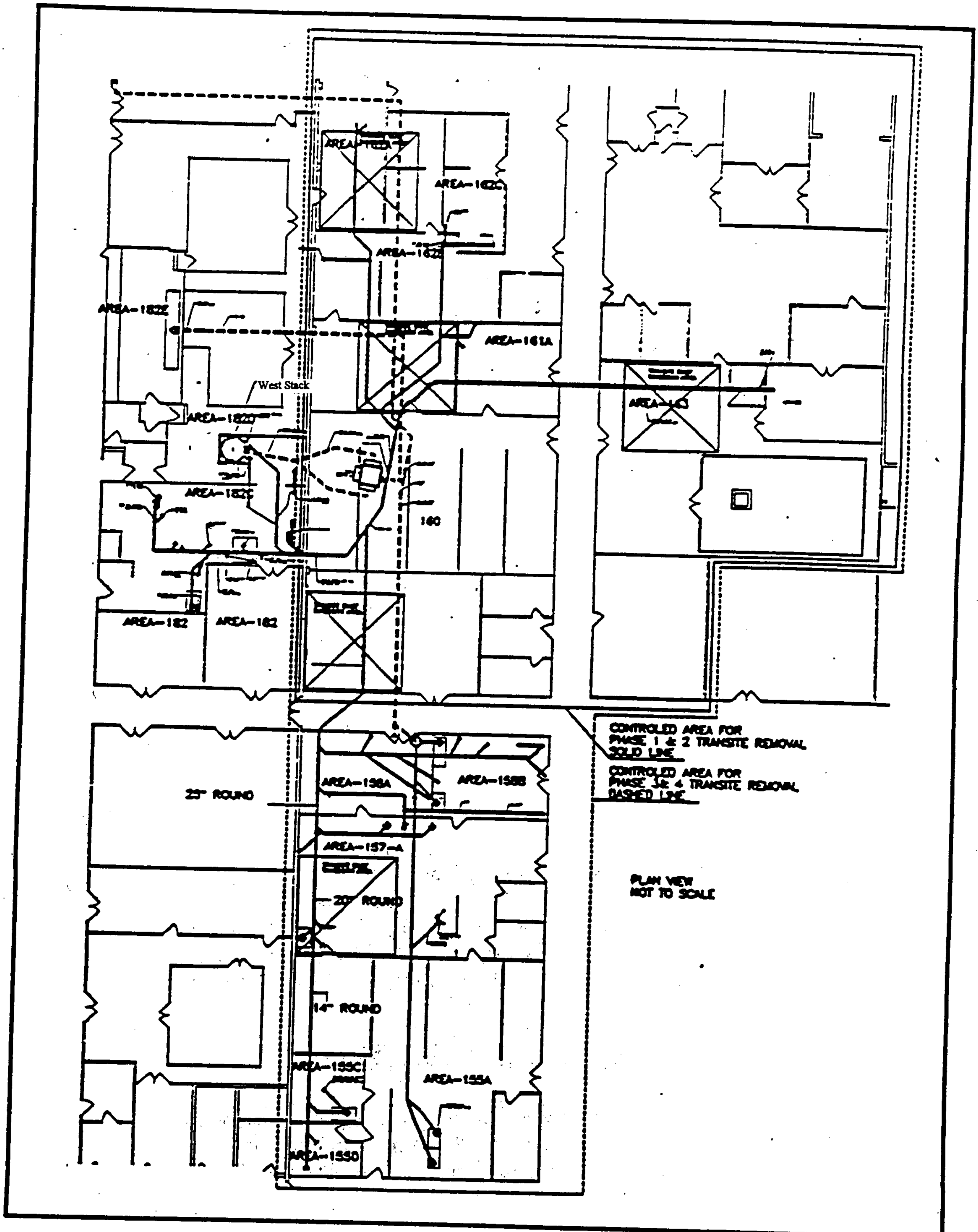


Figure 7-1. Location of the West Stack and its Connecting Ducting

7.2.5 Building 800 Radiological Exhaust System Cleanup

The Building 800 Radiological Exhaust System Cleanup Project will characterize, decontaminate, and remove the radiological exhaust stack and associated ducting and fan that serves Building 800.

7.2.6 Area 108 Cleanup Project

The Area 108 Radiological Cleanup Project will consist primarily of the decontamination and/or removal of contaminated materials from areas within Building 100, which were formerly used to process radioactive components. The project started in 1996 and will be completed in 1997. The following areas will be included in the project:

- Area 132J, K, L & O (TRS Rooms)
- Area 132N (East Stack Fan Room)
- Area 107B (Pure Zone)
- Area 108
- Area 112
- Area 109
- Area 350

The first phase of work, equipment removal, was completed in 1996. Subsequent work includes the removal of contaminated materials, removal of nonessential service piping, removal of the radioactive exhaust ducting, and restoration of systems and structures. The main exhaust stack, stack fans, and above-ground radiological drain system have been removed. For more information, see the Pinellas Plant Area 108 Radiological Cleanup Project; Volume I - Technical Plan; Volume II - Cost and Schedule (Ref. 13).

7.2.7 Radiological Waste Repacking Project

Waste Management has completed repacking radiological waste that was packed prior to the Pinellas Plant's receiving approval to ship waste to the Savannah River Site. Container contents were checked to verify compliance with the Savannah River Waste Acceptance Criteria.

7.2.8 Area Closeout Program

In parallel with the building characterization team (Subsection 7.1.4), the Radiological Operations Department performs radiological characterization of areas as they become available for closeout. They work in accordance with the Health Physics Desk Procedure Final Area Surveys (Appendix J), the Pinellas Plant Radiological Area Disposition Program Plan (Appendix C) and the Survey Plan for Determining Final Radiological Status of the Pinellas Plant (Appendix H). At the conclusion of the characterization, Radiological Operations issues the Final Radiological Status Report to Facilities Transition Planning for transmittal to PAO.

8.0 OVERVIEW OF EXISTING SITE ENVIRONMENTAL RESTORATION PROGRAM

Section 8.0 is an overall summary of the ER activities at the Pinellas Plant. Section 8.0 outlines the pre-cleanup activities, discusses plant sites that are deemed "no further action" by the EPA, and summarizes the ongoing cleanup initiatives.

8.1 Assessment Activities

The HSWA portion of the Pinellas Plant RCRA permit identifies the corrective action process that must be performed at permitted SWMUs (Refer to Appendix E). The RCRA corrective action process was initiated at the plant in 1988, with the performance of a RCRA Facility Assessment (RFA). Data collected as part of the RFA identified 14 SWMUs that required further assessment and characterization at the site [Ref. 14]. These SWMUs were identified as locations where past handling and disposal of wastes from manufacturing at the Pinellas Plant may have resulted in releases of hazardous waste or hazardous constituents to the environment.

Based on the RFA, a RCRA Facility Investigation (RFI) was performed by the Pinellas Plant from 1990 to 1992, to further characterize conditions at each of the SWMUs [Ref. 15]. During performance of the RFI, a 15th SWMU was added. Table 8-1 provides details from the RFI on the 15 original SWMUs.

Table 8-1. Pinellas Plant SWMUs Investigated During the RFI

SWMU Number	SWMU Site	Description and Operational History
PIN02	West Pond	This SWMU is a 2.6-million-gallon, man-made pond (DOE 1983) that was constructed as a borrow pit in 1956 and enlarged in 1966 to its current surface area of 1.63 acres. Between 1972 and 1982, the pond received tertiary-treated sanitary sewage and pH-neutralized industrial waste. In addition to liquid wastes, lumber contaminated with tritium and sulfuric acid was discarded in the southern third of the pond in 1974 or 1975. Currently, the West Pond is not receiving effluent or waste, but does receive limited storm runoff during heavy rainfall events.

SWMU Number	SWMU Site	Description and Operational History
PIN03	Spray Irrigation Site	This site is a 10-acre tract of land with an underground drainage system. It was a land treatment site for pH-neutralized industrial effluent and tertiary-treated sanitary sewage from 1972 to 1982. The underground drainage system remains intact.
PIN04	Metallic Anomaly	Metallic anomaly is an area, north of Building 600, at the southwest edge of the Spray Irrigation Site. A metallic anomaly was identified during an electromagnetic survey conducted by the U.S. Geological Survey (USGS) in 1985. The anomaly was found to correspond to the location of a utility pipe discovered during the RFI.
PIN05	Trenches	This SWMU consists of several trenches thought to have received slurry waste from water softeners in the late 1950s. The trenches are believed to have been excavated west of the West Pond. The depth and other features of the trenches are unknown.
PIN06	Old Drum Storage Site	This SWMU was a storage pad (since removed) for drums containing waste solvents. The 18-by-18-ft pad was located near the northwest corner of Building 100 and was present for an unknown period of time. The pad was steam cleaned and removed in October 1983, in accordance with an FDEP closure permit.
PIN07	Pistol Range	This Pistol Range was a former small-arms firing range for plant security guards. The Pistol Range Site was located west of the West Pond and operated from 1972 to 1987. This site consisted of a covered firing area with an earthen backstop behind the large area. Most of the backstop was removed in 1987, and the remaining structures were demolished and removed in 1988.

SWMU Number	SWMU Site	Description and Operational History
PIN08	Closed Fire Department Training Tank	This SWMU was a former location of a fire department training tank used by the Pinellas Plant Fire Department. From the early 1960s to 1973, the Pinellas Plant Fire Department practiced firefighting techniques near Building 400 by extinguishing burning flammable liquids and oil in a 12-ft-diameter tank. There is no documented cleanup of the site.
PIN09	Incineration Site	This site consists of locations associated with incinerators formerly located at the Pinellas Plant. From 1956 to 1982, paper, dried sewage sludge, and flammable liquids were burned in three incinerators. Two of the incinerators were used to burn solid material, while the third was used to burn flammable liquids. The liquids incinerator and the second solids incinerator operated from 1973 to 1982. The incinerator site was closed in accordance with an approved FDEP permit.
PIN10	Incinerator Ditch	The Incinerator Ditch is a northeast-southwest trending ditch located north of Building 700 and west of PIN09 that formerly received incinerator scrubber water. This site is also a suspected disposal location of small quantities of waste solvents. The site's primary function was to serve as a channel for stormwater runoff. From 1965 to 1970, the ditch received effluent from the solids incinerator scrubber. In the early 1960s, for a 2-to-3 year period, small quantities of acids and solvents were emptied into the ditch. The incinerator ditch was closed in accordance with an approved FDEP permit.
PIN11	Diesel Fuel Spill	The Diesel Fuel Spill Site is where between 10,000 and 12,000 gallons of No. 2 diesel fuel leaked from a broken pipe on January 21, 1983, near the northwest corner of the north parking lot. Fuel impregnated soil was excavated; the contaminated area was backfilled.

SWMU Number	SWMU Site	Description and Operational History
PIN12	Industrial Drain Leaks Building 100	This SWMU includes areas beneath Building 100, where potential leaks occurred from the industrial and health physics drain system. The potential leaks occurred due to possible pipe corrosion. The drain system was originally composed of two piping systems: standard and chemical. The chemical system handled fluids that might potentially come in contact with either tritium or hazardous wastes. The industrial system disposes of approved liquids, such as acids, caustics, and rinses.
PIN13	Southwest Ditch	This SWMU is the locations of former industrial and sanitary effluent outfalls from the Pinellas Plant. From 1957 to 1968, pH-neutralized industrial wastewater, tertiary-treated sewage effluent, low-level tritiated wastewater, and surface runoff flowed into the ditch. The ditch also received runoff from PIN10.
PIN14	Current Fire Department Training Tank	The Current Fire Department Training Tank used by the plant's fire department was located east of the West Pond. From 1972 to 1988, this area was used for fire training exercises involving diesel fuel, used crankcase oil, and other flammable liquids or solvents. From 1975 to 1983, the area was also used for the thermal treatment of explosives.
PIN15	Northeast Site, including the East Pond	The Northeast Site is associated with the location of a former waste solvent staging and storage area. The East Pond received pH-neutralized industrial waste and tertiary-treated sanitary waste from 1968 to 1972. Currently, the East Pond has a 3.25-million gallon capacity and receives only stormwater runoff from the north and east Pinellas Plant parking lots.

SWMU Number	SWMU Site	Description and Operational History
PIN16	Building 500 Spill Site	This site is the former location of an oil drain associated with compressor blowdown north of Building 500. The compressor operated in Building 500 from 1964 to 1981 and was removed in 1981. Approximately 750 cubic feet of stained soils were discovered during the excavation of water pipes. On June 12, 1990, notification was given to the EPA that a new SWMU was identified north of Building 500. The site was added to the SWMU list August 10, 1990, when an RFA plan was prepared.

Environmental investigations and completed cleanups during the RFI indicate that 12 of these SWMUs do not pose a current or future threat to the public or the environment. Based on these findings, the Pinellas Plant recommended the 12 SWMUs for no further action. These 12 SWMUs are listed below:

West Pond
Spray Irrigation Site
Metallic Anomaly
Trenches
Pistol Range
Closed Fire Department Training Tank
Incineration Site
Incinerator Ditch
Diesel Fuel Spill
Southwest Ditch
Current Fire Department Training Tank
Building 500 Spill Site.

At the remaining SWMUs, VOCs in the shallow groundwater aquifer are the primary contaminants.

The Production Components Scrap Area is located immediately west of the West Pond. In January 1993, during an unrelated activity, several discarded epoxy and epoxy-encased electronic parts, which contained some solder, were identified in the soil. A geophysical survey identified the extent of the area containing components. An analysis for lead and other hazardous constituents determined that contaminants in the soil in this area were below applicable regulatory standards. The DOE recommended no further action for this site, and the EPA concurred that no RFI was required at this time. During 1996, an excavation and removal project was performed at the Production Components Scrap Area to ensure removal of buried debris at the site. This area was never added to the plant's HSWA permit as a SWMU.

In October 1991 and January 1992, during routine monitoring of perimeter wells at the west-central boundary of the Pinellas Plant, vinyl chloride contamination was detected in the groundwater. An RFA was subsequently performed, which identified a material storage area that was used until 1986; however, it is not known whether the storage activities contributed to the identified contamination. In July 1992, the Pinellas Plant characterized the extent of groundwater contamination at the West Fenceline Area. The surficial aquifer groundwater contained vinyl chloride levels above drinking water standards, and further action was required by the EPA. The area was subsequently added to the HSWA permit list of SWMUs.

Groundwater sampling conducted at the Pinellas Plant in 1992 indicated the presence of trichloroethene and arsenic near Building 200 and the IWNF. Further investigation revealed specific areas of contamination. Because this contamination was not determined to be associated with any other Pinellas Plant SWMU, the plant reported these results to the EPA and an RFA was performed. Analytical results from groundwater samples indicated that elevated levels of arsenic, vinyl chloride, and trichloroethene are present in the area and exceed regulatory levels [Ref. 16]. The Wastewater Neutralization/Building 200 Area has been added to the HSWA Permit. The RFI confirmed the findings of the RFA, and a Corrective Measures Study (CMS) is in process.

8.2 Remediation Activities

As a result of the RFI process, currently five sites (West Fenceline, Northeast, Old Drum Storage, Industrial Drain Leaks - Building 100, and Wastewater Neutralization/Building 200 Area) were identified for further action. The following information summarizes each of these areas:

West Fenceline Area

Given the proximity of the West Fenceline Area to the Pinellas Plant property boundary, the plant prepared an interim measures plan that recommended an air sparging and soil vapor extraction system as the appropriate interim cleanup measure [Ref. 17]. Construction of this system was initiated in March 1995 and completed in August 1995. The air sparging technology was successful in removing vinyl chloride contamination. An Interim Measures Report was submitted to the FDEP and the EPA in April 1997, documenting completion of cleanup activities for the West Fenceline Area.

Northeast Site (Including the East Pond)

The Northeast Site, which is in the northeast section of the Pinellas Plant property, has elevated levels of solvent contamination in the surficial aquifer groundwater [Ref. 15]. Drums of production related materials were historically stored and disposed there. From 1968 to 1972, the East Pond received stormwater runoff and pH-neutralized industrial wastewater (currently, the East Pond receives only stormwater runoff from the north and east Pinellas Plant building roofs and parking lots). Before construction of the East Pond, all drums were supposedly removed; however, in 1984, three drums were discovered buried near the pond; two were empty, and one contained construction debris. Based on these discoveries, further investigations were performed. Groundwater analyses from the site showed VOC concentrations greatly exceeding drinking water standards.

In 1991, based on concerns that the contamination was spreading and could migrate off site, the plant installed groundwater recovery wells as an interim measure. The extracted contaminated groundwater was routed from the Northeast Site to an existing on-site treatment system near the northwest corner of the property. This existing groundwater treatment system is primarily for DOE's remediation of an adjacent piece of property known as the 4.5-Acre Site. A new groundwater treatment system has been constructed at the Northeast Site. The system contains holding tanks and an air stripper. A construction permit application for the air stripper was submitted to the FDEP in July 1996, and a construction permit was issued by the FDEP on December 17, 1996.

In January 1994, additional drums and debris were discovered at the Northeast Site during the installation of recovery well piping. An interim measures addendum was prepared to address the location and methods for removing the drums and debris at the site. This addendum was submitted to the EPA and the FDEP for review and approval. The debris removal activities were completed in October 1995 and were performed concurrent with the ongoing interim measures. Final site cleanup will be completed based on the EPA-approved CMS, the Corrective Measures Implementation Plan (CMIP), and the HSWA permit. Construction of the approved corrective measure system was initiated in 1995, including installation of a slurry wall, which acts as a hydraulic barrier along the northern boundary of the Northeast Site. This slurry wall was completed in November 1995. Concurrently, a number of innovative technology studies and pilot tests are conducted at this site under a nationally recognized DOE/EPA/Industry program. Results of these studies will enhance, expedite, and reduce costs of cleanup actions at this site and at similar VOC-contaminated sites. A solvent extraction and recovery pilot alternative to air stripping of recovered groundwater was completed in early 1996. In-situ steam stripping of the subsurface soils and groundwater was completed in early 1997. Enhanced anaerobic biodegradation is currently in progress.

Old Drum Storage Site/Industrial Drain Leaks - Building 100

The Old Drum Storage Site, an 18-by-18-ft concrete storage pad with a drain and containment system, was located near the northwest corner of Building 100. Hazardous waste, including dichloromethane, arsenic, ignitable liquids, calcium chromate solids, and resins were stored on this pad. The pad was steam cleaned and removed in October 1983 [Ref. 15].

During the RFI, a soil contaminant (dieldrin) and surficial aquifer groundwater contaminants (vinyl chloride, trichloroethene, 1,1-dichloroethane, 1,1-dichloroethene, 1,1,1-trichloroethane, and tetrachloroethene) around the Old Drum Storage Site were detected above their respective regulatory limits.

The Industrial Drain Leaks Site is an area beneath Building 100 where possible leaks in the Pinellas Plant drain system exist [Ref. 18]. As part of the RFI, a network of 12 groundwater monitoring wells was installed around the perimeter of Building 100 for monitoring potential transport of contaminants from beneath the building. Sampling of these wells revealed benzene and vinyl chloride exceeding their regulatory limits.

The Old Drum Storage and Industrial Drain Leaks - Building 100 SWMUs were combined due to their proximity and similar contaminants. A CMS of the two areas recommended that two pumping wells be installed along the northwest corner of the building and that the monitoring well network be expanded. The EPA approved this CMS, and the wells were installed during 1995. Additionally, during 1995, an extensive soil and groundwater sampling program was implemented for Building 100. As safe shutdown of the plant areas was completed, selected areas were sampled by coring through the building foundation. Samples of soil and groundwater were collected, and the foundation was repaired. Also, included in this project was the installation of eight permanent monitoring wells within Building 100. Data from this study, completed in 1995, identified the extent of soil and groundwater contamination beneath the building. In response to the FDEP's comments, additional groundwater sampling, including installation of six well clusters in and around Building 100 was initiated in 1996. Final site cleanup will be completed in accordance with the CMS, CMIP, and HSWA permit.

Wastewater Neutralization/Building 200 Area

This site consists of widespread, low concentrations of solvent compounds and a small, shallow area contaminated with arsenic. The CMS and CMIP (a combined document) for this area was submitted to the FDEP and the EPA in June 1997.

8.3 4.5-Acre Site

In addition to the SWMUs previously discussed, the Pinellas Plant is implementing a voluntary CERCLA type corrective action on an adjacent parcel of land located along the northwestern portion of the plant site. During the 1960s, the 4.5 Acre Site was a part of the plant site and was used for subsurface disposal of drummed solvent and resinous materials waste. In 1972, the DOE sold the 4.5 Acre Site to a private individual.

In 1985, during site clearning for a geophysical survey, a drum of methylene chloride was discovered [Ref. 19]. In response to this discovery, GEND, the Pinellas Plant's Management and Operating (M&O) contractor at the time, contracted the excavation and removal of the drums and contaminated soils.

A contamination assessment report [Ref. 20] was completed, which identified the presence of surficial aquifer groundwater contamination (primarily composed of vinyl chloride, toluene, trichloroethene, and 1,2-trans-dichloroethene) above regulatory levels [Ref. 21]. Lead, mercury, selenium, and silver were also detected above their regulatory levels [Ref. 22]. Lead and selenium have high naturally occurring concentrations in Pinellas County; therefore, they are not considered contaminants of concern.

In December 1988, based on the concern that the contamination would migrate off site, the interim groundwater recovery treatment system began operating at the 4.5 Acre Site. The treatment system for this site is located on the northwest corner of the Pinellas Plant property and discharges to the Plant's IWNF. The discharge from this treatment system is in compliance with PCU discharge requirements [Ref. 23].

Cleanup goals for the site are consistent with Federal and State standards. A Remedial Action Plan (RAP) was prepared during 1995 that evaluated, screened, and proposed a selected final remedial technology for the site. The DOE is negotiating a consent agreement with the FDEP and property owner, which addresses agency review and approval of the RAP and establishes site cleanup levels and completion criteria. Interim voluntary corrective actions continue during consent agreement negotiations. Improvements and modifications to the existing systems are anticipated for installation in 1997, and include a 22-well dual air/water phase extraction system to accelerate and enhance containment recovery and treatment.

9.0 LIST OF HAZARDOUS SUBSTANCES AND EXTREMELY HAZARDOUS SUBSTANCES

Section 9.0 is a summary, which explains the List of Hazardous Substances and Extremely Hazardous Substances that is included in this EBR as Appendix K.

Appendix K is a list of the following: 1) known hazardous substances and radioisotopes as identified in 40 CFR Part 302.4 and Appendix B to Part 302.4, and 2) extremely hazardous substances as identified by Appendix A to 40 CFR Part 355, which, to the best of Specialty Components knowledge, are currently or were historically used at the Pinellas Plant. Appendix K identifies the chemicals, synonyms, Chemical Abstract Services (CAS) registry number, the hazardous waste number, if applicable, whether the chemical is a hazardous or extremely hazardous substance, and whether the material was stored or processed in excess of 1000 kilograms (kg) for hazardous substances, the curie regulatory reporting limit for radioisotopes, and/or one kilogram for the extremely hazardous substances.

Information in Appendix K was developed from the SARA Title III and the Emergency Planning and Community Right to Know Act (EPCRA) reports, the Pinellas Plant Chemical Material Tracking System (CMTS), the air emissions construction and operation permit applications, the hazardous waste operations records, and the epidemiology feasibility study [Ref. 24].

Because no computerized tracking systems existed prior to 1986, and material purchase records were not routinely maintained in files or archives, this list of chemical substances is not complete for the full 40 years of plant operations. In addition, many commercial chemical products consist of proprietary mixtures, which may contain one or more hazardous or extremely hazardous substance(s). A list of over 7000 of these products used at the plant is available, but has not been included. Finally, since many chemicals are purchased in box, drum, can, gallon, kit, or other unit lots, whether the substance exceeded the 1000 kilograms or 1 kilogram limit cannot always be readily determined. The list of radioisotopes is considered complete since careful records of the management of these substances are available from 1957 to the present.

10.0 COMMON SYNONYMS FOR CHEMICALS USED AT THE PINELLAS PLANT

2-propanol	isopropyl alcohol; isopropanol; secondary propyl alcohol; dimethyl carbinol; petrohol
2-pyrollidone	2-pyrrolidinone; 2-oxypyrrolidine; 2-ketopyrrolidine
acetic acid	glacial acetic acid
acetone	2-propanone
acetonitrile	methyl cyanide; cyanomethane; ethanenitrile
alcohol	ethanol; ethyl alcohol
alumina powder	aluminum oxide
aluminum oxide	alumina powder
ammonia	ammonium hydroxide
ammonium bifluoride	acid ammonium fluoride; ammonium hydrogen fluoride
ammonium dihydrogen phosphate	monobasic ammonium phosphate; ammonium biphosphate; primary ammonium phosphate
ammonium chloride	ammonium muriate
ammonium hydroxide	ammonia in water
ammonium thiocyanate	thiocyanic acid ammonium salt; ammonium rhodanide; ammonium sulfocyanate; ammonium sulfocyanide
arsenic trioxide	arsenous acid; arsenous acid anhydride; arsenous oxide; arsenic sesquioxide; white arsenic
asbestos	amianthus; fibrous mineral silicates
benzoic acid	benzenecarboxylic acid; phenylformic acid; dracyclic acid
beryllium	glucinium
boric acid	boracic acid; orthoboric acid; borofax
bromothymol blue	4,4'-(3H-2,1-benzoxathiol-3-ylidene)bis[2- bromo-3-methyl-6-(1- methylethyl)phenol]S,S-dioxide; 3,3'-dibromothymol-oxy-o-toluenesulfonic acid; 3,3'-dibromothymolsulfonphthalein
butyl acetate	acetic acid butyl ester; acetic acid 1- methylpropyl ester; acetic acid sec-butyl ester; acetic acid 1,1-dimethylethyl ester; acetic acid tert-butyl ester
butyl stearate	octadecanoic acid butyl ester
calcium carbonate	carbonic acid calcium salt
calcium chromate	calcium chrome yellow; gelbin; yellow ultramarine
calcium hydroxide	calcium hydrate; slaked lime
carbon tetrachloride	tetrachloromethane; perchloromethane; necatorina; benzinoform
chlorobenzene	monochlorobenzene; benzene chloride
chloroform	trichloromethane

d-limonene	1-methyl-4-(1-methylethenyl)cyclohexene; p-mentha-1,8,-diene; cinene; cajeputene; kautschin
DETA	deet; N,N-diethyl-3-methylbenzamide; N,N- diethyl-m-toluamide; M-det; m-DETA; ENT 20218; autan; m-delphene; detamide; dieltamid; flypel; metadelphene; off; repel
diacetone alcohol	4-hydroxy-4-methyl-2-pentanone; pyranton
dibutyl amine	n-dibutylamine; N-butyl-1-butanamine
diethanolamine	2,2'-iminobisethanol; 2,2'-iminodiethanol; diethylolamine; bis(hydroxyethyl)amine; 2,2'-dihydroxydiethylamine
diphenylamine	N-phenylbenzeneamine
EDTA	edetic acid; N,N'-1,2-ethanediylbis[N-(carboxymethyl)glycine}; (ethylenedinitrilo)tetraacetic acid; ethylenediaminetetraacetic acid; deathamil; havidote; versene acid
ethanolamine	2-aminoethanol; monoethanolamine; 2-hydroxyethylamine; ethylolamine; colamine
ethylene glycol	1,2-ethanediol
ferric ammonium sulfate	ammonium ferric sulfate
fluoroboric acid	hydrogen tetrafluoroborate
formaldehyde	methanal; oxomethane; oxymethylene; methylene oxide; formic aldehyde; methyl aldehyde
Freon	trichlorotrifluoromethane; trichloromonofluoromethane; fluorotrichloromethane; Freon; Frigen; Arcton; Genetron; Halon; Isotron; dichlorodifluoromethane; difluorodichloromethane; carbon tetrafluoride; tetrafluoromethane; cryoflurane; 1,2-dichloro-1,1,2,2-tetrafluoroethane; octafluorocyclobutane; perfluorocyclobutane
glycerol	1,2,3-propanetriol; glycerin; trihydroxypropane;
gold cyanide	gold monocyanide; aurous syanide
hydrochloric acid	muriatic acid
hydrofluoric acid	fluohydric acid
hydroxypropyl cellulose	cellulose 2-hydroxypropyl ether; oxypropylated cellulose; klucel; lacrisert
isooctane	2,2,4-trimethylpentane; isobutyltrimethylmethane
isopropyl alcohol	2-propanol; isopropanol; secondary propyl alcohol; dimethyl carbinol; petrohol
kerosene	kerosine
lead acetate	natural lead acetate; normal lead acetate; sugar of lead; salt of Saturn

lithium carbonate	Camcolit; Candamide; Carbolith; Ceglution; Eskalith; Hypnorex; Limas; Liskonum; Lithane; Lithobid; Lithonate; Lithotabs; Plenur; Priadel; Quilonium retard
m-xylene	dimethylbenzene; xylol
manganese dioxide	manganese binoxide; manganese peroxide; manganese superoxide; black manganese oxide
mannitol	d-mannitol; mannite; manna sugar; cordycepic acid; manicol; mannidex; diosmol; osmitrol; osmosal
mercuric chloride	mercury bichloride; corrosive sublimate; mercury perchloride; corrosive mercury chloride
mercury	hydrargyrum; liquid silver; quicksilver;
methyl alcohol	methanol; carbinol; wood spirit; wood alcohol
methyl cellulose	cellulose methyl ether; methocel; cellothyl; syncelose; bagolax; cethylose; cethytin; cologel; cellumeth; hydrolose; nicel; tearisol; tylose
methyl ethyl ketone	2-butanone, ethyl methyl ketone
methylene chloride	dichloromethane; methylene dichloride; methylene bichloride
methylene dianiline	methylene diamine p,p'-diaminodiphenylmethane; 4,4'-methylene bis[benzenamine]; 4,4'-methylenedianiline
n-methylpyrrolidinone	n-methylpyrrolidone; methylpyrrolidone; 1-methyl-2-pyrrolidinone; n-methylpyrrolidone; 1-methyl-5-pyrrolidinone; 1-methyl-5-pyrrolidinone; 2-sec-butyl-4; 6-dinitrophenylisopropyl carbonate
n-vinyl pyrollidone	povidone; 1-ethenyl-2-pyrrolidinone polymers; 1-vinyl-2-pyrrolidinone polymers; poly[1-(2-oxo-1-pyrrolidinyl)ethylene; polyvinylpyrrolidone; polyvidone
oxalic acid	ethanedioic acid
p-xylene	dimethylbenzene; xylol
phosphoric acid	orthophosphoric acid
piperidine	hexahydropyridine
polyethylene glycol	macrogol; PEG; carbowaz; jeffox; nycolline; pluracol E; Poly-G; polyglycol E; solbase
polyglycol	macrogol; PEG; carbowaz; jeffox; nycolline; pluracol E; Poly-G; polyglycol E; solbase
polysulfide	thiokol; thiorubber

potassium chloride	camcopot; chloropotassuril; chlorvescent; enseal potassium chloride; kaleorid; kalitabs; kaskay kayback kay cee l; k- contin; klor-con; ktab; peterkal; pfiklor; potavescent; rekawan; repone k; slow-k tablets; span-k
potassium dichromate	potassium bichromate
potassium ferricyanide	tripotassium hexakis(cyano-c)ferrate (3-) potassium hexacyanoferrate(III)
potassium hydrogen phthalate	potassium biphthalate; phthalic acid potassium acid salt; potassium acid phthalate; acid potassium phthalate
potassium hydrogen sulfate	potassium bisulfate; potassium hydrosulfide; potassium sulfhydrate
potassium hydroxide	potassium hydrate; caustic potash; potassa
potassium iodide	knollide
potassium nitrate	saltpeter; niter
potassium permanganate	permanganic acid potassium salt
potassium phosphate	potassium biphosphate; potassium acid phosphate; potassium dihydrogen phosphate; potassium hydrogen phosphate
potassium sodium tartrate	rochelle salt; seignette salt
potassium thiocyanate	potassium sulfocyanate; potassium rhodanide; rhocya
silica (crystalline)	silicon dioxide; silicic anhydride
sodium bicarbonate	sodium hydrogen carbonate; sodium acid carbonate; baking soda
sodium bichromate	sodium dichromate (VI); bichromate of soda
sodium gluconate	gluconic acid sodium salt
sodium nitrite	nitrous acid sodium salt; erinitrit
sodium oxalate	ethanedioic acid disodium salt
sodium thiosulfate	sodium hyposulfite; hypo antichlor; sodothiol; sulfothiorine; ametox
sodium borate	sodium biborate; sodium pyroborate; sodium tetraborate
sodium iodide	ioduril; anayodin
sodium hydroxide	caustic soda; soda lye; sodium hydrate
soluble starch	amylodextrin; amylogen
stannous chloride	tin dichloride; tin protochloride; Stannochlor
stearic acid	octadecanoic acid; emersol 132; promulsin; proviscol wax
sulfur	brimstone; sulphur
sulfuric acid	oil of vitriol
tetrachloroethylene	perchloroethylene; ethylene tetrachloride
tetrahydrofuran	diethylene oxide; tetramethylene oxide

toluene	methyl benzene; tolulol; phenylmethane; methacide
toluene diisocyanate	2,4-diisocyanatotoluene; 2,4-tolyene diisocyanate; TDI; nacconate 100
trichloroethane	methyl chloroform; chloroethene; vinyl trichloride
trichloroethene	trichloroethylene; ethinyl trichloride; triclene; trielene; trilene; trichloran; trichloren; algylen; trimar; triline; tri; trethylene; westrolsol; chlorylen; gemalgene; germalgene
trichloroethylene	trichloroethene; ethinyl trichloride; triclene; trielene; trilene; trichloran; trichloren; algylen; trimar; triline; tri; trethylene; westrolsol; chlorylen; gemalgene; germalgene
trichlorotrifluoromethane	trichloromonofluoromethane; fluorotrichloromethane; Freon 11; Frigen 11; Arcton 9
triethylenetetramine	N,N'-bis(2-aminoethyl-1,2-ethanediamine; 1,8-diamino-3,6-diazaoctane; 3,6- diazaoctane-1,8-diamine; 1,4,7,10-tetraazadecane; trientine; trien; ETEA; TECZA
tris buffer	tromethamine; 2-amino-2-hydroxymethyl- 1,3-propanediol; trimethylol aminomethane; tris(hydroxymethyl)aminomethane; trisamine; trometamol; tromethane
xylene	dimethyl benzene; xylol
zinc sulfate	white vitriol; zinc vitriol; medizinc; optraex; solvezink; zincate; zincomed
zirconium fluoride	zirconium tetrafluoride

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APPENDIX A

Letter Dated July 25, 1991 - United States Department of the Interior Fish and Wildlife Services

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United States Department of the Interior
FISH AND WILDLIFE SERVICE
P.O. BOX 2676
VERO BEACH, FLORIDA 32961-2676

July 25, 1991

Mr. Paul J. Behrens
Senior Environmental Scientist
Systematic Management Services, Inc.
11701 Belcher Road
Suite 103
Largo, FL 34643

Dear Mr. Behrens:

This responds to your letter, dated July 17, 1991, regarding threatened or endangered species that may be present on the U.S. Department of Energy's Pinellas Plant in Largo, Pinellas County, Florida.

The property is within the historic range of the endangered Florida golden aster (Chrysopsis floridana). The species was recorded historically from St. Petersburg Beach and from Seminole, but urban development has apparently extirpated the species from those two sites. If a remnant of pine scrub vegetation is present on the property, it should be thoroughly searched for the species. If sand pine scrub is not present on the property, it is unlikely that the species is present there.

The nearest bald eagle nest (designated PI-19 by the Florida Game and Fresh Water Fish Commission) is located about 2 miles southwest of the property, near Cross Bayou. Although the eagles could feed as far north as the retention ponds on the property, their feeding is most likely concentrated in Cross Bayou. If contaminants from the plant are entering the Cross Bayou Watershed, some adverse effect on the eagles may occur. Otherwise, activities within the property are not likely to have a direct effect on the nesting pair.

The threatened Eastern indigo snake may inhabit the property. Detailed study of the site would be required to determine its presence or absence.

The endangered wood stork may feed seasonally in the retention ponds on the property.

No other Federally listed species are likely to occur near the property. You should contact the Florida Game and Fresh Water Fish Commission regarding species listed by the State.

If the Department of Energy determines that an action is likely to adversely affect a Federally listed species, they should notify this office in writing to request consultation under Section 7 of the Endangered Species Act.

Thank you for the opportunity to comment.

Sincerely yours,

Joseph D. Carroll
Acting Field Supervisor

cc:
FG&FWFC, Tallahassee, FL
FWS, Jacksonville, FL

APPENDIX B

Letter Dated September 12, 1991 -
Florida Department of State
Division of Historical Resources

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FLORIDA DEPARTMENT OF STATE
Jim Smith
Secretary of State
DIVISION OF HISTORICAL RESOURCES
R.A. Gray Building
500 South Bronough
Tallahassee, Florida 32399-0250
Director's Office (904) 488-1480
Telecopier Number (FAX) (904) 488-3353

September 12, 1991

Mr. Paul J. Behrens
Systematic Management Services, Inc.
11701 Belcher Road, Suite 103
Largo, Florida 34643

In Reply Refer To:
Denise M. Breit
Historic Sites
Specialist
(904) 487-2333
Project File No. 912413

RE: Cultural Resource Assessment Request
Site-Wide Environmental Documentation for the Department of Energy's Pinellas Plant
Largo, Pinellas County, Florida

Dear Mr. Behrens:

In accordance with the procedures contained in 36 C.F.R., Part 800 ("Protection of Historic Properties"), we have reviewed the above referenced project(s) for possible impact to archaeological and historical sites or properties listed, or eligible for listing, in the National Register of Historic Places. The authority for this procedure is the National Historic Preservation Act of 1966 (Public Law 89-665), as amended.

A review of the Florida Master Site File indicates that no significant archaeological or historical sites are recorded for or considered likely to be present within the project area. Furthermore, it is the opinion of this agency that because of the project location and/or nature it is considered unlikely that any such sites will be affected. Therefore, it is the opinion of this office that the proposed project will have no effect on any sites listed, or eligible for listing, in the National Register. The project is consistent with the historic preservation aspects of Florida's coastal zone program, and may proceed without further involvement with this agency.

Archaeological Research (904) 487-2299
Florida Folklife Programs (904) 397-2192
Historic Preservation (904) 487-2333
Museum of Florida History (904) 488-1484

If you have any questions concerning our comments, please do not hesitate to contact us. Your interest in protecting Florida's archaeological and historic resources is appreciated.

Sincerely,

Suzanne P. Walker

for George W. Percy, Director
Division of Historical Resources
and
State Historic Preservation Officer

GWP/Bdb

APPENDIX C

Radiological Disposition Program Plan

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Pinellas Plant
Radiological Area Disposition
Program Plan

July 24, 1995

Introduction

The purpose of Pinellas Plant Radiological Area Disposition (RAD) Program Plan is to describe a program for cleaning radioactively contaminated areas at the Pinellas Plant by September 30, 1997, when the Lockheed Martin Specialty Components (LMSC) M&O contract expires. This Radiological Area Disposition Program Plan identifies constraints, issues, responsibilities and resource requirements for accomplishing the work scope. Earlier drafts of this Radiological Area Disposition Program Plan were used to prepare for FY 97 budget submission to EM.

Elements of the Plan

The RAD Plan defines the areas to be cleaned, the activities to accomplish this work and the desired end state when cleaning is finished. Human resources and the responsibilities of both line and staff are identified for the work effort. The RAD Plan describes general Technical Criteria for managing, conducting and certifying completion of the RAD work. The Costs, Schedule and the major milestones for the project are also discussed. Finally, due to the complexity of the undertaking, a section of the RAD Plan is also devoted to issues and barriers which might adversely impact accomplishing the work scope.

Assumptions

The RAD Plan is based upon assumptions which are valid as of this writing. Some of the assumptions (e.g., Assumption #4) are in the future and represent the "worst case" planning basis for estimating the work to be done within the time constraints imposed by various factors. In the case of Assumption #4, LMSC is assumed to decide to abandon use of tritium in its new business at the last possible moment, thereby adversely affecting the time available for disposition of the radiologically contaminated areas. Of course, if LMSC decides to continue work with tritium elsewhere, or decides to end tritium work earlier, then the impact of #4 would be reassessed.

Following is an itemization of the planning assumptions that conditioned the elements of the Plan described above.

1. Shutdown and Deactivation and Compliance will continue to be funded by DOE throughout FY 95-96-97.

2. DOE funds will be allocated to perform tasks described in this Program Plan within the timeframes required.

3. Tritium work (supporting an ICO contract with Sandia National Laboratory) in building 100 by LMSC will continue until 3/31/96.

4. LMSC decides on 1/31/96 to discontinue all other tritium-related commercial business activities.

5. LMSC goal is to complete clean up of Pinellas Plant by 9/30/97. This includes decontamination of all radiological areas and disposal of contaminated equipment.

6. All Radiological wastes must be removed from the *site* by 9/30/97. The site includes any and all areas of the real property being transferred to the County, with the exception of below ground pipes and contamination that may exist under buildings.

7. Pinellas County Industry Council does not exercise option to demolish building 100.

8. Below ground piping and associated soil contamination, if any, will be left in place, since building 100 will not be demolished.

9. All DOE Order requirements are still to be met for the duration of the M&O contract (i.e., push back initiatives are not approved by DOE).

10. The current HP Drain cleanup project will be completed, so it is not part of the scope of this plan.

11. Areas 108, 132, 109 have asbestos tile that will be removed before 9-30-97.

12. All contaminated equipment will be removed from contaminated areas by 9-30-96. Radiologically contaminated equipment that cannot be cleaned (to below the ALARA goal of 220 dpm/100 square centimeters) will be scrapped; due to the time and expense to decontaminate such equipment, it will not be excessed or any other type of disposition.

13. Security will have negligible impact on clean up.

14. East Stack can be cleaned to reduce waste disposition costs.

15. Local, State and Federal Regulators will accept these assumptions as a planning basis for transfer of the facility to the PCIC on or before 10-1-97.

16. Assume that concrete below the flooring will not have to be removed in radiological areas.

Program Plan

The scope of the Program Plan to disposition radiological areas is defined as follows:

Buildings: 800, 1010, 200, 1040, 1000
Areas in building 100: 107,108, 109, 132J-K-L-N-O, 182C, 350, 158A, 158B
Systems:

- HP drains system including Lift Stations and HP Holding Tanks;
- Radiological Exhaust System and the main stack, building 200 and 800 stacks, stack monitoring systems, associated stack equipment;
- Ductwork in buildings 200 and 800 and ductwork associated with radiological areas in building 100, especially Area 108;
- Tritium Recovery System (TRS), TRS Plant piping outside of 132J, K, L, Tritium sniffer piping outside monitored areas, SECS components;

Equipment: Contaminated equipment will be dispositioned subject to the Assumptions described above.

The activities to accomplish this Plan will include the following:

- Flush, characterize and cap drain system below ground; remove above ground system; remove vents through the roof;
- Characterize and cap roof penetrations;
- Characterize soil and groundwater under buildings 200 and 100.
- Remove walls, ceilings, flooring tiles, ducts in areas that cannot be cleaned in place; sand blast structural members that cannot be removed;
- Purge equipment to reduce contamination levels to acceptable level for disassembly and shipment offsite for burial/disposal.
- Disposition contaminated waste water sludge.

The objective of these activities will be to bring the areas (walls, floors and ceilings) to an end state available for alternate use. Equipment will be disposed of as waste if it is contaminated. Systems will be disposed of as waste if they are contaminated, consistent with the site's High Risk Property Procedures. LMSC has defined this to mean that when the radioactive systems/components are cleaned or removed, the areas will be available for alternative uses and will have no radiological control requirements imposed. In other words, the end state of an area after it is cleaned shall leave it free and clear of any radiological control requirement. It is the intent of DOE that the CRO assume no liability for hazardous or radioactive materials/wastes when the cleanup is completed, and that such areas as described above are acceptable for industrial use.

Since contamination below the buildings, if any, will not be remediated, the release of areas will be restricted to the extent that if, in the future, there is a need to excavate below the buildings, under the concrete flooring, or the buildings are removed, then additional assessment for radiological contamination will be necessary prior to implementing alternate uses. The possibility of future discovery of contamination is discussed in the Sale Agreement between the PCIC and the DOE, and DOE agrees to remediate such contamination if any is discovered and it can be shown that it is linked to the former DOE operations on the site.

Health Physics has issued a plan that determines when cleanup of residual contamination has been completed to a level that is acceptable given the above paragraph. The Survey Plan for Determining Final Radiological Status of the Pinellas Plant (part I. covers areas ventilated by the West Stack Exhaust System) calls out the NUREG/CR-5849 Manual for Conducting Radiological Surveys in Support of License Termination. See the Survey Plan for the technical release criteria. Generally the cleaning of radiological contamination is based on the site standard of 1000 dpm/100 square centimeters for exposure limits. The site ALARA goal is 220 dpm/100 square centimeters. For more information, see the Pinellas Plant's RadCon Manual, Table 2-2.

Roles and Responsibilities

Disposition of contaminated areas will involve several oversight organizations as well as line organizations performing the actual cleaning tasks. These general responsibilities are described below by organization.

- *Plant Engineering*
  Layout and design engineering for the facilities work will be performed. This work will include maintenance of the Plant as-built drawings to ensure any modifications to the facility are reflected in the drawings and receive proper change authorization. Additional support services will include definition of conceptual layouts, providing any engineering cost estimates as options are explored for disposition of an area and technical support to other Facilities

organizations.

- *Facilities Maintenance*
  Purchase necessary equipment for cleanup actions, schedule personnel to perform the cleaning work. Provide time and material contractor for all cleanup or demolition of facilities and/or plant equipment that is associated with plant radiological areas.

- *Shutdown Operations*
  Shutdown of operating equipment in the areas. Initiate the Preliminary Change Decision Form process and secure its resolution. Complete Area Shutdown project plan to identify schedule for activities to remove equipment, documents, wastes and materials. Complete all Area Shutdown tasks leading to turnover of the area to Facilities for final disposition. (See the Shutdown Project Planning Template for activities.)
  The Radiochemistry lab will analyze tritium smears during the clean up.

- *Environmental Restoration and Permitting*
  This organization, within the consolidated Environment Safety and Health division, provides oversight for the stack monitoring system operation and ensures compliance with Clean Air Act, Clean Water Act and State/Local requirements, if any, related to radiological air and water effluents.

  Additional activities managed by this group include characterizing and documenting building penetrations, the state of the ground under building 100 and the as-left condition of the areas following clean up.

  The ER&P department provides consultation regarding clean up activities to maintain ALARA releases of tritium and krypton, asbestos abatement certification and final authorization for any Plant project which could change (whether to increase or decrease) the output of radiological and non-radiological air and wastewater effluents.

- *Waste Management*
  This organization is also located within the consolidated Environment Health and Safety Division. Its responsibilities include provision of radiological waste containers for waste disposal, procedures for specific cleanup and packaging activities, characterizing waste generated by Waste Management and disposal of any mixed waste. Waste Management also provides oversight concerning proposed project plans and procedures for cleanup activities.

- *Compliance Management*
  Ensures that Safe Shutdown activities are in compliance with DOE Orders and regulations.

- *Health Physics*
  Health Physics, within the Quality, Ethics and Compliance department, ensures compliance with DOE Orders 5480.11 and 5400.5, DOE rule 10 CFR 835 and State of Florida regulations 10D-91. HP will direct the radiological operations to ensure work is conducted in an ALARA manner. HP operations are covered by the LMSC Radiological Control Manual issued by the site radiological control manager. HP will provide training to all personnel involved with operations to carry out this plan.

- *Risk Management*
  This organization, within the consolidated Environment Safety and Health division, reviews Preliminary Change Analyses to determine whether preventive/corrective change analysis is required, to determine whether a change requires safety evaluation and to coordinate the change analysis with other divisions to ensure comprehensive review prior to initiation of the change.

- *Industrial Hygiene*
  This organization, within the consolidated Environment Safety and Health division, ensures compliance with DOE Order 5480.10, 29 CFR 1910 and 40 CFR 61. In addition, Industrial Hygiene personnel assist in hazard assessment, assess non-routine work, identify administrative, engineering and physical controls required, determine level of cleanliness of equipment/materials leaving the facility, assist in defining decontamination procedures and specify personal protective equipment to minimize exposure to chemical, physical and/or biological hazards. Industrial Hygiene also manages the Plant programs for Asbestos, Hazard Communications, Respiratory Protection, and Confined Space and provide oversight to hazardous waste operations and emergency response (HAZWOPER).

- *Business Management*
  This division establishes projects in the financial systems, reporting variances between actual and planned performance. Business Management also coordinates operating/capital budgeting, submits funding requests, communicates funding status to DOE and manages both the Work Authorization Directive and Activity Data Sheet processes.

- *EM Transition Program Manager*
  Definition of programmatic requirements for transition of the Plant from its

Defense mission to alternate use is the responsibility of the EM Transition Program Manager. Shutdown/Reconfiguration activities are coordinated with these programmatic requirements. The Program Manager also integrates such activities with the plans of the Community Reuse Organization. The EM Transition Program Manager is the current owner of this Radiological Area Disposition Plan.

- *Quality Assurance*
  Ensure compliance with DOE Order 5700.6C and 10 CFR 830-120 and determine the need for additional quality plans.

Technical Criteria

Specific DOE Orders and DOE Standards will be relevant to the clean up action. Following is a list of the Orders and Standards identified:

- DOE Orders: 4300.1C; 5820.2A; 5400.5; 5700.6C; 5400.1; 5400.5; 5480.10; *5000.3C; 5480.19; 5480.26*

- DOE Standards: DOE/CH-8901; DOE/EP-0100; DOE EH-0173T; DOE and ALO Outleasing Policies

Following are regulatory/statutory requirements relevant to clean up action:

- Federal: 40 CFR 300 (CERCLA); 40 CFR 373, 42 USC 9620.Sec.120(h), and PL 102-426 (CERFA); 41 CFR 101-47.202-2, 10 CFR 830-120; 29 CFR 1910; 40 CFR 61; 10 CFR 834; 40 CFR 63;
- Local: Pinellas County Ordinance. 91-26; State DEP Rule 62-213-100(19), FAC. (Clean Air Act)

Multiple administrative controls are in place to ensure technical requirements are met during the disposition of the radiological areas. Several administrative controls ensure compliance with regulations. They include the Preliminary Change Decision Analysis, the Special Work Permit Process, Environmental Assessments, Record Keeping/Log Keeping, NEPA Documentation, the EM and ES&H Procedures and the GOP/SOP's.

Reports, permits, plans, legal documents and other pertinent information may be required to be modified or created to ensure compliance.

- LMSC Health Physics has developed the Survey Plan for Determining Final

Radiological Status of the Pinellas Plant (part I. covers areas ventilated by the West Stack Exhaust System), which calls out the NUREG/CR-5849 Manual for Conducting Radiological Surveys in Support of License Termination. This document is the technical basis (along with the Pinellas Plant RadCon Manual) for determining when areas in the Plant may be released for alternate uses.

- Wastewater Permit #153-IE; Stormwater Permit (Pending)
- Air Permit #A052-233355 and subsequent modifications
- NEPA Environmental Assessments (D&D, Commercializations and Programmatic Non Nuclear Consolidation Environmental Assessment).
- Annual Radiological Air Emissions Report
- Radiological Effluent/On-site Discharge Report.

Costs

Funding for the removal of wastes, both hazardous and radioactive, has been requested in the Waste Management Activity Data Sheet submission. Funding for the removal of contaminated equipment and the cleanup of contaminated areas has been requested in the Deactivation and Compliance Activity Data Sheet submission. Following is a summary of the funds targeted by BRMD in the FY 1997 Budget and what LMSC has estimated is required to finish the Plant transition work by the end of FY 1997.

FY 1996	Funding Target	Funding Requested
Deactivation	$10,427,000	$16,620,000
Waste Mgt.	$ 2,409,000	$ 4,152,000

FY 1997	Funding Target	Funding Requested
Deactivation	$12,004,000	$21,300,000
Waste Mgt.	$ 2,000,000	$ 3,063,000

The analysis of the impacts of funding Deactivation at the target level are included in the Activity Data Sheet submitted in the FY 1997 for Pinellas Plant. Essentially, the impact will be with respect to schedule and cost, not compliance, insofar as insufficient funding in FY 1996 and/or FY 1997 will cause cleanup work to carryover into FY

1998, thereby causing additional Landlord costs that would otherwise have been avoided. As of this writing, EM has indicated that funding at the Plan level will be allocated to ensure the completion of cleanup by the end of FY 1997.

Not all of the funding submitted in the FY 1996 and FY 1997 requests are for cleanup of radiological and hazardous contamination areas. Following is a breakout of the Deactivation and Compliance funding for FY 1996:

	($000's)
Radiological / Hazardous Cleanup	$3,830,.4
Characterization	773.8
Documents disposition	1,644.9
Equipment / material disposition	4,400.7
Waste prep for removal	638.4
Facility transition activities	4,490.1
Demilitarization	261.7
Tritium Recovery System maintenance	579.9
Total	$16,619.9

Schedule

Attachments 1 and 2 are the schedules for cleanup of radiological areas in the west end of the building 100, including removal of the West Stack.
Attachment 3 is the schedule for relocation of tritium operations to building 200 for commercial work, and the cleanup of Area 108, the major area in the east end of building 100 requiring decontamination. It should be noted that Facilities planners will establish specific project plans for key activities in the other areas to be completed as well.

Barriers/Issues

Organizations have identified the specific issues that will potentially adversely affect their performance of the work described in the Scope section. Specific project planning activities will address these issues.

- *Waste Management*
  LMSC is working with Savannah River Plant (SRP) to obtain a certification for sending radioactive waste to their storage cells program. The current authorization to send such waste from Pinellas to the SRP landfill program is extremely limited: Only 10 curies or less per barrel may be shipped to SRP.

Current Pinellas Plant Radiological storage areas are full. The certification for storage of radiological waste in the SRP storage cells will probably solve this problem before 1995 ends.
LMSC is also working with the Nevada Test Site (NTS) to gain approval for shipment of radioactive waste oil to NTS. Approval is expected by end of 1995.
LMSC is working on a contingency plan for mixed waste disposal.

- *Occurrence Reporting/DNFSB*
  A higher Occurrence Reporting frequency is expected during this project. Such reports, corrective actions and operational readiness checks may impact schedules. Involvement of the Defense Nuclear Facilities Safety Board (DNFSB) could also delay implementation and push up support and administrative costs if numerous reviews are required. Their past visits have resulted in significant costs to supply them with information.

- *Safety, Risk Management, Environmental Management*
  Recent experiences with the removal of the West Stack have provided insight with respect to the numerous issues and activities that must be coordinated. It has become apparent that the time it takes to complete such projects is significantly impacted when there is a new and/or unknown risk factor involved.

- *Facilities*
  Cleanup of radioactive areas will be to the flooring layer; LMSC has not budgeted for excavation and removal of concrete below the flooring. Should it become necessary to remove the concrete below the flooring, then additional funding may be required. The assumption is that the PCIC will continue to use the facility and hence removal of the concrete below will not be necessary between now and FY 1997's end.

Capabilities/Capacities

Organizations were asked to identify issues concerning capabilities or capacities that will constrain meeting the program scope within the Assumptions. For example, are there limits established by our Permits that would inhibit accomplishment of the work by 9-30-97 within the Assumptions? Each organization shall clearly define these limitations and how they will be addressed in their respective plans to ensure completion by 9-30-97 within the Assumptions.

- *Facilities Maintenance*
  Insufficient funding in FY 96 may result in loss of technical facilities personnel

who would be needed in FY 97 for cleanup work to proceed. Current schedules and capacity are not sufficient to remove concrete below the flooring layer in radiological areas.

- *Shutdown Operations*
  Equipment that is contaminated must be purged to the Tritium Recovery System prior to its being opened. The TRS can currently purge two to four items at once, so additional capacity is needed. A request to fund building a portable TRS system to add the required capacity has been approved by DOE.

- *Environmental Restoration and Permitting*
  Any resultant air and waste water discharge must remain below permit limits. There is currently adequate margin within existing permits to accommodate increases in emissions.

  The ALARA process will be used to minimize radiological emissions. EM has identified, however, that extensive radiological sampling and monitoring will be required to ensure compliance with permits for waste assessment and worker safety. To meet scheduled milestones, it will be necessary to maintain internal radiological analysis capability.

  DOE may require that additional NEPA documentation be developed to characterize the environmental impacts of disposition of the radiological areas prior to initiation of some tasks of the project.

  Environmental Monitoring will continue for some period after 9/97 to document successful completion of the project, as required by CERCLA and existing DOE Orders.

- *Waste Management*
  A destination for all radiological wastes from Pinellas is not yet identified. Assumption 6 will not be satisfied if a radiological waste site is not available.

  Walls, ceiling and ductwork will be disposed of in some of the areas. Much of this will have been painted to fix contamination and will not be cleanable. This waste will be voluminous, and access to a sufficient number of containers for transport could be a serious capacity issue.

- *Industrial Hygiene*
  Work that requires asbestos abatement will be subcontracted; funding required will depend on the quantity in these areas, which is not known.

- *Health Physics*
  Currently the site has a limit on the number of contamination smears that can be conducted each work day. The limitation is due to having insufficient volume of counting equipment and lab personnel. LMSC is in the process of acquiring more equipment and evaluating the need for adding laboratory personnel to increase capacity for smears analysis.

APPENDIX D

Pinellas Plant
Industrial Wastewater Discharge Permit

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W W

INDUSTRIAL WASTEWATER DISCHARGE PERMIT

PINELLAS COUNTY SEWER SYSTEM
PINELLAS COUNTY, FLORIDA

In accordance with all terms and conditions of the Pinellas County Sewer Use Ordinance #91-26 and any applicable provisions of Federal or State law or regulation;

U. S. Department of Energy
Pinellas Plant

is hereby granted permission to discharge industrial wastewater from a facility located at:

7887 Bryan Dairy Road

Largo, Florida

34649

this permit is granted in accordance with the application filed on July 1, 1994 in the office of the Director of the Sewer System and in conformity with plans, specifications and other data submitted to the Director in support of the above application, all of which are filed with and considered as part of this permit, together with the appended named conditions and requirements.

Effective this 28th day of August, 19 94.

To expire the 28th day of August, 19 97.

Permit Number 153-IE

Todd L. Tanberg, P.E.
Director, Sewer System

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SECTION A. STANDARD CONDITIONS

1. PROHIBITIONS

   The permittee shall comply with all the prohibitions and limitations on discharge, as stated in Section 5 of the Pinellas County Sewer Use Ordinance #91-26.

2. DUTY TO COMPLY

   The permittee must comply with all conditions of this permit. Failure to comply with the requirements of this permit may be grounds for administrative action, or enforcement proceedings including civil or criminal penalties, injunctive relief and service termination.

3. PERMIT DURATION

   This permit shall be issued for a time period not to exceed THREE (3) years. The terms and conditions of the permit may be subject to modification by the Director during the term of the permit as limitations or requirements of this agreement are modified, as stated in Section A, #12. The permittee shall have an opportunity to discuss proposed changes in the permit at least thirty (30) days prior to the effective date of change. Any changes or new conditions in the permit shall include a reasonable time schedule for compliance.

4. RIGHT OF ENTRY

   The permittee shall allow the County or its representatives, exhibiting proper credentials to enter upon the premises of the permittee, at all reasonable hours, for the purposes of inspection, sampling, or records inspection. Reasonable hours in the context of inspection and sampling includes any time the permittee is operating any process which results in a process wastewater discharge to the County's Wastewater Treatment Facility, as defined in Section 8 of the County's Ordinance.

5. RECORDS RETENTION

   The permittee shall retain and preserve for a period of no less than three (3) years, all records, books, documents, memoranda, reports, correspondence, and any and all summaries thereof, relating to monitoring, sampling, chemical analyses, and this permit and application, made by or in behalf of the permittee in connection with its discharge. All records that pertain to matters that are the subject of special orders or any other enforcement or litigation activities brought by the County shall be retained and preserved by the permittee until all enforcement activities have concluded and all periods of limitation with respect to any and all appeals have expired.

SECTION A. (Continued)

6. CONFIDENTIAL INFORMATION

Except for data determined to be confidential under Section 12 of the County's Ordinance, all reports required by this permit shall be available for public inspection at the office of the Director.

7. RECORDING OF RESULTS

For each measurement of sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a) The exact place, date, and time of sampling;
b) The sampling methodology, including preservation techniques or procedures;
c) Who performed the sampling or measurements;
d) The date(s) the analyses were performed;
e) The person(s) who performed the analyses;
f) The analytical techniques or methods used; and
g) The results of all required analyses.

8. DILUTION

No permittee shall increase the use of potable or process water or, in any way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in this permit.

9. PROPER DISPOSAL OF PRETREATMENT SLUDGES AND SPENT CHEMICALS

The disposal of sludges and spent chemicals generated shall be done in accordance with applicable Federal regulations, specifically Section 405 of the Clean Water Act and State regulations, specifically Subtitles C and D of the Resource Conservation and Recovery Act.

10. REVOCATION OF PERMIT

The permit issued to the permittee by the County may be revoked in whole or in part during its term for the following causes:

a) If, after inspection, monitoring, or analysis it is determined that the discharge of wastewater to the sanitary sewer is in violation of Federal, State, or local laws, ordinances, or regulations.
b) If the permittee knowingly makes any false statement on any report or other document required by this permit.
c) If the permittee knowingly renders any monitoring device or method inaccurate.

SECTION A. (Continued)

d) If a permittee fails to pay sewer charges or fines, fails to meet compliance schedules, or refuses to allow timely access to the facility premises and records.

These actions may also result in punishment as violations of County Ordinances, as well as being subject to civil penalties and relief.

11. LIMITATION ON PERMIT TRANSFER

Wastewater discharge permits are issued to a specific user for a specific operation. The permittee must give at least a thirty (30) days advanced notice of the proposed transfer to the Director. This notice must be a written certification by the prospective new owner which:

a) States what the new owner's immediate intent is regarding the facility's operations and processes.
b) Identifies the specific date on which the transfer is to occur.
c) Acknowledges full responsibility for complying with the permit.

A permit shall not be reassigned, transferred, or sold to a new owner, new facility, different premises, or a new operation without the prior written approval of the Director. If transfer or reassignment is approved, any succeeding owner or user shall also comply with the terms and conditions of the existing permit.

12. MODIFICATION OR REVISION OF THE PERMIT

This permit may be modified or revised for good causes including, but not limited to, the following:

a) To incorporate any new or revised Federal, State, or local pretreatment standards or requirements.
b) Material or substantial alterations or additions to the permittee's operation processes, or discharge volume or character which were not considered in drafting the effective permit.
c) A change in any condition in either the permittee or the County that requires either a temporary or permanent reduction or elimination of the authorized discharge.
d) Information indicating that the permitted discharge poses a threat to the Pinellas County's Sewer System, the County's personnel, or the receiving waters.
e) Violation of any terms or conditions of the permit.
f) Misrepresentation or failure to disclose fully all relevant facts in the permit application or in any required reporting.

SECTION A. (Continued)

g) To correct typographical or other errors in the permit.
h) To reflect transfer of the facility ownership and/or operation to a new owner/operator.
i) Upon request by the permittee, provided such request does not create a violation of any applicable requirements, standards, laws, or rules and regulations.

Any permit modifications which result in new conditions in the permit shall include an opportunity for the permittee to discuss any proposed changes, and a reasonable time schedule for compliance, as necessary.

13. DUTY TO REAPPLY

The County shall notify the permittee <u>ninety</u> (90) days prior to the expiration of the permittee's permit. Within <u>thirty</u> (30) days of the notification, the permittee shall reapply for reissuance of the permit on a form provided by the County.

14. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

15. PROPERTY RIGHTS

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

16. CONTINUATION OF EXPIRED PERMIT

An expired permit will continue to be effective and enforceable until the permit is reissued if:

a) The permittee has submitted a complete permit application at least <u>sixty</u> (60) days prior to the expiration date of the permittee's existing permit.
b) The failure to reissue the permit, prior to expiration of the previous permit, is not due to any act or failure to act on the part of the permittee.

SECTION B. DEFINITIONS

The meaning of terms or abbreviations used in this permit shall be as defined in Section 2 of the Pinellas County Sewer Use Ordinance #91-26. Additional terms are defined below:

1. Composite Sample - the accumulation of grab samples collected at equal intervals and combined proportional to flow; a sample continuously collected proportional to flow; or equal volumes taken at varying time intervals.

2. Daily Maximum - the maximum allowable discharge of pollutant during a calendar day. Where daily maximum limitations are expressed in terms of concentration, the daily discharge is the arithmetic average measurement of the pollutant concentration derived from all measurements taken that day.

3. Director - means the Director of the PCSS or the duly authorized representative. The duly authorized representative of the Director for all matters related to the Industrial Monitoring Program is the Industrial Program Supervisor.

4. Four-Day Average - an arithmetic average calculated from the independent results of four consecutive sampling days. These sampling days are not necessarily calendar days, but reflect the sampling frequency.

5. Grab Sample - an individual sample collected over a period of time not exceeding 15 minutes, without regard to flow or time.

6. Monthly Average - an arithmetic average calculated from the results of all sampling events performed in a calendar month.

7. Total Metals - the sum of the concentration or mass of Copper, Chromium (total), Nickel, and Zinc.

8. Toxic Organic Management Plan (TOMP) - a management plan that must specify the toxic organic compounds used, the method of disposal used and procedures for assuring that toxic organics do not routinely spill or leak into wastewater discharged to the PCSS. A certification statement must also be submitted with this plan.

9. Total Toxic Organic (TTO) Standard - the sum of the concentrations of individual toxic organic compounds when they are present in a regulated waste stream in a concentration greater than 0.01 mg/l.

SECTION C. WASTEWATER DISCHARGE STANDARDS

The permittee is authorized to discharge process wastewater to the Pinellas County Sewer System (PCSS) in accordance with: * a) Categorical Pretreatment Standards [40 CFR 433] developed by the United States Environmental Protection Agency (US EPA), and b) local standards set forth in the Pinellas County Sewer Use Ordinance #91-26. The permittee shall comply with the effluent standards specified below:

Parameter	Adj. Categorical Daily Maximum Discharge Stds.*	Adj. Categorical Monthly Average Discharge Stds.*	Local Daily Maximum Discharge Stds.
Cadmium	0.28 mg/l	0.10 mg/l	0.2 mg/l
Chromium	1.10 mg/l	0.68 mg/l	2.6 mg/l
Copper	1.35 mg/l	0.83 mg/l	1.0 mg/l
Cyanide, A	---- mg/l	---- mg/l	---
Cyanide, T	0.48 mg/l	0.26 mg/l	1.0 mg/l
Lead	0.28 mg/l	0.17 mg/l	0.6 mg/l
Mercury	---- mg/l	---- mg/l	0.1 mg/l
Nickel	1.59 mg/l	0.95 mg/l	1.0 mg/l
Silver	0.17 mg/l	0.10 mg/l	0.4 mg/l
Zinc	1.04 mg/l	0.59 mg/l	1.0 mg/l
Total Metals	---- mg/l	---- mg/l	---
TTO	0.85 mg/l	---- mg/l	---
BOD	---- mg/l	---- mg/l	250 mg/l
TSS	---- mg/l	---- mg/l	250 mg/l
Oil/Grease (m)	---- mg/l	---- mg/l	50 mg/l
(a)	---- mg/l	---- mg/l	100 mg/l
Temperature	---- C	---- C	$\leq 65.5^{\circ}C$
pH	---- units	---- units	5.5 - 9.5 units

(m) mineral (a) animal/vegetable

* Categorical Standards adjusted using Combined Wastestream Formula See Attachment A for calculations of adjusted standards.

The permittee's discharge shall comply with all other applicable laws, regulations, standards, and requirements contained in the County's Ordinance, and any applicable Federal laws, regulations, standards, and requirements, including those which may become effective during the term of this permit.

These effluent standards are applied to the permittee's discharge at the sampling point(s) specified in Section D. The Categorical Standards apply to wastewater discharges after pretreatment; whereas, the local standards apply to wastewater discharges at the point of entry into the PCSS. Where both Categorical Standards and local standards limit a pollutant, the more stringent of the two shall be used to assess compliance.

SECTION D. WASTEWATER MONITORING REQUIREMENTS

In accordance with Section 6(e)(1) of the Pinellas County Sewer Use Ordinance #91-26, the permittee is required to sample, analyze, and report on the volume and quality of its wastewater discharge to the PCSS. The required information shall be reported for each sampling event on the report forms provided by the PCSS, and in accordance with the schedule set forth in Section E. The self-monitoring requirements for the permittee are defined below.

MONITORING SITE DESCRIPTION

The permittee shall provide and maintain a suitable sampling point or points at a specified location to observe, measure, and sample the discharged wastewater to the PCSS. The sampling point(s) and monitoring equipment shall be subject to approval by the Director, as stated in Section 6(e)(1b) & (e)(3) of the County's Ordinance.

All monitoring of the permittee's wastewater discharge shall be performed at the sampling point(s) specified in this permit. The sampling point(s) shall not be changed without notification to, and approval by, the Director. The permitted sampling point(s) is(are) as follows:

> The permittee shall monitor the combined wastestream at the neutralization facility. PCSS will monitor the combined wastestream at the flume located to the northwest of the neutralization facility.

SAMPLE COLLECTION METHOD

Samples shall be collected by the method appropriate for the type of analyses to be performed, taking into consideration the type and frequency of the discharge.

Grab samples are required when analyzing wastewater for cyanide, oil/grease, pH, sulfides, temperature, total phenols, and volatile organics. Cyanide samples must be collected in accordance with Federal regulations. Grab samples for pH analyses shall be collected at the beginning and at the end of a compositing period, and every two (2) hours throughout the compositing period. ALTERNATE METHOD: if preferred, the permittee shall monitor the pH of its regulated waste stream continuously by installing a continuous pH recorder.

Composite samples are required when analyzing for metals, TSS's, and BOD's. Composite samples shall consist of individual grabs collected at least once an hour; the volume of each grab shall be no less than 100 ml. The total volume of the composite sample shall be no less than two (2) liters. Samples may be composited manually or using an automatic sampler. Where applicable, composite samples shall be flow proportional.

ALL SAMPLES SHALL BE COLLECTED DURING NORMAL OPERATIONAL HOURS AT A TIME WHEN THE FLOW IS REPRESENTATIVE OF THE DISCHARGE. OPERATIONAL HOURS SHALL INCLUDE ALL CLEANING ACTIVITIES THAT GENERATE WASTEWATER.

SECTION D. (Continued)

SAMPLING AND ANALYSIS

The sampling procedure, preservation, handling, and analytical methods used by the permittee shall conform to the methods specified by the PCSS in accordance with Section 304(h) of the Federal Clean Water Act and with the techniques prescribed in 40 CFR 136.

PARAMETERS	FREQUENCY
Cadmium	* twice/year
Chromium	monthly
Copper	+ weekly
Cyanide, A	-----
Cyanide, T	monthly
Lead	monthly
Mercury	* twice/year
Nickel	monthly
Silver	monthly
Zinc	monthly
Total Metals	-----
Total Toxic Organics	* twice/year
BOD	twice/year
TSS	twice/year
Oil/Grease	twice/year
Temperature	-----
pH	^ daily

As defined in Section B.

* One sampling event shall take place during the first six (6) months of the year, and the second sampling event shall take place during the latter six (6) months of the year.

+ See Section F. - Special Conditions #8.

^ As specified in "Sample Collection Method".

In accordance with Section 6(e)(1)(a) of the County's Ordinance #91-26, manual pH meters must be calibrated daily and continuous pH meters must be calibrated weekly, using a 2-point calibration. Records of calibration shall be kept in a bound ledger and made available for review by the PCSS at all times.

SECTION E. REPORTING REQUIREMENTS

1. The permittee shall submit the self-monitoring results obtained during the previous ONE month to the Director on the provided report forms. The reports shall be post marked no later than the 15th day of the month following the completed reporting period. If no discharge occurs during the reporting period, "no discharge" shall be reported. The first report is due on September 15, 1994.

2. The permittee is required to sample its wastewater for the pollutants specified in Section D, and report on compliance. Any reason(s) for non-compliance and any step(s) being taken by the permittee to comply shall be a part of this compliance report. In addition to the non-compliance report, the permittee must resample its waste stream within thirty (30) days of any noted violation. The permittee must also notify the Director within twenty-four (24) hours upon becoming aware of such violation. This requirement is in accordance with 40 CFR 403.12(g).

3. If the permittee monitors any pollutant more frequently than is required by this permit, in accordance with 40 CFR 136 or other EPA approved methods, the results of such monitoring shall also be submitted with the permittee's self-monitoring reports.

4. The PCSS may require more frequent monitoring, or the monitoring of other pollutants not required in this permit by written notification.

5. The permittee shall implement an adequate quality assurance and quality control program. The permittee shall calibrate, inspect, and perform maintenance procedures on all monitoring and analytical instruments at regular intervals to ensure the accuracy of measurements. These records and procedures shall be made available to the PCSS at all times.

6. The permittee shall maintain all records concerning any monitoring and sampling activity of its industrial wastewater discharge in accordance with Section 6(e)(1) of the County's Ordinance. These records shall be made available to the PCSS at all times.

7. The permittee shall provide a summary of all pH excursions lasting greater than ten (10) minutes and less than or equal to one (1) hour in duration. This summary shall include the date, time, duration, and a brief description of the cause of each excursion. This summary is to be submitted with the monthly self-monitoring report. The permittee shall follow procedures as stated in Section E. 8 or 9 for reporting pH excursions lasting more than one (1) hour in duration, and include a copy of the pH strip chart indicating the excursion, time of day, and chart scale.

SECTION E. (Continued)

8. The permittee shall notify the Director by phone immediately upon the occurrence of an accidental discharge to the PCSS in accordance with Section 6(f) of the County's Ordinance. A detailed, written report describing the circumstances, causes, and remedies must be submitted to the Director within five (5) calendar days of the occurrence. A copy of the Accidental Spill Notification Procedure is included with this permit.

9. Any upset experienced by the permittee of its operations or pretreatment system that places it in a temporary state of non-compliance with wastewater discharge standards contained in this permit or other limitations specified in the County's Ordinance, shall be reported to the Director within twenty-four (24) hours of first awareness of the upset. A detailed report shall be submitted within five (5) calendar days.

10. The permittee shall notify the Director prior to the introduction of new wastewater or pollutants, or any changes/additions to the pretreatment process, or any substantial change (>10%) in the volume or characteristics of the wastewater being introduced into the PCSS from the permittee's industrial processes. A formal written notification shall be submitted to the Director thirty (30) days prior to such introduction.

11. All reports required herein shall be submitted to the following address:

Industrial Pretreatment Program
Water Quality Management Division
Pinellas County Sewer System
14850 118th Avenue North
Largo, Florida 34644
phone: (813)582-2282

SECTION F. SPECIAL CONDITIONS

1. The permittee shall comply with the Monitoring Requirements for TTO's in accordance with 40 CFR 433. The permittee need only to sample and analyze for those organics that are known or expected to be present in the permittee's effluent.

2. The permittee shall submit an annual summary report to document the generation and/or disposal of all wastes. This report shall include the type, quantity, transportation date, transporter, and disposal site of all wastes. (Copies of waste manifests for the calendar year will suffice, if all the requested information is included on the manifests.) The permittee shall submit this report to the PCSS by January 15th of each year.

3. In accordance with Section 5(a)(15) of the County's Ordinance, the permittee shall provide means to prevent large solids from entering the wastewater discharge.

4. The permittee shall monitor its discharge volume by taking flow meter readings for each day of operation, including all cleaning activities. The permittee shall record the date, time, and meter reading in a bound ledger, which shall be made available to the PCSS at all times. The daily flow shall be reported on the self-monitoring report forms.

5. The permittee shall monitor the batch discharge from the area for Treatment of Non-Hazardous Aqueous Solutions, and shall record the date, time, and quantity of discharge in a bound ledger which shall be made available to the PCSS at all times. The beginning and ending meter reading for each month and for each discharge shall be reported on the self-monitoring report forms.

6. The permittee is required to maintain all pH strip charts in a bound ledger. The daily minimum and maximum values shall be recorded on the self-monitoring report forms.

7. The permittee shall submit an Industrial User Survey for each Incubator business at least thirty (30) days prior to the start up and/or discharge to the DOE waste treatment system or PCSS lines from such Incubator business (see Attachment B).

8. The monitoring frequency for copper as stated in Section D. will be reviewed after six (6) months of data have been submitted. If consistent compliance has been demonstrated, an addendum to the permit will be issued adjusting the monitoring frequency to monthly.

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ATTACHMENT A

Industry: U.S. Department of Energy Permit #: 153-IE

Calculations of adjusted Categorical Pretreatment Standards for New Source Metal Finishers - 40 CFR 433, using the Combined Wastestream Formula (CWF).

F_t = 209,149 gpd (Total Flow = regulated/unregulated processes, sanitary, cleaning, dilution)

F_d = 125,644 gpd (Dilution = sanitary, cooling tower/boiler blow down, noncontact cooling, 40 CFR 403 Appendix D)

$$\frac{F_t - F_d}{F_t} \times \text{Standard Limit} = \frac{209{,}149-125{,}644}{209{,}149} = 0.39926 \text{ CWF CON/FAC}$$

Daily Maximum(mg/l)

Pollutant	Standard Limit		CWF Conversion Factor		CWF Adjusted Limit
Cd	0.69	X	0.399	=	0.28 mg/l
Cr	2.77	X	"	=	1.10 mg/l
Cu	3.38	X	"	=	1.35 mg/l
Pb	0.69	X	"	=	0.28 mg/l
Ni	3.98	X	"	=	1.59 mg/l
Ag	0.43	X	"	=	0.17 mg/l
Zn	2.61	X	"	=	1.04 mg/l
Cn(T)	1.20	X	"	=	0.48 mg/l
TTO	2.13	X	"	=	0.85 mg/l

Maximum Monthly Average(mg/l)

Pollutant	Standard Limit		CWF Conversion Factor		CWF Adjusted Limit
Cd	0.26	X	0.399	=	0.10 mg/l
Cr	1.71	X	"	=	0.68 mg/l
Cu	2.07	X	"	=	0.83 mg/l
Pb	0.43	X	"	=	0.17 mg/l
Ni	2.38	X	"	=	0.95 mg/l
Ag	0.24	X	"	=	0.10 mg/l
Zn	1.48	X	"	=	0.59 mg/l
Cn(T)	0.65	X	"	=	0.26 mg/l
TTO	----				

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Attachment B

PINELLAS COUNTY SEWER SYSTEM
INDUSTRIAL PRETREATEMENT PROGRAM
INDUSTRIAL USER SURVEY
FOR INCUBATOR BUSINESSES AT U.S. DOE

Please complete this discharge application with all information available. Where additional space is needed, attach extra pages. Please indicate estimated values with an "E" following the number. For information which is not yet available, indicate when you expect to obtain the information.

A. GENERAL INFORMATION

1. Company Name: ______________________

   Mailing Address: ______________________

   City, State, Zip: ______________________

   Telephone Number: (   ) ______________________

2. On site person authorized to represent company.

   Name: ______________________

   Title: ______________________

3. Brief description of the manufacturing, industrial processes, production, or business activities conducted by this company:

   ____

   ____

   ____

   ____

   ____

4. Indicate applicable Standard Industrial Classification (SIC) for all processes:

   ____

5. Are any of these activities regulated under Federal Categorical Pretreatment Standards? _____ Yes _____ No _____ Unsure

6. Projected hours of operation and number of employees per shift:

	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
1st Shift							
2nd Shift							
3rd Shift							

B. WATER USAGE AND WASTEWATER DESCRIPTION

1. What is the projected average water use for this company:
______________ gallons/month

2. Will any water be recycled?: _____ Yes _____ No

If yes, please give a brief description of recycling processes.
____
____

3. Will this company discharge any wastewater other than from restrooms to the Pinellas County Sewer System? ____ Yes ____ No

If yes, please indicate the source(s) of the wastewater:

[_]Cooling water, non-contact [_]Boiler/Tower blowdown
[_]Cooling Water, contact [_]Pollution Control Unit
[_]Process (Specify):_______________________________________
[_]Other (Specify): ____
____

4. What is the projected daily discharge flow rate: _______ gpd.

5. Will any form of wastewater treatment be used prior to combining with the wastewater discharge from the Deptartment of Energy?
_____ Yes _____ No.

If yes, briefly describe the operation of the wastewater treatment system. Include chemicals used and what they are used for.

____
____
____
____
____
____

6. Schematic Process Flow Diagram: For each major activity in which wastewater will be generated or treated, draw a diagram of the flow of materials, products, water, and wastewater from the start of the activity to its completion, showing all unit processes. Indicate which processes use water and which generate waste streams. Include the average daily volume and maximum daily volume of each waste stream.

7. Please list ALL chemicals (in quantities greater than one gallon) used and/or stored on site:

Chemical	Average Quantity (on site)	Will this chemical be in wastewater discharged to Pinellas County Sewer?
______________	______________	[_]yes [_]no
______________	______________	[_]yes [_]no
______________	______________	[_]yes [_]no
______________	______________	[_]yes [_]no
______________	______________	[_]yes [_]no
______________	______________	[_]yes [_]no
______________	______________	[_]yes [_]no
______________	______________	[_]yes [_]no
______________	______________	[_]yes [_]no

8. Are there any floor drains in the manufacturing or chemical storage area(s)? ______ Yes ______ No

If yes, briefly describe where these floor drains discharge to:
____
____

9. Will any liquid or solid wastes be generated and NOT disposed of in the Pinellas County Sewer System? _____ Yes _____ No

If yes, indicate the type(s) of waste generated:

[_]Acids, Alkalies [_]Dyes, Inks [_]Heavy Metals
[_]Inorganic Compounds [_]Oil/Grease [_]Organic Compounds
[_]Paints [_]Pesticides [_]Sludge
[_]Solvents
[_]Other (Specify):________________________________

How will the indicated waste(s) be disposed of? (provide name and address of waste haulers)
____
____

C. CERTIFICATION

I hereby state that the information contained on this survey is familiar to me, and to the best of my knowledge and belief, such information is true, complete, and accurate.

______________________________	______________________________
Authorized Facility Rep. (print)	Signature of Authorized Rep.
______________________________	______________________________
Title	Date

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BOARD OF COUNTY COMMISSIONERS
PINELLAS COUNTY, FLORIDA

PINELLAS COUNTY SEWER SYSTEM
310 COURT STREET
CLEARWATER, FLORIDA 34616

ACCIDENTAL DISCHARGE NOTIFICATION PROCEDURE
Pinellas County Sewer Use Ordinance #91-26, Section 6 (f)

In the event of an accidental discharge to the Pinellas County Sewer System (PCSS), the following must be met.

1) TELEPHONE NOTIFICATION

Notification must be made <u>immediately</u> by contacting one of the following, in the order given below:

Industrial Pretreatment Program: (Water Quality Management Division)	582-2282
South Cross Bayou WWTF: (Operators on duty 24 hrs/day)	582-7953
Director, Sewer System: (Main office)	464-4721

2) WRITTEN NOTIFICATION

A detailed written report describing the cause of the discharge and corrective measures taken must be submitted to the PCSS within five (5) calendar days following such accidental discharge. This report is to be submitted to the following address:

Industrial Pretreatment Program
Water Quality Management Division
Pinellas County Sewer System
14850 118th Avenue North
Largo, Florida 34644

adnp:930524

ANALYTICAL METHODS

The permittee may use any of the approved methods referenced in 40 CFR 136, including the following methods: A - Methods for Chemical Analyses of Water and Waste, EPA 600/4-79-020, Revised 1983; or B - Standard Methods for the Examination of Water and Wastewater, 17th Edition, 1989.

Cadmium -	Ref A: 213.1(Fl), 213.2(Fr), 200.7(ICP) Ref B: 3111 B/C(Fl), 3113 B(Fr), 3500 Cd-D(Cl), 3120 B(ICP)
Chromium -	Ref A: 218.1(Fl), 218.2(Fr), 200.7(ICP) Ref B: 3111 B/C(Fl), 3113 B(Fr), 3500 Cr-D(Cl), 3120 B(ICP)
Copper -	Ref A: 220.1(Fl), 220.2(Fr), 200.7(ICP) Ref B: 3111 B/C(Fl), 3113 B(Fr), 3500 Cu-D(Cl), 3120 B(ICP)
Lead -	Ref A: 239.1(Fl), 239.2(Fr), 200.7(ICP) Ref B: 3111 B/C(Fl), 3113 B(Fr), 3500 Pb-D(Cl), 3120 B(ICP)
Mercury -	Ref A: 245.1(cold vapor), 245.2(automated) Ref B: 3112 B(cold vapor)
Molybdenum -	Ref A: 246.1(Fl), 246.2(Fr), 200.7(ICP) Ref B: 3111 D(Fl), 3113 B(Fr), 3120 B(ICP)
Nickel -	Ref A: 249.1(Fl), 249.2(Fr), 200.7(ICP) Ref B: 3111 B/C(Fl), 3113 B(Fr), 3500 Ni-D(Cl), 3120 B(ICP)
Silver -	Ref A: 272.1(Fl), 272.2(Fr), 200.7(ICP) Ref B: 3111 B/C(Fl), 3113 B(Fr)
Zinc -	Ref A: 289.1(Fl), 289.2(Fr), 200.7(ICP) Ref B: 3111 B/C(Fl), 3500 Zn-E(Cl), 3120 B(ICP)
Cyanide(T) -	Ref A: 335.2(spectrophotometric), 335.3(automated) Ref B: 4500 Cn-D(titrimetric), 4500 Cn-E(spectrophotometric)
Cyanide(A) -	Ref A: 335.1(titrimetric/spectrophotometric) Ref B: 4500 Cn-G(titrimetric/spectrophotometric)
BOD -	Ref A: 405.1 Dissolved Oxygen Depletion(BOD_5) Ref B: 5210 Dissolved Oxygen Depletion(BOD_5)
Oil/Grease -	Ref A: 413.1(gravimetric) Ref B: 5520 B(gravimetric)
TSS -	Ref A: 160.2(gravimetric) Ref B: 2540 D(gravimetric)
pH -	Ref A: 150.1(electrometric) Ref B: 4500 H(electrometric)
Temperature -	Ref A: 170.1(thermometric) Ref B: 2550 B(thermometric)
TTO's -	EPA Methods 601-613, 624-625. TTO analyses must be performed in accordance with 40 CFR 136.3.

Fl=Flame, Fr=Furnace, ICP=Inductively Coupled Plasma, Cl=Colorimetric

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INDUSTRIAL USER SELF-MONITORING REPORT FORM

INDUSTRY: U.S. Department of Energy MONTH, YEAR: ______________ PERMIT NUMBER: 153-IE

DAY	SAMPLE TYPE*	START TIME+	END TIME+	WATER USE (gpd)	DISCHARGE FLOW(gpd)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
			TOTAL FLOW		
			DAILY AVERAGE		

* G=GRAB, TC=TIME COMPOSITE, FC=FLOW COMPOSITE
\+ TIME IN MILITARY NOTATION

Samples collected by: ______________

Samples analyzed by: ______________

If an outside laboratory performed any of the analyses contained in this report, give the name and address of the laboratory and specify the data they supplied.

____

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violation."

______________ Authorized Representative/Title ______________ Date

TOTAL DAYS OF PRODUCTION: ______

(FOR PCSS USE ONLY)

Checked by: ______________ Date: ______________

sm-forms:900614

INDUSTRIAL USER SELF-MONITORING REPORT FORM

INDUSTRY: U.S. Department of Energy MONTH, YEAR: ____________ PERMIT NUMBER: 153-IE

PARAMETERS (mg/l)

DAY	Cd	Cr	Cu	Cn, T	Pb	Hg	Ni	Ag	Zn	*TOTAL METALS	pH RANGE MIN - MAX	TEMP MAX+
1											–	
2											–	
3											–	
4											–	
5											–	
6											–	
7											–	
8											–	
9											–	
10											–	
11											–	
12											–	
13											–	
14											–	
15											–	
16											–	
17											–	
18											–	
19											–	
20											–	
21											–	
22											–	
23											–	
24											–	
25											–	
26											–	
27											–	
28											–	
29											–	
30											–	
31											–	
											*MONTHLY AVERAGE	

+ Sample temperature - ^{o}C (if applicable)
* If applicable
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INDUSTRIAL USER SELF-MONITORING REPORT FORM

INDUSTRY: U.S. Department of Energy MONTH, YEAR: ______________ PERMIT NUMBER: 153-IE

IF ANALYSES ARE PERFORMED ON PARAMETERS NOT SPECIFIED ON THIS REPORT FORM, LIST PARAMETERS AND THEIR RESPECTIVE VALUES BELOW.

OTHER PARAMETERS (mg/l)

DAY	TTO	Cn, A	BOD	TSS	O/G, m	O/G, a						
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APPENDIX E

Pinellas Plant
Hazardous and Solid Waste Amendments Permit

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Department of Energy
U.S. DOE - Pinellas Plant
7887 Bryan Dairy Road
Largo, Florida 34294-2900

Identification No. FL6 890 090 008
Permit No. FL6 890 090 008

Permit

Pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 USC §6901 et seq., commonly known as RCRA) and regulations promulgated thereunder by the U.S. Environmental Protection Agency (EPA) (codified and to be codified in Title 40 of the Code of Federal Regulations), a permit is issued to U.S. DOE (hereafter called the Permittee), who operates a hazardous waste treatment and storage facility located in Largo, Florida latitude 27°52'30" North and longitude 82°45'00" West.

This Permit, in conjunction with the Hazardous Waste Management Permit issued by the State of Florida, constitutes the RCRA permit for this facility. The Permittee shall be required to investigate any releases of hazardous waste or hazardous constituents from any solid waste management unit at the facility regardless of the time at which waste was placed in such unit and to take appropriate corrective action for any such releases. The Permit also requires the Permittee to certify annually that on-site generation of hazardous waste is minimized to the extent practicable.

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions contained herein (including those in any attachments) and applicable regulations contained in 40 CFR Parts 260 through 264, 266, 268, 270, and 124 as specified in the permit and statutory requirements of RCRA, as amended by the Hazardous and Solid Waste Amendments of 1984, P. L. 98-616, (the RCRA amendments). Nothing in this permit shall preclude the Regional Administrator from reviewing and modifying the permit at any time during its term in accordance with 40 CFR §270.41.

This Permit is based on the assumption that the information and reports submitted to date, and subsequent to issuance of this permit by the Permittee are accurate. Any inaccuracies found in this information may be grounds for termination or modification of this permit in accordance with 40 CFR §270.41, §270.42, and §270.43 and potential enforcement action. The Permittee must inform EPA of any deviation from or changes in the information in the application which would affect the Permittee's ability to comply with the applicable regulations or permit conditions.

This Permit is effective as of Feb. 9, 1990 , and shall remain in effect until Feb. 8, 2000 , unless revoked and reissued, or terminated under 40 CFR §§270.41 and .43 or continued in accordance with 40 CFR §270.51(a).

2-9-90
Date

Patrick M Tobin
Patrick M. Tobin
Director
Waste Management Division

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PART I - STANDARD CONDITIONS

I.A. EFFECT OF PERMIT

Compliance with this RCRA permit constitutes compliance, for purposes of enforcement, with Subtitle C of RCRA except for those requirements not included in the permit which become effective by statute or which are promulgated under 40 CFR Part 268 restricting placement of hazardous waste in or on the land. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local law or regulations. Compliance with the terms of this permit does not constitute a defense to any order issued or any action brought under Section 3013 or Section 7003 of RCRA, Sections 106(a), 104, or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq., commonly known as CERCLA), or any other law providing for protection of public health or the environment.

I.B. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR §§270.41, 270.42, and 270.43. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes, or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition.

I.C. SEVERABILITY

The provisions of this permit are severable, as specified in 40 CFR §124.16 and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

I.D. DUTIES AND REQUIREMENTS

I.D.1. Duty to Comply

The Permittee shall comply with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance, other than noncompliance authorized by an emergency permit, constitutes a violation of RCRA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application.

I.D.2. Duty to Reapply

If the Permittee will continue an activity allowed by this permit after the expiration date of this permit, the Permittee shall submit a complete application for a new permit at least 180 days before this permit expires, unless permission for a later date has been granted by the Regional Administrator.

I.D.3. Permit Expiration

If the State does not have RCRA hazardous waste permitting authority under 40 CFR Part 271 for the 1984 RCRA Amendments, this permit and all conditions herein will remain in effect beyond the permit's expiration date, as specified in 40 CFR §270.51. This applies only if the Permittee has submitted a timely, complete application in accordance with 40 CFR §270.10(c) and, through no fault of the Permittee, the Regional Administrator has not issued a new permit with an effective date under 40 CFR §124.15 on or before the expiration date of the previous permit.

If the State does have RCRA hazardous waste permitting authority under 40 CFR Part 271 for the 1984 RCRA Amendments and if the Permittee has submitted a timely and complete application under applicable state law and regulations, the terms and conditions of this permit continue in force beyond the expiration date of the permit, but only until the effective date of the state's issuance or denial of a state RCRA permit.

I.D.4. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

I.D.5. Duty to Mitigate

In the event of noncompliance with the permit, the Permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.

I.D.6. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

I.D.7. Duty to Provide Information

The Permittee shall furnish to the Regional Administrator, within a reasonable time, any relevant information which the Regional Administrator may request to determine whether cause exists for modifying, revoking, and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Regional Administrator, upon request, copies of records required to be kept by this permit.

I.D.8. Inspection and Entry

The Permittee shall allow the Regional Administrator, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:

I.D.8.a. Enter at reasonable times upon the Permittee's premises where a regulated activity is located or conducted, or where records must be kept under the conditions of this permit;

I.D.8.b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

I.D.8.c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated, or required under this permit; and

I.D.8.d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by RCRA, any substance, or parameters at any location.

I.D.9. Monitoring and Records

I.D.9.a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample to be analyzed must be the appropriate method from Appendix I of 40 CFR Part 261 or an equivalent method approved by the Regional Administrator. Laboratory methods must be those specified in the most recent edition of Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846 or Methods for Chemical Analysis of Water and Wastes, (EPA-600/4-79-020).

I.D.9.b. The Permittee shall retain at the facility, or other appropriate location as provided for under 40 CFR Part 264, records of all monitoring information required under the terms of this permit, including all calibration and maintenance records, records of all data used to prepare documents required by this permit, copies of all reports and records required by this permit, the certification required by 40 CFR 264.73(b)(9), and records of all data used to complete the application for this permit for a period of at least 3 years from the date of the sample, measurement, report, certification or application, or until corrective action is completed, whichever date is later. These periods may be extended by request of the Regional Administrator at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility.

I.D.9.c. Records of monitoring information shall specify:

I.D.9.c.i. The dates, exact place, and times of sampling, or measurements;

I.D.9.c.ii. The individuals who performed the sampling or measurements;

I.D.9.c.iii. The dates analyses were performed;

I.D.9.c.iv. The individuals who performed the analyses;

I.D.9.c.v. The analytical techniques or methods used; and

I.D.9.c.vi. The results of such analyses.

I.D.10. Reporting Planned Changes

The Permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. This would apply to all contiguous land, structures, other appurtenances and improvements on the land, used for the treatment, storage or disposal of solid waste.

I.D.11. Anticipated Noncompliance

The Permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

I.D.12. Transfer of Permits

This permit may be transferred to a new owner or operator only if it is modified or revoked and reissued pursuant to 40 CFR §270.41(b)(2) or §270.42(d). Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of 40 CFR Parts 264 and 270, the 1984 RCRA Amendments and this permit.

I.D.13. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

I.D.14. Twenty-four Hour Reporting

I.D.14.a. The Permittee shall report any noncompliance which may endanger human health or the environment. Any such information shall be reported orally within 24 hours from the time the Permittee becomes aware of the circumstances. This report shall include:

I.D.14.a.i. Information concerning the release of any hazardous waste or hazardous constituents which may endanger public drinking water supplies.

I.D.14.a.ii. Information concerning the release or discharge of any hazardous waste or hazardous constituents, or of a fire or explosion at the facility, which could threaten the environment or human health outside the facility.

I.D.14.b. The description of the occurrence and its cause shall include:

I.D.14.b.i. Name, address, and telephone number of the owner or operator;

I.D.14.b.ii. Name, address, and telephone number of the facility;

I.D.14.b.iii. Date, time, and type of incident;

I.D.14.b.iv. Name and quantity of materials involved;

I.D.14.b.v. The extent of injuries, if any;

I.D.14.b.vi. An assessment of actual or potential hazard to the environment and human health outside the facility, where this is applicable; and

I.D.14.b.vii. Estimated quantity and disposition of recovered material that resulted from the incident.

I.D.14.c. A written report shall also be provided to the Regional Administrator within 15 days of the time the Permittee becomes aware of the circumstances. The written report shall contain the information specified under Condition I.D.14a. and b.; a description of the noncompliance and its cause; the periods of noncompliance (including exact dates and times); whether the noncompliance has been corrected; and if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

I.D.15. Other Noncompliance

The Permittee shall report all other instances of noncompliance not otherwise required to be reported above, at the time written reports as required by this permit are submitted. The reports shall contain the information listed in Condition I.D.14.b. as appropriate.

I.D.16. Other Information

Whenever the Permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in any document(s) submitted to the Regional Administrator, the Permittee shall promptly submit such facts or information.

I.E. SIGNATORY REQUIREMENT

All applications, reports, or information submitted to the Regional Administrator shall be signed and certified in accordance with 40 CFR §270.11.

I.F. CONFIDENTIAL INFORMATION

The Permittee may claim confidential any information required to be submitted by this permit in accordance with 40 CFR §270.12.

I.G. DEFINITIONS

For purposes of this permit, terms used herein shall have the same meaning as those in RCRA and 40 CFR Parts 124, 260, 261, 264, and 270, unless this permit specifically provides otherwise; where terms are not defined in the regulation, the permit, or EPA guidances or publications, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

I.G.1. The term "solid waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923).

I.G.2. A "hazardous constituent" for purposes of this permit are those substances listed in 40 CFR Part 261 Appendix VIII.

I.G.3. A "solid waste management unit" for the purposes of this permit includes any unit which has been used for the treatment, storage, or disposal of solid waste at any time, irrespective of whether the unit is or ever was intended for the management of solid waste. RCRA regulated hazardous waste management units are also solid waste management units.

I.G.4. A "unit" for the purposes of this permit includes, but is not limited to, any landfill, surface impoundment, waste pile, land treatment unit, incinerator, injection well, tank, container storage area, septic tank, drain field, wastewater treatment unit, elementary neutralization unit, transfer station, or recycling unit.

I.G.5. A "release" for purposes of this permit includes any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of any hazardous waste or hazardous constituents.

I.G.6. "Contamination" for purposes of this permit refers to the presence of any hazardous constituent in a concentration which exceeds the naturally occurring concentration of that constituent in the immediate vicinity of the facility (in areas not affected by the facility).

I.G.7. "Corrective action," for purposes of this permit, may include all corrective measures necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit at the facility, regardless of the time at which waste was placed in the unit, as required under 40 CFR §264.101. Corrective measures may address releases to air, soils, surface water or groundwater.

Part II - Solid Waste Management Units

II.A. Applicability

The Conditions of this Part apply to:

II.A.1. The solid waste management units identified in Appendix A. Paragraph I.

II.A.2. Any additional solid waste management units or releases of hazardous waste or hazardous constituents other than those referenced above, discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means.

II.A.3. For releases from solid or hazardous waste management units at the facility that migrate off-site, the Permittee shall implement corrective actions beyond the facility boundary, where necessary to protect human health and the environment, unless the permittee demonstrates to the satisfaction of the Regional Administrator that, despite the permittee's best efforts, the permittee was unable to obtain the necessary permission to undertake such actions. The permittee is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis.

II.B. RCRA Facility Assessment (RFA)

II.B.1. The Permittee shall notify the Regional Administrator of any additional solid waste management unit(s) with releases of hazardous constituents or hazardous waste not identified in Condition II.A.1., discovered during the course of groundwater monitoring, field investigations, environmental audits or other means within fifteen (15) days of discovery.

II.B.2. The Permittee shall prepare and submit to the Regional Administrator a RCRA Facility Assessment (RFA) Plan with a proposed schedule of implementation and completion for any additional solid waste management unit(s) or release(s) which is discovered subsequent to the issuance of this permit. The Plan shall include methods and specific actions as necessary to determine whether a prior or continuing release of hazardous waste or hazardous constituents has occurred at each solid waste management unit. The plan must also include, at a minimum, the following information for each unit:

(1) Location of unit(s) on a topographic map of appropriate scale such as required under 40 CFR §270.14(b)(19).
(2) Designation of type and function of unit(s).
(3) General dimensions, capacities and structural description of unit(s) (supply any available plans/drawing).

(4) Dates that the unit(s) was operated.
(5) Specification of all wastes that have been managed at/in the unit(s).
(6) All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include groundwater data, soil analyses, and/or surface water data).
(7) Results of sampling and analysis of groundwater, landsurface and subsurface strata, surface water or air requested by the Regional Administrator.

II.B.3. If the time required to conduct the RFA is greater than 180 days, the Permittee shall provide the EPA with quarterly Progress Reports (90 day intervals) beginning ninety (90) days from implementation of the approved plan containing:

a. A description of the portion of the RFA completed;

b. Summaries of findings;

c. Summaries of all deviations from the approved RFA Plan during the reporting period;

d. Summaries of all problems or potential problems encountered during the reporting period;

e. Projected work for the next reporting period; and

f. Copies of daily reports, inspection reports, laboratory/ monitoring data, etc.

II.B.4 The Permittee shall prepare and submit to the Regional Administrator a RCRA Facility Assessment Report of the results of the RFA required under Condition II.B.2 in accordance with the schedule(s) under Condition II.H. The RFA Report must include at a minimum the information listed under Condition II.B.2. and other appropriate information necessary to determine the need for a RFI under Condition II.C.2.

II.C. RCRA Facility Investigation (RFI)

II.C.1. The Permittee shall prepare and submit to the Regional Administrator a RCRA Facility Investigation (RFI) Plan or plans for those units indicated in Appendix A paragraph I as subject to the RFI, which includes schedules of implementation and completion of specific actions necessary to determine the nature and extent of releases and the potential pathways of contaminant releases to the air, land, surface water, and groundwater. The Permittee must provide sufficient justification and/or documentation that a release is not probable if a media/pathway associated with a unit (groundwater, surface water, soil or air) is not included in the RFI Plan(s). Such deletions of a media or pathway from the RFI are subject to the approval of the Regional Administrator.

II.C.2. The Permittee shall prepare and submit to the Regional Administrator a RCRA Facility Investigation (RFI) Plan for those units identified under Condition II.B. which includes schedules of implementation and completion of specific actions necessary to determine the nature and extent of releases indicated by the assessment, and the potential pathways of contaminant releases to the air, land, surface water, and groundwater. The Permittee must provide sufficient justification and/or documentation that a release is not probable if a unit identified under Condition II.B. or a media/pathway associated with such unit (groundwater, surface water, soil or air) is not included in the RFI plan. Such deletions of a unit, media or pathway from the RFI are subject to the approval of the Regional Administrator.

II.C.3. The RFI Plan(s) shall meet the requirements of Appendix B at a minimum. The RFI shall be conducted in accordance with the approved RFI Plan(s) and Appendix B. The Permittee shall provide written sufficient justification for any omissions or deviations from the minimum requirements of Appendix B. Such omissions or deviations are subject to the approval of the Regional Administrator. The scope of the RFI Plan(s) shall include all investigations necessary to ensure compliance with 40 CFR §264.101(c).

II.C.4. If the time required to conduct the RFI is greater than 180 days, the Permittee shall provide the EPA with quarterly RFI Progress Reports (90 day intervals) beginning ninety (90) days from implementation of the approved plan containing:

a. A description of the portion of the RFI completed;

b. Summaries of findings;

c. Summaries of all deviations from the approved RFI Plan during the reporting period;

d. Summaries of all problems or potential problems encountered during the reporting period;

e. Projected work for the next reporting period; and

f. Copies of daily reports, inspection reports, laboratory/ monitoring data, etc.

II.C.5. The Permittee shall prepare and submit to the Regional Administrator a Draft and Final RCRA Facility Investigation Report. The RFI Reports shall be submitted in accordance with the schedule(s) under Condition II.H.5. The RFI Report shall include an analysis and summary of all required investigations of solid waste management units and their results. The summary shall include a report on the type and extent of contamination at the facility, including sources and migration pathways, and a description of actual or potential receptors. The report shall also describe the extent of contamination (qualitative/quantitative in relation to background levels indicative for the area. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support a Corrective Measures Study and/or a Corrective Action Plan, if necessary.

II.D. Interim Measures

II.D.1. The Permittee, (upon approval by the Regional Administrator), may conduct interim measures to contain, remove or treat contamination resulting from the release of hazardous constituents from a solid waste management unit in order to protect public health and the environment. Such interim measures may be conducted concurrently with investigations required under the terms of this permit.

II.D.2. The Permittee shall notify the Regional Administrator of any proposed interim/corrective measures at least thirty (30) days prior to implementation. The notice shall include a description and a schedule of implementation of any proposed interim measures.

II.D.3. The Permittee shall give notice to the Regional Administrator as soon as possible of any planned changes, reduction or additions to the interim measures.

II.D.4. Final approval of interim measures as corrective action required under 40 CFR §264.101 shall be in accordance with 40 CFR §270.41 and Condition II.E.2. as a permit modification.

II.D.5 If the time required for completion of an Interim Measure is greater than 180 days, the Permittee shall provide EPA with quarterly progress reports (90 day intervals) beginning ninety (90) days after initiation of the Interim Measure(s). Such reports shall include:

a. A description of the portion of the Interim Measure completed;

b. Summaries of all deviations from the Interim Measures Plan during the reporting period;

c. Summaries of all problems or potential problems encountered during the reporting period;

d. Projected work for the next reporting period; and

e. Copies of laboratory/monitoring data.

II.D.6. Upon completion of Interim Measures conducted under this Condition, the Permittee shall submit an Interim Measures Report to EPA that contains:

a. A description of measure(s) implemented;

b. Summaries of results;

c. Summaries of all problems encountered;

d. Summaries of accomplishments and/or effectiveness of interim measure; and

e. Copies of all relevant laboratory/monitoring data, etc. in accordance with Condition I.D.9.

II.E. <u>Corrective Measures Study</u>

II.E.1. The Regional Administrator will review the final RFI report(s) required under Condition II.C.5. and notify the Permittee of the need for further investigative actions and/or the need for a Corrective Measures Study (CMS) to meet the requirements of CFR §264.101.

II.E.2. Within 90 days of the notification by the Regional Administrator that a Corrective Measures Study (CMS) is required, the Permittee shall prepare and submit a CMS Plan or Plans for those units requiring a CMS. The Plan(s) developed to meet the requirements of Condition II.E.3.

II.E.3. The CMS Plan(s) shall meet the requirements of Appendix C at a minimum. This Plan shall include schedules of implementation and completion of specific actions necessary to complete a CMS. The CMS shall be conducted in accordance with the approved CMS Plan and Appendix C. The Permittee shall provide sufficient written justification for any omissions or deviations, which are subject to the approval of the Regional Administrator. The scope of the CMS Plan shall include all investigations necessary to ensure compliance with 40 CFR §264.101(c).

II.E.4 The Permittee shall prepare and submit to the Regional Administrator a draft and final Corrective Measures Report for the study conducted pursuant to the Plan submitted under Conditions II.E.2. and II.E.3. The draft CMS Report shall be submitted to EPA for review in accordance with the schedule in the CMS Plan(s) approved under Condition II.E.3. The final CMS Report(s) shall summarize the results of the investigations for each remedy studied and of any bench-scale or pilot tests conducted. The CMS Report(s) must include an evaluation of each remedial alternative. The CMS Report shall present all information gathered under the approved CMS Plan. The Report must contain adequate information to support the Regional Administrator in the approval of the recommended remedy.

II.F Remedy Approval

II.F.1 The Regional Administrator shall approve a remedy from the remedial alternatives evaluated in the CMS that will

(1) protect human health and the environment;
(2) meet the approved clean-up levels;
(3) control the source(s) of release(s) so as to reduce or eliminate to the maximum extent practicable, further releases that may pose a threat to human health and the environment; and
(4) meet all applicable waste management requirements.

II.F.2. A modification to this Permit will be initiated by the Regional Administrator after approval of a remedy under Condition II.F.1.

II.G. Imminent Hazards

II.G.1. The Permittee shall report to the Regional Administrator any imminent or existing hazard to public health or the environment from any release of hazardous waste or hazardous constituents from a solid waste management unit. Such information shall be reported orally within 24 hours from such time the Permittee becomes aware of the circumstances. This report shall include the information specified under Conditions I.D.14.a. and b.

II.G.2. A written report shall also be provided to the Regional Administrator within fifteen (15) days of the time the Permittee becomes aware of the circumstances. The written report shall contain the information specified under Conditions I.D.14.a. and b.; a description of the release and its cause; the period of the release; whether the release has been stopped; and if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the release.

II.H. Schedule of Compliance and Report Requirements

II.H.1. The Permittee shall submit the RFA Plan(s) for solid waste management units or releases discovered after the effective date of this permit required under Condition II.B.2. to the Regional Administrator within sixty (60) days of the notification required under Condition II.B.1.

II.H.2. The Permittee shall submit the RFA Report required under Condition II.B.4. within sixty (60) days after completion of all activities conducted under the approved RFA Plan.

II.H.3. The Permittee shall submit the RFI Plan required by Condition II.C.1. and the associated documentation to the Regional Administrator within 120 days of the effective date of this permit.

II.H.4. The Permittee shall submit the RFI Plan(s) required under Condition II.C.2. for solid waste management units or releases discovered after the effective date of this permit within ninety (90) days of submission of the RFA report required under Condition II.B.4.

II.H.5. The Permittee shall submit the Draft RFI Report required under Condition II.C.5. to EPA for review ninety (90) days after completion of the RFI. The Final RFI Report shall be submitted to EPA within thirty (30) days of receipt of EPA comments on the Draft RFI Report.

II.H.6. The Permittee shall submit the CMS Plan(s) required under Condition II.E.2. to the EPA for review within ninety (90) days of the notification from the Regional Administrator under Condition II.E.1.

II.H.7. All plans and schedules shall be subject to approval by the Regional Administrator prior to implementation. The Permittee shall revise all submittals and schedules as specified by the Regional Administrator.

Upon approval the Permittee shall implement all plans and schedules as written.

II.H.8. The results of all plans and reports shall be submitted in accordance with the approved schedule. Extensions of the due date for submittals may be granted by the Regional Administrator based on the Permittee's demonstration that sufficient justification for the extension exists.

II.H.9. If the Permittee at any time determines that the RFA or RFI plans required under Conditions II.B. or II.C. no longer satisfy the requirements of 40 CFR §264.101 or this permit for prior or continuing releases of hazardous waste or hazardous constituents from solid waste management units, he shall submit an amended plan(s) to the Regional Administrator within ninety (90) days of such determination.

II.H.10. All reports shall be signed and certified in accordance with 40 CFR §270.11.

II.H.11. Three (3) copies of all reports and plans shall be provided by the Permittee to U.S. EPA at the following address:

Mr. James H. Scarbrough, P.E.
Chief, RCRA Branch
Waste Management Division

Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

PART III - WASTE MINIMIZATION

WASTE MINIMIZATION CERTIFICATION

Until certification of closure the Permittee shall certify no less often than annually that the Permittee has a program in place to reduce the volume and toxicity of hazardous waste that he generates to the degree determined by the Permittee to be economically practicable and the proposed method of treatment, storage or disposal is that practicable method currently available to the Permittee which minimizes the present and future threat to human health and the environment.

The Permittee shall maintain copies of the certification in the facility operating record as required under 40 CFR §264.73(b)(9).

PART IV - LAND DISPOSAL RESTRICTIONS

IV.A. 40 CFR Part §268 identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances under which an otherwise prohibited waste may continue to be placed on or in a land treatment, storage or disposal unit. The Permittee shall maintain compliance with the requirements of 40 CFR §268. Where the Permittee has applied for an extension, waiver or variance under 40 CFR Part §268 the Permittee shall comply with all restrictions on land disposal under this Part once the effective date for the waste has been reached pending final approval of such application.

II.B. For the purposes of 40 CFR Part §268 "Land Disposal" means placement in or on the land and includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, underground mine or cave, or concrete vault or bunker intended for disposal purposes.

IV.C. A restricted waste identified in 40 CFR Part §268 Subpart C may not be placed in a land disposal unit without further treatment unless the requirements of 40 CFR Part §268 Subparts C and/or D are met.

IV.D. The storage of hazardous wastes restricted from land disposal under 40 CFR Part §268 is prohibited unless the requirements of 40 CFR Part §268 Subpart E are met.

Appendix A

Solid Waste management Unit Summary

I. List of Solid Waste Management Units requiring an RFI:

1. West pond
2. Northeast site
3. Spray irrigation site
4. Trenches
5. Old drum storage site
6. Former pistol range
7. Closed fire department training tank
8. Current fire department training tank
9. Metallic anomaly site
10. Incinerator site
11. Incinerator ditch
12. Diesel fuel spill
13. Industrial drain leaks
14. Southwest ditch

II. List of Solid Waste Management Units with no known releases (no RFI required)

1. Acid and alkali spills

APPENDIX B

RCRA FACILITY INVESTIGATION (RFI) WORKPLAN OUTLINE

I. RFI WORKPLAN REQUIREMENTS

The Permittee shall prepare a RCRA Facility Investigation (RFI) Workplan that meets the requirements of Part II of this document and the RFI Guidance, EPA-530/SW-87-001. This Workplan shall also include the development of the following plans, which shall be prepared concurrently:

A. Project Management Plan

The Permittee shall prepare a Project Management Plan which will include a discussion of the technical approach, schedules, and personnel. The Project Management Plan will also include a description of qualifications of personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RCRA Facility Investigation.

B. Sampling and Analysis Plan(s)

The Permittee shall prepare a plan to document all monitoring procedures: field sampling, sampling procedures and sample analysis performed during the investigation to characterize the environmental setting, source, and releases of hazardous constituents, so as to ensure that all information and data are valid and properly documented. The Sampling Stategy and Procedures shall be in accordance with Characterization of Hazardous Waste Sites A Methods Manual: Volume II. Available Sampling Methods, EPA-600/4-84-076, or EPA Region IV Engineering Support Branch's Standard Operating Procedure and Quality Assurance Manual (SOP). Any deviations from these references must be requested by the applicant and approved by EPA. The Sampling and Analysis Plan must specifically discuss the following unless the EPA-600/4-84-076 or SOP procedures are specifically referenced.

1. Sampling Strategy

a. Selecting appropriate sampling locations, depths, etc.;

b. Obtaining all necessary ancillary data;

c. Determining conditions under which sampling should be conducted;

e. Determining which media are to be sampled (e.g., groundwater, air, soil, sediment, etc.);

f. Determining which parameters are to be measured and where;

g. Selecting the frequency of sampling and length of sampling period;

h. Selecting the types of samples (e.g., composites vs. grabs) and number of samples to be collected.

2. Sampling Procedures

a. Documenting field sampling operations and procedures, including;

i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, preservatives, and absorbing reagents);

ii) Procedures and forms for recording the exact location and specific considerations associated with sample acquisition;

iii) Documentation of specific sample preservation method;

iv) Calibration of field instruments;

v) Submission of field-biased blanks, where appropriate;

vi) Potential interferences present at the facility;

vii) Construction materials and techniques, associated with monitoring wells and piezometers;

viii) Field equipment listing and sampling containers;

ix) Sampling order; and

x) Decontamination procedures.

b. Selecting appropriate sample containers;

c. Sampling preservation; and

d. Chain-of-custody, including:

i) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment; and

ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.

3. Sample Analysis

Sample analysis shall be conducted in accordance with SW-846: "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods" (third edition). The sample analysis section of the Sampling and Analysis Plan shall specify the following:

a. Chain-of-custody procedures, including:

i) Identification of a responsible party to act as sampling custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;

ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and

iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersement for analysis.

b. Sample storage;

c. Sample preparation methods;

i) Scope and application of the procedure;

ii) Sample matrix;

iii) Potential interferences;

iv) Precision and accuracy of the methodology; and

v) Method detection limits.

d. Analytical procedures, including:

i) Scope and application of the procedure;

ii) Sample matrix;

iii) Potential interferences;

iv) Precision and accuracy of the methodology; and

v) Method detection limits.

e. Calibration procedures and frequency;

f. Data reduction, validation and reporting;

g. Internal quality control checks, laboratory performance and systems audits and frequency, including:

i) Method blank(s);

ii) Laboratory control sample(s);

iii) Calibration check samples(s);

iv) Replicate sample(s);

v) Matrix-spiked sample(s);

vii) Control charts;

viii) Surrogate samples;

ix) Zero and span gases; and

x) Reagent quality control checks.

h. Preventive maintenance procedures and schedules;

i. Corrective action (for laboratory problems); and

j. Turnaround time.

C. Data Management Plan

The Permittee shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

The data record shall include the following:

a. Unique sample or field measurement code;

b. Sampling or field measurement location and sample or measurement type;

c. Sampling or field measurement raw data;

d. Laboratory analysis ID number;

e. Property or component measured; and

f. Result of analysis (e.g. concentration).

2. Tabular Displays

The following data shall be presented in tabular displays:

a. Unsorted (raw) data;

b. Results for each medium, or for each constituent monitored;

c. Data reduction for statistical analysis, as appropriate;

d. Sorting of data by potential stratification factors (e. g., location, soil layer, topography); and

e. Summary data

3. Graphical Displays

The following data shall be presented in graphical formats (e. g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.):

a. Display sampling location and sampling grid:

b. Indicate boundaries of sampling area, and area where more data are required;

c. Display geographical extent of contamination;

d. Illustrate changes in concentration in relation to distances from the source, time, depth or other parameters; and

e. Indicate features affecting intramedia transport and show potential receptors.

II. RCRA Facility Investigation (RFI) Requirements

RCRA Facility Investigation:

The Permittee shall conduct those investigations necessary to: characterize the facility (Environmental Setting); define the source (Source Characterization); define the degree and extent of release of hazardous constituents (Contamination Characterization); and identify actual or potential receptors.

The investigations should result in data of adequate technical content and quality to support the development and evaluation of the corrective action plan if necessary. The information contained in a RCRA Part B permit application and/or RCRA Section 3019 Exposure Information Report may be referenced as appropriate.

All sampling and analyses shall be conducted in accordance with the Sampling and Analysis Plan. All sampling locations shall be documented in a log and identified on a detailed site map.

A. Environmental Setting

The Permittee shall collect information to supplement and/or verify Part B information on the environmental setting at the facility. The Permittee shall characterize the following as they relate to identified sources, pathways and areas of releases of hazardous constituents from Solid Waste Management Units.

1. Hydrogeology

The Permittee shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

a. A description of the regional and facility specific geologic and hydrogeologic characteristics affecting ground-water flow beneath the facility, including:

i) Regional and facility specific stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts:

ii) Structural geology: description of local and regional structural features (e. g., folding, faulting, tilting, jointing, etc.);

iii) Depositional history;

iv) Regional and facility specific ground-water flow patterns; and

v) Identification and characterization of areas and amounts of recharge and discharge.

b. An analysis of any topographic features that might influence the ground water flow system.

c. Based on field data, tests, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (i. e., the aquifers and any intervening saturated and unsaturated units), including:

i) Hydraulic conductivity and porosity (total and effective);

ii) Lithology, grain size, sorting, degree of cementation;

iii) An interpretation of hydraulic interconnections between saturated zones; and

iv) The attenuation capacity and mechanisms of the natural earth materials (e. g., ion exchange capacity, organic carbon content, mineral content etc.).

d. Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the

potential contaminant source, a representative description of water level or fluid pressure monitoring including:

i) Water-level contour and/or potentiometric maps;

ii) Hydrologic cross sections showing vertical gradients;

iii) The flow system, including the vertical and horizontal components of flow; and

iv) Any temporal changes in hydraulic gradients, for example, du tidal or seasonal influences.

e. A description of manmade influences that may affect the hydrolog of the site, identifying:

i) Local water-supply and production wells with an approximate schedule of pumping; and

ii) Manmade hydraulic structures (pipelines, french drains, ditches, etc.).

2. Soils

The Permittee shall conduct a program to characterize the soil and r units above the water table in the vicinity of contaminant release(s Such characterization may include, but not be limited to, the follow types of information as appropriate:

a. Surface soil distribution;
b. Soil profile, including ASTM classification of soils;
c. Transects of soil stratigraphy;
d. Hydraulic conductivity (saturated and unsaturated);
e. Relative permeability;
f. Bulk density;
g. Porosity;
h. Soil sorptive capacity;
i. Cation exchange capacity (CEC);
j. Soil organic content;
k. Soil pH;
l. Particle size distribution;
m. Depth of water table;

n. Moisture content;
o. Effect of stratification on unsaturated flow;
p. Infiltration;
q. Evapotranspiration;
r. Storage capacity;
s. Vertical flow rate; and
t. Mineral content.

3. <u>Surface Water and Sediment</u>

The Permittee shall conduct a program to characterize the surface water bodies in the vicinity of the facility. Such characterization may include, but not be limited to, the following activities and information:

a. Description of the temporal and permanent surface water bodies including:

i) For lakes and estuaries: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume

ii) For impoundments: location, elevation, surface area, depth, volume, freeboard, and construction and purpose;

iii) For streams, ditches, and channels: location, elevation, flow velocity, depth, width, seasonal fluctuations, flooding tendencies (i. e., 100 year event), discharge point(s), and general contents.

iv) Drainage patterns; and

v) Evapotranspiration.

b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients (NH_3, NO_3^-/NO_2^-, PO^{-3}), chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.

c. Description of sediment characteristics including:

i) Deposition area;

ii) Thickness profile; and

iii) Physical and chemical parameters (e. g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.)

4. Air

The Permittee shall provide information characterizing the climate in the vicinity of the facility. Such information may include, but not be limited to:

a. A description of the following parameters:

i) Annual and monthly rainfall averages;

ii) Monthly temperature averages and extremes;

iii) Wind speed and direction;

iv) Relative humidity/dew point;

v) Atmospheric pressure;

vi) Evaporation data;

vii) Development of inversions; and

viii) Climate extremes that have been know to occur in the vicinity of the facility, including frequency of occurrence. (i. e. Hurricanes)

b. A description of topographic and manmade features which affect air flow and emission patterns, including:

i) Ridges, hills or mountain areas;

ii) Canyons or valleys;

iii) Surface water bodies (e. g. rivers, lakes, bays, etc.);

iv) Buildings.

B. Source Characterization

For those sources from which releases of hazardous constituents have been detected the Permittee shall collect analytic data to completely characterize the wastes and the areas where wastes have been placed, to the degree that is possible without undue safety risks, including: type, quantity; physical form; disposition (containment or nature of deposits); and facility characteristics affecting release (e. g., facility security, and engineering barriers). This shall include quantification of the following specific characteristics, at each source area:

1. Unit/Disposal Area Characteristics:

e. Period of operation;
f. Age of unit/disposal area;
g. General physical conditions; and
h. Method used to close the unit/disposal area.

2. Waste Characteristics:

a. Type of wastes placed in the unit;

i) Hazardous classification (e. g., flammable, reactive, corrosive, oxidizing or reducing agent);

ii) Quantity; and

iii) Chemical composition.

b. Physical and chemical characteristics such as;

i) Physical form (solid, liquid, gas);

ii) Physical description (e. g., powder, oily sludge);

iii) Temperature;

iv) pH;

v) General chemical class (e. g., acid, base, solvent);

vi) Molecular weight;

vii) Density;

viii) Boiling point;

ix) Viscosity;

x) Solubility in water;

xi) Cohesiveness of the waste; and

xii) Vapor pressure.

c. Migration and dispersal characteristics of the waste such as;

i) Sorption capability;

ii) Biodegradability, bioconcentration, biotransformation;

iii) Photodegradation rates;

iv) Hydrolysis rates; and

v) Chemical transformations.

The Permittee shall document the procedures used in making the above determinations.

C. <u>Characterization of Releases of Hazardous Constituents</u>

The Permittee shall collect analytical data on groundwater, soils, surface water, sediment, and subsurface gas contamination in the vicinity of the facility in accordance with the sampling and analysis plan as required above. These data shall be sufficient to define the extent, origin, direction, and rate of movement of contamination. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and anaylsis. The Permittee shall address the following types of contamination at the facility:

1. <u>Groundwater Contamination</u>

The Permittee shall conduct a groundwater investigation to characterize any plumes of contamination detected at the facility. This investigation shall at a minimum provide the following information:

a. A description of the horizontal and vertical extent of any plume(s) of hazardous constituents originating from the facility;

b. The horizontal and vertical direction of contamination movement;

c. The velocity of contaminant movement;

d. The horizontal and vertical concentration profiles of hazardous constituents in the plume(s);

e. An evaluation of factors influencing the plume movement; and

f. An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determinations (e. g., well design, well construction, geophysics, modeling, etc.).

2. <u>Soil Contamination</u>

The Permittee shall conduct an investigation to characterize the contamination of the soil and rock units above the saturated zone in the vicinity of any contaminant release. The investigation may include the following information:

a. A description of the vertical and horizontal extent of contamination;

b. A description of appropriate contaminant and soil chemical properties within the contaminant source area and plume. This may include contaminant solubility, speciation, absorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation;

c. Specific contaminant concentrations;

d. The velocity and direction of contamination movement; and

e. An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determinations.

3. <u>Surface Water and Sediment Contamination</u>

The Permittee shall conduct a surface water investigation to characterize contamination in surface water bodies resulting from releases of hazardous constituents at the facility.

The investigation may include, but not be limited to, the following information:

a. A description of the horizontal and vertical extent of any plume(s) originating from the facility, and the extent of contamination in underlying sediments;

b. The horizontal and vertical direction of contaminant movement;

c. The contaminant velocity;

d. An evaluation of the physical, biological and chemical factors influencing contaminant movement;

e. An extrapolation of future contaminant movement; and

f. A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

4. Air Contamination

The Permittee shall conduct an investigation to characterize gaseous releases of hazardous constituents into the atmosphere or any structures or buildings. This investigation may provide the following information:

a. A description of the horizontal and vertical direction and velocity of contaminant movement;

b. The rate and amount of the release; and

c. The chemical and physical composition of the contaminants(s) released, including horizontal and vertical concentration profiles.

The Permittee shall document the procedures used in making the above determinations.

D. Potential Receptors

The Permittee shall collect data describi g the human populations and environmental systems that are susceptible to contaminant exposure from the facility. Chemical analysis of biological samples and/or data on observable effects in ecosystems may also be obtained as appropriate. The following characteristics shall be identified:

1. Current local uses and planned future uses of groundwater:

a. Type of use (e. g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and

b. Location of ground water users, to include withdrawal and discharge wells, within one mile of the impacted area.

The above information should also indicate the aquifer or hydrogeologic unit used and/or impacted for each item.

2. Current local uses and planned future uses of surface waters directly impacted by the facility:

a. Domestic and municipal (e. g., potable and lawn/gardening watering);
b. Recreational (e. g. swimming, fishing);

c. Agricultural;
d. Industrial; and
e. Environmental (e. g., fish and wildlife propagation).

3. Human use of or access to the facility and adjacent lands, including but not limited to:

   a. Recreation;
   b. Hunting;
   c. Residential;
   d. Commercial; and
   e. Relationship between population locations and prevailing wind direction.

4. A general description of the biota in surface water bodies on, adjacent to, or affected by the facility.

5. A general description of the ecology within and adjacent to the facility.

6. A general demographic profile of the people who use or have access to the facility and adjacent land, including, but not limited to: age; sex; and sensitive subgroups.

7. A description of any known or documented endangered or threatened species near the facility.

APPENDIX C

Corrective Measures Study (CMS) Plan Outline

CORRECTIVE MEASURE STUDY PLAN OUTLINE

SCOPE

The Corrective Measure Study consists of four tasks:

Task VIII: Identification and Development of the Corrective Measure Alternatives

A. Description of Current Situation
B. Establishment of Corrective Action Objectives
C. Screening of Corrective Measures Technologies
D. Identification of the Corrective Measure Alternative

Task IX: Evaluation of the Corrective Measure Alternatives

A. Technical/Environmental/Human Health/Institutional
B. Cost Estimate

Task X: Justification and Recommendation of the Corrective Measure or Measures

A. Technical
B. Environmental
C. Human Health

Task XI: Reports

A. Progress
B. Draft
C. Final
D. Public Review and Final Selection of Corrective Measure

TASK VIII: IDENTIFICATION AND DEVELOPMENT OF THE CORRECTIVE ACTION ALTERNATIVES

Based on the results of the RCRA Facility Investigation and consideration of the identified potential corrective measure technologies (Task II), the Permittee shall identify, screen and develop the alternatives for removal, containment, treatment and/or other remediation of the contamination based on the objectives established for the corrective action.

A. Description of Current Situation

The Permittee shall submit an update to the information describing the current situation at the facility and the known nature and extent of the contamination as documented by the RCR Facility Investigation Report. The Permittee shall provide an update to information presented in Task I of the RFI to the Agency regarding previous response activities and in interim measures which have or are being implemented at the facility. The Permittee shall also make a facility-specific statement of the purpose for the response, based on the results of the RCRA Facility Investigation. The statement of purpose should identi the actual or potential exposure pathways that should be addressed by corrective measures.

B. Establishment of Corrective Action Objectives

The Permittee shall propose for EPA review and approval facility-specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RCRA Facility Investigation, EPA guidance, and the requirements of any applicable Federal statutes. At a minimum, all corrective actions concerning ground water releases from regulated units must be consistent with, and as stringent as, those required under 40 CFR 264.100.

C. Screening of Corrective Measure Technologies

The Permittee shall review the results of the RCRA Facility Investigation and reassess the technologies specified in Task I and to identify additional technologies which are applicable at the facility. The Respondent shall screen the preliminary corrective measure technologies identified in Task II of the RC Facility Investigation and any supplemental technologies to eliminate those that may prove infeasible to implement, that re on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within reasonalbe time period. This screening process focuses on eliminating those technologies which have severe limitations fo a given set of waste and site-specific conditions. The screeni step may also eliminate technologies based on inherent technolo limitations.

Site, waste, and technology characteristics which are used to scree inapplicable technologies are described in more detail below:

1. Site Characteristics

   Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should b eliminated from further consideration;

2. Waste Characteristics

   Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important pa of the screening process. Technologies clearly limited by thes waste characteristics should be eliminated from consideration. Waste characteristics particularly affect the feasibility of in-situ methods, direct treatment methods, and land disposal (on/off-site); and

3. Technology Limitations

   During the screening process, the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for eac technology considered. Technologies that are unreliable, perfo poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

D. <u>Identification of the Corrective Measure Alternatives</u>

   The Permittee shall develop the Corrective measure alternatives based on the corrective action objectives and analysis of potential corrective measure technologies, as presented in Task II of the RCRA Facility investigation and as supplemented following the preparation of the RFI Report. The Respondent shall rely on engineering practice to determine which of the previously identified technologies appear most suitable for the site. Technologies can be combined to form the overall corrective action alternatives. The alternatives developed should represent a workable number of option(s) that each appea to adequately address all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. The Respondent shall document the reasons for excluding technologies, identifi in Task II, as supplemented in the development of the alternatives.

<u>TASK IX: EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVES</u>

The Permittee shall describe each corrective measure alternative th passes through the Initial Screening in Task VIII and evaluate

Each corrective measure alternative and it's components. The evaluation shall be based on technical, environmental, human health and institutional concerns. The Permittee shall also develop cost estimates of each corrective measure.

A. Technical/Environmental/Human Health/Institutional

The Permittee shall provide a description of each corrective measure alternative which includes but is not limited to the following: preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and roug quantities of utilities required. The Permittee shall evaluate each alternative in the four following areas:

1. Technical;

The Permittee shall evaluate each corrective measure alternativ based on performance, reliability, implementability and safety.

a. The Permittee shall evaluate performance based on the effectiveness and useful life of the corrective measure:

i) Effectiveness shall be evaluated in terms of the ability t perform intended functions, such as containment, diversion removal, destruction, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. Any specific waste or site characteristics which could potentially impede effectiveness shall be considered. The evaluation should also consider the effectiveness of combinations of technologies; and

ii) Useful life is defined as the length of time the level of desired effectiveness can be maintained. Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected service lives of its life of the project.

b. The Permittee shall provide information on the reliability of each corrective measure including their operation and maintenance requirements and their demonstrated reliabilit

i) Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should b regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and

ii) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. The Respondent should evaluate whether the technologies have been used effectively under analogous conditions whether the combination of technologies have been use together effectively; whether failure of any one technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.

c. The Permittee shall describe the implementability of each corrective measure including the relative ease of installation (constructability) and the time required to achieve a given level of response:

i) Constructability is determined by conditions both internal and external to the facility conditions and include such items as location of underground utilities, depth to water table, heterogeneity of subsurface materials, and location of the facility (i.e., remote location vs. a congested urban area). The Permittee shall evaluate what measures can be tak to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities; and

ii) Time has two components that shall be addressed: the time it takes to implement a corrective measure and t time it takes to actually see beneficial results. Beneficial results are defined as the reduction of contaminants to some acceptable, pre-established leve

d. The Permittee shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those to workers during implementation. Factors to consider are fire, explosion, and exposure to hazardous substances.

2. Environmental;

The Permittee shall perform an Environmental Assessment fo each alternative. The Environmental Assessment shall focu on the facility conditions and pathways of contamination actually addressed by each alternative. The Environmental Assessment for each alternative will include, at a minimum an evaluation of: the short- and long-term beneficial and adverse effects of the response alternative; andy adverse effects on environmentally sensitive areas; and an analysi of measures to mitigate adverse effects.

3. Human Health; and

The Permittee shall assess each alternative in terms of th extent to which it mitigates short-and long-term potential exposure to any residual contamination and protects human health both during and after implementation the corrective measure. The assessment will describe the concentrations and characteristics of the contaminants on-site, potential exposure routes, and potentially affected population. Eac alternative will be evaluated to determine the level of exposure to contaminants and the reduction over time. For management of mitigation measures, the relative reduction impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to EPA.

4. Institutional.

The Permittee shall assess relevant institutional needs for eac alternative. Specifically, the effects of Federal, state and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative.

B. Cost Estimate

The Permittee shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment o the alternative). The cost estimate shall include both capital and operation and maintenance costs.

1. Capital costs consist of direct (construction) and indirect (nonconstruction and overhead) costs.

   a. Direct capital costs include:

      i) Construction costs: Costs of materials, labor (including fringe benefits and worker's compensation), and equipment required to install the corrective measure.

      ii) Equipment costs: Costs of treatment, containment disposal and/or service equipment necessary to implement the action; these materials remain unti the corrective action is complete;

      iii) Land and site-development costs: Expenses associated with purchase of land and development of existing property; and

      iv) Buildings and services costs: Costs of process a nonprocess buildings, utility connections, purchased services, and disposal costs.

b. Indirect capital costs include:

i) Engineering expenses: Costs of administration, design, construction supervision, drafting, and testing of corrective measure alternatives;

ii) Legal fees and license or pemit costs: Administrative and technical costs necessary to obtain licenses and permits for installation and operation;

iii) Startup and shakedown costs: Costs incurred during corrective measure startup; and

iv) Contingency allowances: Funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate facility characterization.

2. Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. The Permittee shall consider the following operation and maintenance cost components:

a. Operating labor costs: Wages, salaries, training, overhead, and fringe benefits associated with the labo needed for post-construction operations;

b. Maintenance materials and labor costs: Costs for labor, parts, and other resources required for routine maintenance of facilities and equipment;

c. Auxillary materials and energy: Costs of such items a: chemicals and electricity for treatment plant operations, water and sewer service, and fuel;

d. Purchased services: Sampling costs, laboratory fees, and professional fees for which the need can be predicted;

e. Disposal and treatment costs: Costs of transporting, treating, and disposing of waste materials, such as treatment plant residues, generated during operations;

f. Administrative costs: Costs associated with administration of corrective measure operation and maintenance not included under other categories;

g. Insurance, taxes, and licensing costs: Costs of such items as liability and sudden accident insurance; real estate taxes on purchased land or right-of-way; licensing fees for certain technologies; and permit renewal and reporting costs;

h. Maintenance reserve and contingency funds: Annual payments into escrow funds to cover (1) costs of anticipated replacement or rebuilding of equipment and (2) any large unanticipated operation and maintenance costs; and

i. Other costs: Items that do not fit any of the above categories.

TASK X: JUSTIFICATION AND RECOMMENDATION OF THE CORRECTIVE MEASURE OR MEASURES

The Permittee shall justify and recommend a corrective measure alternative using technical, human health, and environmental criteria. This recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Tradeoffs among health risks, environmental effects, and other pertinent factors shall be highlighted. The U.S. EPA will select the corrective measure alternative or alternatives to be implemented based on the results of Task IX and X. At a minimum, the following criteria will be used to justify the final corrective measure or measures.

A. Technical

1. Performance - corrective measure or measures which are most effective at performing their intended functions and maintaining the performance over extended periods of time will be given preference;

2. Reliability - corrective measure or measures which do not require frequent or complex operation and maintenance activities and that have proved effective under waste and facility conditions similar to those anticipated will be given preference;

3. Implementability - corrective measure or measures which can be constructed and operating to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time will be preferred; and

4. Safety - corrective measure or measures which pose the least threat to the safety of nearby residents and environments as well as workers during implementation will be preferred.

B. Human Health

The corrective measure or measures must comply with existing U.S. EPA criteria, standards, or guidelines for the protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.

C. Environmental

The corrective measure or measures posing the least adverse impact (or greatest improvement) over the shortest period of tim on the environment will be favored.

TASK XI: REPORTS

The Permittee shall prepare a Corrective Measure Study Report presenting the results of Task VIII through X and recommending a corrective measure alternative. Copies of the preliminary report shall be provided by the Permittee to EPA for review and EPA for approval.

A. Progress

The Permittee shall at a minimum provide the EPA with signed, monthly progress reports containing:

1. A description and estimate of the percentage of the CMS completed;

2. Summaries of all findings;

3. Summaries of all changes made in the CMS during the reportinc period;

4. Summaries of all contacts with representative of the local community, public interest groups or State government durinc the reporting period;

5. Summaries of all problems or potential problems encountered during the reporting period;

6. Actions being taken to rectify problems;

7. Changes in the personnel involved with the CMS during reporting period;

8. Projected work for the next reporting period; and

9. Copies of daily reports, inspection reports, laboratory/ monitoring data, etc.

B. Draft

The Report shall at a minimum include:

1. A description of the facility;

   a. Site topotgraphic map & preliminary layouts.

2. A summary of the corrective measure or measures and rationale for selection;

   a. Description of the corrective measure or measures and rationale for selection;

   b. Performance expectations;

   c. Preliminary design criteria and rationale;

   d. General operation and maintenance requirements; and

   e. Long-term monitoring requirements.

3. A summary of the RCRA Facility Investigation and impact on the selected corrective measure or measures;

   a. Field studies (ground-water, surface water, soil, air); and

   b. Laboratory studies (bench scale, pick scale).

4. Design and Implementation Precautions;

   a. Special technical problems;

   b. Additional engineering data required;

   c. Permits and regulatory requirements;

   d. Access, easements, right-of-way;

   e. Health and safety requirements; and

   f. Community relations activities.

5. Cost Estimates and Schedules;

   a. Capitol cost estimate;

   b. Operation and maintenance cost estimate; and

   c. Project schedule (design, construction, operation).

Copies of the draft shall be provided by the Permittee to EPA.

C. <u>Final</u>

The Permittee shall finalize the Corrective Measure Study Repor[t] incorporating comments received from EPA on the Draft Correctiv[e] Measure Study Report. The report shall become final upon EPA approval.

D. Public Review and Final Selection of Corrective Measures

Upon receipt of the Final Corrective Measure Study Report, EPA shall announce its availability to the public for review and comment. At the end of the comment period, EPA shall review the comments and then inform the Permittee of its final decision as to the approved Corrective Measures to be implemented.

Appendix D

Facility Submission Summary

A summary of the planned reporting requirements contained in the EPA RCRA Permit is presented below:

Facility Submission Requirements	Due Date
RFI Plan for SWMU(s) identified at time of permit issuance in Condition II.A.1.	120 days after effective date of permit
RFI Progress Reports Condition II.C.4.	Quarterly, beginning 90 days from implementation of RFI Plan*
Draft RFI Report Condition II.C.5.	90 days after RFI completion
Final RFI Report Condition II.C.5.	Thirty (30) days after receipt of EPA comments on Draft RFI Report
Interim Measures Notification Condition II.D.2.	30 days prior to implementation
Interim Measures Progress Reports Condition II.D.5.	Semi-annually, beginning 180 days from implementation of Interim measures *
Interim Measure Report Condition II.D.6.	Within 90 days of completion of Interim Measures
Corrective Measures Study Plan Condition II.E.2.	Within 90 days of notification by EPA
Imminent Hazard Report Conditions II.F.1. and II.F.2.	Orally within 24 hours written within 15 days
Notification of the discovery of additional SWMUs not already identified in Condition II.A.1. Condition II.B.1	Within 15 days of discovery
RFA Plan (SWMUs discovered after permit issuance) Condition II.B.2.	Within 60 days of notification
RFA Progress Reports Condition II.B.3.	Quarterly, beginning 90 days from implementation of RFA Plan*
RFA Report Condition II.B.4.	Within 60 days of RFA Completion
RFI Plan (SWMUs discovered after permit issuance) Condition II.C.2.	Within 45 days of submitting the RFA Report Under II.B.4.

The above reports must be signed and certified in accordance with 40 CFR §270.11.

* This applies to RFI/RFA/Interim Measures execution that requires for more than 180 days.

APPENDIX F

Pinellas Plant
Air Emissions Operating Permit

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FLORIDA

Department of Environmental Protection

Lawton Chiles
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Virginia B. Wetherell
Secretary

NOTICE OF PERMIT AMENDMENT

CERTIFIED MAIL

PERMITTEES:

OWNER-OPERATOR

Mr. Charles E. Rainey, Chairman
Pinellas County Industry Council
2200 Tall Pines Drive, Suite 100
Largo, FL 34641

Co-Operator

Mr. Richard E. Glass
Area Manager
U.S. Department of Energy
P.O. Box 2900
Largo, FL 34649

Co-Operator

Mr. Edward E. Mayer
Dir. Environmental Management
Lockheed Martin Specialty
Components
P.O. Box 2908
Largo, FL 34649

Dear Mr. Rainey:

Re: Letters dated 07/10/95, 08/07/95, 09/08/95, and 09/12/95
DEP Permit No. AO52-233355

Enclosed is amended Permit No. AO52-233355 for the operation of a specialty components manufacturing facility, issued pursuant to Section 403.087, Florida Statutes.

A person whose substantial interests are affected by this amended permit may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of receipt of this amended permit. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this amended permit. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

This amended permit is final and effective on the date filed with the Clerk of the Department unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition and conforms to Rule 17-

103.070, F.A.C. Upon timely filing of a petition or a request for an extension of time this amended permit will not be effective until further Order of the Department.

When the Order (Amended Permit) is final, any party to the Order has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date the Final Order is filed with the Clerk of the Department.

This letter must be attached to and becomes a part of permit A052-233355. If you have any questions, please call Mr. Jim McDonald of my staff at (813)744-6100 extension 106.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

James L. McDonald

James L. McDonald
Air Permitting Engineer

cc: PCDEM
David A. Buff, P.E.
Richard E. Glass
Edward E. Mayer

CERTIFICATE OF SERVICE

This is to certify that this NOTICE OF AMENDED PERMIT and all copies were mailed by certified mail before the close of business on 10/03/95 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGEMENT FILED, on this date, pursuant to Section 120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledge.

Marilyn Quispe (Clerk) 10/03/95 (Date)

DEPARTMENT OF ENVIRONMENTAL PROTECTION
FLORIDA

Department of Environmental Protection

Lawton Chiles
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Virginia B. Wetherell
Secretary

PERMITTEES:

OWNER-OPERATOR

Pinellas County Industry Council
2200 Tall Pines Drive, Suite 100
Largo, FL 34641

CO-OPERATOR
U.S. Department of Energy
P.O. Box 2900
Largo, Fl 34649

CO-OPERATOR
Lockheed Martin Specialty Components
P.O. Box 2908
Largo, FL 34649

Permit No.: A052-233355
County: Pinellas
Originally Issued: 04/24/94
1st Amended Date: 06/22/95
2nd Amended Date: 10/03/95
Expiration Date: 01/25/99
Project: Specialty Components Manufacturing Facility

This amended permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 62-209 through 62-297 & 62-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the operation of a specialty components manufacturing facility engaged in the design, development and production of specialized electronic and mechanical equipment. The usages of these specialty components include applications in support of the nation's defense program and other commercialized products. During the manufacturing of the components, specific chemical constituents and volatile organic compound/organic chemicals are emitted from buildings/areas as listed below and in Table 1 (pages 26 & 27) attached to the application dated October 8 & 13, 1992. The buildings/areas are further described in Section 3 and Appendix 1, as amended in a June 23, 1993 response, a February 7, 1995 response, an April 20, 1995 response, and a September 12, 1995 response.

PERMITTEES:
Pinellas County Industry Council
&
U.S. Department of Energy
&
Lockheed Martin Specialty Components

PERMIT No.: A052-233355
PROJECT: Specialty Components Manufacturing Facility

BUILDING 100 - Area Nos.

103 - Test Equipment Construction (w/paint spray booth)
104 - Machine Shop
105 - Ceramics Manufacture
106 - Tool and Grinding Room
108 - Tube Exhaust
109 - Manufacturing Area
110 - Optoelectronics Production
111 - Magnetics Transfer Presses/Encapsulation
112 - Generator Assemble, FE Assembly and Blast Room
113 - Solder Training Area (w/degreaser)
115 - Audio Visual Photo Laboratory
116 - Capacitor Assemble and Potting
117 - Metalizing and Plating
122* - Particulate Contamination Control Laboratory
123 - Calibration/Vacuum and Maintenance
138 - Vapor Blast and Resin Casting
139 - Vapor Blast and Resin Casting
142 - Assembly
143A - Clean Room (w/Scrubber #1)
143B - Chemical Cleaning (Scrubber #2)
145 - Ceramics (N/A, DEEMED INSIGNIFICANT SOURCE)
146 - Hydrogen Furnace
148* - Environmental, Health and Safety Offices
150 - Assembly and Test (N/A, DEEMED INSIGNIFICANT SOURCE)
154 - Transducer, Film Development, and Model Shop Areas
155* - Chemistry Laboratory
157* - Gas Analysis Laboratory
159* - Advanced Analysis Laboratory
160* - Polymers and Chemistry Laboratory
161* - Surface Analysis
162* - Metallurgy Laboratory
163* - Materials and Processes Laboratory
164* - Process Support Laboratory
168 - Oscillators
175 - Quartz Devices (w/cleaning console)
176* - Environmental Radiological Laboratory **(Moved to Area 350)**
179 - Field Test Systems Area
180 - Capacitor Areas
181 - Surface Mount Facility
182 - Tube Development
183 - Generator (w/paint spray booth)

PERMITTEES:
Pinellas County Industry Council
&
U.S. Department of Energy
&
Lockheed Martin Specialty Components

PERMIT No.: A052-233355
PROJECT: Specialty Components Manufacturing Facility

185* - Polymers-Foam Encapsulation
192 - Ceramic Areas
193 - Magnetics and FT Generators
194 - Ceramics Processing
195 - Lithium Battery (w/Scrubber #3 for dry room)
196* - Component Product Evaluation Laboratory
307 - Power Sources Development Dry Room
313 - Special Components Production
316 - LAMB-Lithium Ambient Batteries Test and Development Areas
330 - Glassing Area
331 - E.B. Weld
333 - Glassing, Test and Inspection
336 - Glassing, Test and Inspection
348 - Optoelectronics and Pre-Pack Magnetics
349 - Power Sources Development Dry Room
350* - Standard Lab, Instrumentation Lab, Ambient Battery, QA Areas, **Environmental Radiological Laboratory (w/Scrubber #4)**
351 - Calibration Maintenance/Resonator Clock, Maintenance Vacuum (w/Scrubber #5)
353 - Iron Disulfide (w/Scrubber #6 and Scrubber #7)

<u>Building 200</u> - General VOC/OC and HAP usage

<u>Building 400</u> - General VOC/OC and HAP usage

<u>Building 500</u> - Utility Building (w/Scrubber #8)

<u>Building 700</u> - Maintenance Shop (w/paint spray booth & degreaser)

<u>Building 800</u> - General VOC/OC and HAP usage

<u>Building 1040*</u> - Chemical Storage, Handling, Treatment and Shipping

<u>Building 1200</u> - General VOC/OC and HAP Usage
- Shooting Range (N/A, DEEMED INSIGNIFICANT SOURCE)

<u>Building 1400</u> - General VOC/OC and HAP Usage

<u>Open Area 9999</u> - Thermal Treatment of RCRA Waste (N/A, DEEMED INSIGNIFICANT SOURCE)

The most recent updated equipment list should be used to accurately determine where the above equipment and processes are located.

PERMITTEES:
Pinellas County Industry Council
&
U.S. Department of Energy
&
Lockheed Martin Specialty Components

PERMIT No.: AO52-233355
PROJECT: Specialty Components Manufacturing Facility

* These buildings/areas are exempt from permitting per Rule 62-210.300, F.A.C., however material usage, chemical usage and VOC/OC emissions are included in the facility's total allowable limitations as stipulated in the specific conditions of this permit.

None of the particulate and volatile organic compound (VOC) emitting sources as described in the construction application dated October 8 & 13, 1992 are subject to the requirements of particulate RACT or VOC RACT.

SUMMARY OF SOURCES DEEMED INSIGNIFICANT
The emissions from the following point sources are insignificant and are listed here for recordkeeping purposes. They are individually subject to the air pollution rules addressed in the appropriate Florida Administrative Code, but do not require special monitoring or testing: Area 104 - Sand Blaster Unit, Area 105 - Spray Dryer, 3 Stokes Presses, 2 Servo Mills, 3 N/C Machining Centers, Milling Machine, Tracer Lathe, Cut Off Saw, Lathe, Area 106 - 2 SM Lathes, Lathe, Area 111 - Power Hood, Area 112 - 2 Micro Blast Units, Area 138/139 - Exhaust Hood, 3 Pencil Blasters, Glass Blast Machine, Plastic Bead Blast, 2 Sand Blasters, Lathes, Drills, Band Saw, Sander, Area 145 - Lathe (Hardinge), Area 150 - Sand Blaster, Area 179 - Glass Bead Blaster, Area 183 - 2 Pencil Blaster Units, 2 Sand Blaster Units, Area 185 - Pencil Blaster Unit, Area 192 - Pencil Blaster Unit, 5 Lathes, 3 Grinders, Powder Mix Hood, Spray Drier, Area 194 - 2 PBO Hoods, Area 195 - Dehumidifier, Area 351 - Sand Blaster Unit, Building 1200 - Shooting range for security personnel, Open Area 9999 - Thermal RCRA Waste Treatment-----Emissions from these sources deemed insignificant and not requiring an air pollution permit are:

Particulate ----- 0.6 tons/yr.
Sulfur Dioxide -- 0.7 tons/yr.
Nitrogen Oxides - 0.5 tons/yr.
Carbon Monoxide - 0.1 tons/yr.
Hydrocarbons ---- 0.025 tons/yr.

Location: 7887 Bryan Dairy Road, Largo

UTM: 17-327.8E 3084.3N

Replaces Permit No.: AC52-206678

ARMS Facility ID: 0220

ARMS Emission Unit ID:
001 - General VOC's
002 - Area 143A, Acid Scrubber #1
003 - Area 350, Acid Scrubber #4
004 - Area 351, Acid Scrubber #5
005 - Area 353, Acid Scrubber #6
006 - Area 353, Acid Scrubber #7
007 - Building 500, Acid Scrubber #8
008 - Area 143B, Acid Scrubber #2
009 - Area 195, Acid Scrubber #3

NOTE: Please reference the Permit No., Facility ID, and Emission Unit ID in all correspondence, test report submittals, applications, etc.

SPECIFIC CONDITIONS:

OPERATING LIMITATIONS

1. A part of this permit is the attached 15 General Conditions. [Rule 62-4.160, F.A.C.]

2. All applicable rules of the Department along with design discharge and operating limitations specified in the application shall be adhered to. The permit holders may also need to comply with county, municipal, federal, or other state regulations. [Rule 62-4.070(7), F.A.C.]

3. Operation of this facility shall not exceed 8760 hrs./yr. [Permit AC52-206678]

4. No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. [Rule 62-296.320, F.A.C. and Pinellas County Code, Section 58-178]

5. Pursuant to Rule 62-296.320, F.A.C., this facility shall comply with the following:

A. All equipment, pipes, hoses, lids, fittings, etc., shall be operated /maintained in such a manner as to minimize leaks, fugitive emissions and spills of VOC/OC materials.

B. All solvents from solvent washings (equipment clean-up) shall be directed into containers that prevent evaporation into the atmosphere. Evaporation from the alcohol wipes, during production, is specifically excluded from this requirement, however it shall be accounted for within the plant-wide VOC/OC emissions total.

UTILIZATION AND EMISSION LIMITS

6. The total maximum VOC/OC usage rate for this facility is 49.8 tons per any 12 consecutive month period as stated in Appendix 3 of the construction application dated October 8 & 13, 1992. [Permit AC52-206678]

7. Pursuant to the construction application dated October 8 & 13, 1992, the maximum volatile organic compounds (VOC) and organic chemicals (OC) emissions from this facility shall not exceed 19.52 tons of VOC and 21.58 tons of OC per any 12 consecutive month period. [Permit AC52-206678]

8. The maximum allowable emission for each chemical constituent identified as a Florida Air Toxic, VOC, OC, or other regulated pollutant from this facility shall not exceed the corresponding lbs./day and lbs./yr. value as listed in Appendix No. 6 which was originally submitted with the construction application dated October 8 & 13, 1992 and amended in an **October 3, 1995** letter. Appendix 6 may be amended in accordance with Specific Condition No. 10. [Permit AC52-206678]

9. The maximum usage rate for each chemical constituent from this facility shall not exceed the corresponding lbs./day and lbs./yr. value as listed in the amended Appendix No. 6 (**10/02/95**) in an October 3, 1995 letter and made an attachment to this amended permit. [Permit AC52-206678]

10. At the request of the permittee(s) dated April 11, 1995, May 25, 1995, and the May 24, 1995 amended format of Appendix 6, usages and emissions of new chemicals or increases in usages of other chemicals may be implemented as follows:

A. Provided VOC/OC and HAP total usages and emissions do not contravene other permit conditions or Department rules, new chemicals currently not used (with 0.0 usages in Appendix 6) may be used upon submittal of a revised Appendix 6 to the Pinellas County Department of Environmental Management (PCDEM) and this office. The new emission shall not be above the Appendix 6 Impact Based Maximum Emission Rates (lb/hr and lb/yr). Immediate tracking of usage and emissions and its related equipment shall be followed pursuant to Specific Condition Nos. 16 and 17 upon said notification.

B. Provided VOC/OC and HAP total usages and emissions do not contravene other permit conditions or Department rules, currently permitted chemical usages and emissions may be increased upon submittal of a revised Appendix 6 to the PCDEM and this office. The revised Appendix 6 with the requested changes shall demonstrate compliance with Florida's Air Toxic Strategy version 3.0.

11. Visible emissions from each of the 8 acid scrubbers shall not be equal to or greater than 20% opacity in accordance with Rule 62-296.310, F.A.C.

12. Pursuant to Rule 62-296.310, F.A.C., as an indicator the unconfined particulate emissions from the paint spray booths are being adequately controlled, there shall be no visible emissions. If visible emissions are observed, it will not be a violation in an of itself, but an indicator that additional controls devices and/or measures may be necessary.

COMPLIANCE TESTING

13. Each of the 8 acid scrubbers shall be tested for visible emissions annually within 60 days prior to the date of March 10. The test reports shall be submitted to this office and the Pinellas County Department of Environmental Management (PCDEM) within 45 days of testing. [Rules 62-297.340(1)(c) and 62-297.570(2), F.A.C.]

14. Compliance with the visible emission limitation of Specific Condition No. 11 shall be determined using EPA Method 9 contained in 40 CFR 60, Appendix A (July 1, 1991) and adopted by reference in Rule 62-297.401, F.A.C. Each test shall be at least 30 minutes in duration and conducted when the sources controlled by the scrubber being tested are in normal operation. The minimum requirements for

stationary point source emissions test procedures and reporting shall be in accordance with 40 CFR 60, Appendix A and Rule 62-297.570(3), F.A.C.

15. The permittee(s) shall notify in writing the PCDEM and this office at least 15 days prior to the date on which each formal compliance test is to begin of the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted. [Rule 62-297.340(1)(i), F.A.C.]

RECORDKEEPING REQUIREMENTS

16. Pursuant to Rule 62-4.070(3), F.A.C., monthly logs and Chemical Usage Budgets (CMTS, Chemical Usage Issuance Logs), as submitted in the October 13 and December 17, 1993 responses, shall be kept for this facility to document compliance with the limitations of Specific Condition Nos. 6, 7, 8, and 9 and retained on file for at least 2 years. Monthly logs shall be completed by the end of the following month. At a minimum, for each chemical constituent listed in Appendix No. 6, the log shall include the following:

Usage Information

A. At the end of each month, the total of each of chemical constituents used in lbs./month with a 12 consecutive month total, except those non-VOC/OC constituents which do not exceed 25% of the No Threat Level (NTL) value for that chemical.

B. At the end of each month, the total of all VOC/OC chemical constituents used with a 12 consecutive month total.

C. At the end of each calendar year, the total for each of the chemical constituents used, including those non-VOC/OC constituents which were excluded in A. above.

Emission Information

D. At the end of each month, the total emissions of each chemical constituent used in lbs./month with a 12 consecutive month total, except those non-VOC/OC constituents which do not exceed 25% of the No Threat Level (NTL) value for that chemical.

E. At the end of each month, the total emission of all VOC/OC chemical constituents with a 12 consecutive month total.

F. At the end of each calendar year, the total for each of the chemical constituents, including those non-VOC/OC constituents which were excluded in D. above.

Documentation of the amount of each chemical constituent reclaimed will use a mass balance method to determine usage/emissions (amount used minus amount collected for disposal or recycle). Supporting documentation (Chemical usage tracking logs, MSDS sheets, purchase orders, EPA "As Supplied" data sheets, etc.) shall be kept for each chemical constituent and associated products which includes sufficient information to determine usage rates and emissions. These records shall be made available to the Department or the PCDEM upon request.

17. Pursuant to Rule 62-4.070(3), F.A.C. and in order to comply with Specific Condition Nos. 10 and 13, the permittees shall demonstrate compliance with the emission limitations and provide reasonable assurance that the short-term NTL's (8-hour and 24-hour averaging times) will not be exceeded for any new chemical constituent(s) to be added to Appendix No. 6 that have individual maximum annual usages greater than 1,000 lbs./yr. For each existing and new chemical, the permittee shall implement the internal "Administrative Control Process" (as submitted in the responses dated October 13 and December 17, 1993), which includes provisions for allocating and tracking of unit budgetaries of the chemical in various work areas. Tracking of these chemicals shall be performed weekly and the total usages of each chemical shall not exceed the total allowable usages for each chemical to be shown in the amended Appendix No. 6.

18. As requested by the permittees in a facsimile dated December 16, 1993, in the event the Department determines that Specific Condition Nos. 16 and 17 do not provide adequate verification of tracking usages/emissions, more frequent or additional recordkeeping may be required. [Rule 62-4.070(3), F.A.C.]

19. Pursuant to Pinellas County Code, Section 58-128, the permittees shall comply with the "Operation and Maintenance Plan" (O&M) Plan dated August 30, 1995 for all 8 scrubbers. The O&M Plan documentation logs shall be maintained at the facility for a minimum of two years. At a minimum the O&M Plan shall include:

A. The operating parameters of the pollution control devices.

B. Time table for routine maintenance of the pollution control devices as specified by the manufacturer.

C. Time table of routine weekly, bi-weekly, or monthly observations of the pollution control device.

D. A list of the type and quantity of required spare parts for the pollution control devices which are stored on the premises.

E. A record log which will indicate, at a minimum:

1. When maintenance was performed.
2. What maintenance was performed.
3. Who performed the maintenance.

20. Submit to the PCDEM and this office for this facility, each calendar year and on or before March 1, an annual operating report which includes the Emissions Report Section [DEP Form 62-210.900(5)] for the preceding calendar year pursuant to Rule 62-210.370(3), F.A.C.

OTHER REQUIREMENTS

21. At the requests of the permittee dated May 13, 1993 and April 11, 1995 and based on the modeling results submitted in the June 23 and October 13, 1993 responses, existing equipment may be moved as follows:

A. Equipment not associated with compounds requiring vent-specific ISCST modeling, may be relocated without further modeling.

B. Equipment associated with compounds, requiring vent-specific ISCST modeling, may be moved after appropriate modeling verifies that the associated NTL values are not exceeded.

c. Written notification of equipment relocations to areas or buildings included as part of this permit shall be made within 30 days to the PCDEM and this office. The written notification shall include a copy of modeling performed, if required.

22. Replace in kind of equipment may be installed at the facility as long as the associated chemical usages and emissions shall be limited to allow continued compliance with the total maximum material usage and emission limitations specified elsewhere in this permit. [Rule 62-4.070(3), F.A.C.]

23. An application to renew this operating permit shall be submitted to the Southwest District Office of the Department and one copy to the PCDEM at least 60 days prior to the expiration date of this permit pursuant to Rule 62-4.090(1), F.A.C. The renewal operating permit application shall include the 2 most recent calendar months of the monthly and weekly logs required by Specific Condition Nos. 16 and 17. One copy of the application (w/attachments) should also be submitted to the PCDEM, pursuant to Rule 62-209, F.A.C. Note, the requirements of Rules 62-210.300(2)(b) and 62-213.420, F.A.C. may supersede this requirement.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

W. C. Thomas, P.E.
District Air Program Administrator

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ATTACHMENT - GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

GENERAL CONDITIONS:

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
( ) Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

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APPENDIX 6-- MAXIMUM ANNUAL AND HOURLY CHEMICAL USAGES, MAXIMUM ANNUAL AND HOURLY EMISSIONS, AND IMPACT ANALYSIS RESULTS USING ISCST2 MODEL FOR DOE PINELLAS PLANT
REVISED (4/17/96)

		Maximum Usages (a)				Impact Based Maximum Emission Rate (b)				Maximum Permitted Emission Rates (a)				No-Threat Levels (µg/m³)			Predicted Maximum Impacts (µg/m³) (c)		
Chemicals	HAP	Annual (lb/yr)	Weekly (lb/wk)	Daily (lb/day)	Hourly (lb/hr)	100 % NTL (lb/hr)	25 % NTL (lb/hr)	100 % NTL (lb/yr)	25 % NTL (lb/yr)	Annual (lb/yr)	Max. wkly (lb/wk)	Max. Daily (lb/day)	Max. Hourly (lb/hr)	8-Hour	24-Hour	Annual	Short-term 8-Hour	Short-term 24-Hour	Annual
VOCs										For Volatile Organic Compounds (VOC) - See Note (d)									
1 2-dibromo-3-chloropropane	Y	0.0	0.0	0.0	0.0	N/A	N/A	114.2	N/A	0.0	0.0	0.0	0.0			2.00E-01	-	-	0.0
1-nitropropene		0.0	0.0	0.0	0.0	6.57	N/A	13,668	N/A	0.0	0.0	0.0	0.0	910	218.4		0.0	0.0	-
1, 2, 3-trichloropropene		0.0	0.0	0.0	0.0	4.33	N/A	9,011	N/A	0.0	0.0	0.0	0.0	600	144		0.0	0.0	-
1,1-dichloro-1-nitroethane		0.0	0.0	0.0	0.0	0.866	N/A	1,802	N/A	0.0	0.0	0.0	0.0	120	28.8		0.0	0.0	-
1,1-dichloroethylene ==> vinylidene chloride	Y	0.0	0.0	0.0	0.0	1.44	N/A	11.42	N/A	0.0	0.0	0.0	0.0	200	48	2.00E-02	0.0	0.0	0.0
1,1-dimethylhydrazine	Y	0.0	0.0	0.0	0.0	0.0866	N/A	180.2	N/A	0.0	0.0	0.0	0.0	12	2.88		0.0	0.0	-
1,1,1,2-tetrachloro-2,2-difluoroethane		0.0	0.0	0.0	0.0	602.2	N/A	1,252,503	N/A	0.0	0.0	0.0	0.0	83400	20016		0.0	0.0	-
1,1,1,2-tetrachloroethane		0.0	0.0	0.0	0.0	N/A	N/A	79.94	N/A	0.0	0.0	0.0	0.0			1.40E-01	-	-	0.0
1,1,2-trichloroethane	Y	0.0	0.0	0.0	0.0	3.97	N/A	35.97	N/A	0.0	0.0	0.0	0.0	550	132	6.30E-02	0.0	0.0	0.0
1,1,2,2-tetrachloro-1,2-difluoroethane		0.0	0.0	0.0	0.0	602.2	N/A	1,252,503	N/A	0.0	0.0	0.0	0.0	83400	20016		0.0	0.0	-
1,1,2,2-tetrachloroethane	Y	0.0	0.0	0.0	0.0	0.498	N/A	9.71	N/A	0.0	0.0	0.0	0.0	69	16.56	1.70E-02	0.0	0.0	0.0
1,2 diaminoethane ==> ethylenediamine		0.0	0.0	0.0	0.0	1.81	N/A	3,755	N/A	0.0	0.0	0.0	0.0	250	60		0.0	0.0	-
1,2 dibromoethane ==> ethylene dibromide	Y	0.0	0.0	0.0	0.0	N/A	N/A	2.57	N/A	0.0	0.0	0.0	0.0			4.50E-03	-	-	0.0
1,2-dichloroethane ==> ethylene dichloride	Y	0.0	0.0	0.0	0.0	2.89	N/A	21.70	N/A	0.0	0.0	0.0	0.0	400	96	3.80E-02	0.0	0.0	0.0
1,2-dichloroethylene		0.0	0.0	0.0	0.0	57.3	N/A	119,093	N/A	0.0	0.0	0.0	0.0	7930	1903.2		0.0	0.0	-
1,2-dichloropropane ==> propylene dichloride	Y	0.0	0.0	0.0	0.0	25.1	N/A	2,284	N/A	0.0	0.0	0.0	0.0	3470	832.8	4.00E+00	0.0	0.0	0.0
1,3-butadiene	Y	0.0	0.0	0.0	0.0	1.59	N/A	2.06	N/A	0.0	0.0	0.0	0.0	220	52.8	3.60E-03	0.0	0.0	0.0
1,3-dichloropropene	Y	0.0	0.0	0.0	0.0	0.361	N/A	11,420	N/A	0.0	0.0	0.0	0.0	50	12	2.00E+01	0.0	0.0	0.0
2-chloro-1,3-butadiene ==> (beta)-chloroprene	Y	0.0	0.0	0.0	0.0	2.60	N/A	1,713	N/A	0.0	0.0	0.0	0.0	360	86.4	3.00E+00	0.0	0.0	0.0
2-diethylaminoethanol		0.0	0.0	0.0	0.0	3.47	N/A	7,209	N/A	0.0	0.0	0.0	0.0	480	115.2		0.0	0.0	-
2-ethoxyethanol/glycol monoethyl ether (cellulose)	Y	0.0	0.0	0.0	0.0	1.30	N/A	114,202	N/A	0.0	0.0	0.0	0.0	180	43.2	2.00E+02	0.0	0.0	0.0
2-ethoxyethyl acetate		0.0	0.0	0.0	0.0	1.95	N/A	4,055	N/A	0.0	0.0	0.0	0.0	270	64.8		0.0	0.0	-
2-heptanone ==> methyl n-amyl ketone		0.0	0.0	0.0	0.0	16.8	N/A	34,992	N/A	0.0	0.0	0.0	0.0	2330	559.2		0.0	0.0	-
2-hexanone ==> methyl n-butyl ketone		0.0	0.0	0.0	0.0	1.44	N/A	3,004	N/A	0.0	0.0	0.0	0.0	200	48		0.0	0.0	-
2-methoxyethanol		0.0	0.0	0.0	0.0	1.16	N/A	11,420	N/A	0.0	0.0	0.0	0.0	160	38.4	2.00E+01	0.0	0.0	0.0
2-methyl aziridine ==> 1,2-propylene imine	Y	0.0	0.0	0.0	0.0	0.339	N/A	705.8	N/A	0.0	0.0	0.0	0.0	47	11.28		0.0	0.0	-
2-nitropropane	Y	0.0	0.0	0.0	0.0	2.60	N/A	11,420	N/A	0.0	0.0	0.0	0.0	360	86.4	2.00E+01	0.0	0.0	0.0
2,2,4-trimethylpentane	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
2,3-epoxy-1-propanol ==> glycidol		0.0	0.0	0.0	0.0	5.49	N/A	11,414	N/A	0.0	0.0	0.0	0.0	760	182.4		0.0	0.0	-
5-methyl-3-heptanone ==> ethyl amyl ketone		0.0	0.0	0.0	0.0	9.46	N/A	19,674	N/A	0.0	0.0	0.0	0.0	1310	314.4		0.0	0.0	-
acetaldehyde	Y	0.0	0.0	0.0	0.0	13.0	N/A	257.0	N/A	0.0	0.0	0.0	0.0	1800	432	4.50E-01	0.0	0.0	0.0
acetic anhydride		0.0	0.0	0.0	0.0	1.52	N/A	3,154	N/A	0.0	0.0	0.0	0.0	210	50.4		0.0	0.0	-
acetophenon	Y	0.0	0.0	0.0	0.0	N/A	N/A	57,101	N/A	0.0	0.0	0.0	0.0			1.00E+02	-	-	0.0
ACETYLENE		1025.0	39.4	7.88	0.99	N/A	N/A	N/A	N/A	1025.0	39.4	7.9	0.99	-	-	-	-	-	-
acrolein	Y	0.0	0.0	0.0	0.0	0.0166	N/A	11.42	N/A	0.0	0.0	0.0	0.0	2.3	0.552	2.00E-02	0.0	0.0	0.0
acrylic acid	Y	0.0	0.0	0.0	0.0	0.426	N/A	171.3	N/A	0.0	0.0	0.0	0.0	59	14.16	3.00E-01	0.0	0.0	0.0
allyl alcohol		0.0	0.0	0.0	0.0	0.347	N/A	2,855	N/A	0.0	0.0	0.0	0.0	48	11.52	5.00E+00	0.0	0.0	0.0
allyl chloride	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
allyl glycidyl ether ==> AGE		0.0	0.0	0.0	0.0	1.66	N/A	3,454	N/A	0.0	0.0	0.0	0.0	230	55.2		0.0	0.0	-
AMYL ACETATE		400.0	15.4	3.1	0.38	38.4	N/A	79,896	N/A	400.0	15.4	3.1	0.4	5320.0	1276.8	-	31.9	12.8	-
aniline	Y	0.0	0.0	0.0	0.0	0.549	N/A	571.0	N/A	0.0	0.0	0.0	0.0	76	18.24	1.00E+00	0.0	0.0	0.0
benzene	Y	0.0	0.0	0.0	0.0	0.217	N/A	68.52	N/A	0.0	0.0	0.0	0.0	30	7.2	1.20E-01	0.0	0.0	0.0
benzyl chloride	Y	0.0	0.0	0.0	0.0	0.375	N/A	780.9	N/A	0.0	0.0	0.0	0.0	52	12.48		0.0	0.0	-
bis (chloromethyl) ether	Y	0.0	0.0	0.0	0.0	3.6E-04	N/A	9.1E-03	N/A	0.0	0.0	0.0	0.0	0.05	0.012	1.60E-05	0.0	0.0	0.0
bromoform	Y	0.0	0.0	0.0	0.0	0.375	N/A	537.3	N/A	0.0	0.0	0.0	0.0	52	12.48	9.41E-01	0.0	0.0	0.0
bromomethane ==>methyl bromide	Y	0.0	0.0	0.0	0.0	1.37	N/A	456.8	N/A	0.0	0.0	0.0	0.0	190	45.6	8.00E-01	0.0	0.0	0.0
butane		0.0	0.0	0.0	0.0	274.4	N/A	570,685	N/A	0.0	0.0	0.0	0.0	38000	9120		0.0	0.0	-
BUTANONE,2 (Methyl Ethyl Ketone)	Y	500.0	19.2	3.85	0.48	42.6	N/A	45,681	N/A	500.0	19.2	3.8	0.48	5900.0	1416.0	80.0	39.9	15.96	0.9
BUTYL ACETATE		61.2	2.35	0.47	0.06	51.5	N/A	107,079	N/A	61.2	2.4	0.47	0.059	7130.0	1711.2	-	4.88	1.96	-
butyl acrylate		0.0	0.0	0.0	0.0	3.75	N/A	7,809	N/A	0.0	0.0	0.0	0.0	520	124.8		0.0	0.0	-
BUTYL ALCOHOL, N-		200.0	7.7	1.54	0.19	1.08	N/A	2,253	N/A	200.0	7.7	1.5	0.19	150.0	36.0	-	16.0	6.39	-
BUTYL ALCOHOL, SEC- OR TERT-		200.0	7.7	1.54	0.19	21.7	N/A	45,054	N/A	200.0	7.7	1.5	0.2	3000.0	720.0	-	16.0	6.4	-
BUTYL GLYCIDYL ETHER		1.92	0.074	0.015	1.8E-03	9.75	N/A	20,274	N/A	1.92	0.074	0.015	1.8E-03	1350.0	324.0	-	0.15	0.06	-
butyl mercaptan		0.0	0.0	0.0	0.0	0.130	N/A	270.3	N/A	0.0	0.0	0.0	0.0	18	4.32		0.0	0.0	-
butylamine		0.0	0.0	0.0	0.0	1.08	N/A	2,253	N/A	0.0	0.0	0.0	0.0	150	36		0.0	0.0	-
caprolactam, dust	Y	0.0	0.0	0.0	0.0	0.0722	N/A	150.2	N/A	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-
carbon disulfide	Y	0.0	0.0	0.0	0.0	2.24	N/A	114,202	N/A	0.0	0.0	0.0	0.0	310	74.4	2.00E+02	0.0	0.0	0.0
carbon tetrabromide		0.0	0.0	0.0	0.0	0.101	N/A	210.3	N/A	0.0	0.0	0.0	0.0	14	3.36		0.0	0.0	-
carbon tetrachloride ==> tetrachloromethane	Y	0.0	0.0	0.0	0.0	2.24	N/A	38.26	N/A	0.0	0.0	0.0	0.0	310	74.4	6.70E-02	0.0	0.0	0.0
carbonyl fluoride		0.0	0.0	0.0	0.0	0.390	N/A	811.0	N/A	0.0	0.0	0.0	0.0	54	12.96		0.0	0.0	-
carbonyl sulfide	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
chloral		0.0	0.0	0.0	0.0	N/A	N/A	1,142	N/A	0.0	0.0	0.0	0.0			2.00E+00	-	-	0.0
chloroacetaldehyde		0.0	0.0	0.0	0.0	0.231	N/A	480.6	N/A	0.0	0.0	0.0	0.0	32	7.68		0.0	0.0	-
chloroacetone		0.0	0.0	0.0	0.0	0.274	N/A	570.7	N/A	0.0	0.0	0.0	0.0	38	9.12		0.0	0.0	-
chloroacetyl chloride		0.0	0.0	0.0	0.0	0.0166	N/A	34.54	N/A	0.0	0.0	0.0	0.0	2.3	0.552		0.0	0.0	-
chlorobenzene ==> monochlorobenzene	Y	0.0	0.0	0.0	0.0	24.9	N/A	51,812	N/A	0.0	0.0	0.0	0.0	3450	828		0.0	0.0	-
chlorobromomethane ==> bromochloromethane		0.0	0.0	0.0	0.0	153.1	N/A	318,382	N/A	0.0	0.0	0.0	0.0	21200	5088		0.0	0.0	-
chloroform ==> trichloromethane	Y	0.0	0.0	0.0	0.0	3.54	N/A	24.55	N/A	0.0	0.0	0.0	0.0	490	117.6	4.30E-02	0.0	0.0	0.0
chloropicrin ==> nitrotrichloromethane		0.0	0.0	0.0	0.0	0.0484	N/A	100.6	N/A	0.0	0.0	0.0	0.0	6.7	1.608		0.0	0.0	-
cobalt carbonyl		0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
cresols, all isomers	Y	0.0	0.0	0.0	0.0	1.59	N/A	28,551	N/A	0.0	0.0	0.0	0.0	220	52.8	5.00E+01	0.0	0.0	0.0

APPENDIX 6-- MAXIMUM ANNUAL AND HOURLY CHEMICAL USAGES, MAXIMUM ANNUAL AND HOURLY EMISSIONS, AND IMPACT ANALYSIS RESULTS USING ISCST2 MODEL FOR DOE PINELLAS PLANT
REVISED (4/17/96)

		Maximum Usages (a)				Impact Based Maximum Emission Rate (b)				Maximum Permitted Emission Rates (a)				No-Threat Levels (µg/m³)			Predicted Maximum Impacts (µg/m³) (c)		
		Annual	Weekly	Daily	Hourly	100 % NTL	25 % NTL	100 % NTL	25 % NTL	Annual	Max. wkly	Max. Daily	Max. Hourly				Short-term	Short-term	Annual
Chemicals	HAP	(lb/yr)	(lb/wk)	(lb/day)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/wk)	(lb/day)	(lb/hr)	8-Hour	24-Hour	Annual	8-Hour	24-Hour	
crotonaldehyde		0.0	0.0	0.0	0.0	0.412	N/A	856.0	N/A	0.0	0.0	0.0	0.0	57	13.68		0.0	0.0	–
cumene	Y	0.0	0.0	0.0	0.0	17.8	N/A	571.0	N/A	0.0	0.0	0.0	0.0	2460	590.4	1.00E+00	0.0	0.0	0.0
cyanogen		0.0	0.0	0.0	0.0	1.52	N/A	17,130	N/A	0.0	0.0	0.0	0.0	210	50.4	3.00E+01	0.0	0.0	0.0
cyanogen bromide		0.0	0.0	0.0	0.0	N/A	N/A	45,681	N/A	0.0	0.0	0.0	0.0			8.00E+01	–	–	0.0
cyanogen chloride		0.0	0.0	0.0	0.0	0.0542	N/A	112.6	N/A	0.0	0.0	0.0	0.0	7.5	1.8		0.0	0.0	–
CYCLOHEXANE		22.9	0.88	0.18	0.02	148.7	N/A	309,371	N/A	22.9	0.88	0.18	0.022	20600.0	4944.0	–	1.82	0.73	–
cyclohexanol		0.0	0.0	0.0	0.0	14.9	N/A	30,937	N/A	0.0	0.0	0.0	0.0	2060	494.4		0.0	0.0	–
CYCLOHEXANONE		1.12	0.043	0.009	1.1E-03	7.22	N/A	15,018	N/A	1.12	0.043	8.6E-03	1.1E-03	1000.0	240.0	–	0.09	0.04	–
cyclohexene		0.0	0.0	0.0	0.0	145.8	N/A	303,384	N/A	0.0	0.0	0.0	0.0	20200	4848		0.0	0.0	–
cyclopentane		0.0	0.0	0.0	0.0	248.4	N/A	516,620	N/A	0.0	0.0	0.0	0.0	34400	8256		0.0	0.0	–
diacetone alcohol/4hydroxy-4methyl-2pentanone		0.0	0.0	0.0	0.0	17.2	N/A	35,743	N/A	0.0	0.0	0.0	0.0	2380	571.2		0.0	0.0	–
diazomethane	Y	0.0	0.0	0.0	0.0	0.0245	N/A	51.06	N/A	0.0	0.0	0.0	0.0	3.4	0.816		0.0	0.0	–
dibutyl phosphate		0.0	0.0	0.0	0.0	0.621	N/A	1,292	N/A	0.0	0.0	0.0	0.0	86	20.64		0.0	0.0	–
dichloroethyl ether ==> bis(2-chloroethyl)ether	Y	0.0	0.0	0.0	0.0	2.09	N/A	1.71	N/A	0.0	0.0	0.0	0.0	290	69.6	3.00E-03	0.0	0.0	0.0
dichlorofluoromethane		0.0	0.0	0.0	0.0	3.03	N/A	6,308	N/A	0.0	0.0	0.0	0.0	420	100.8		0.0	0.0	–
diethyl ether ==> ethyl ether		0.0	0.0	0.0	0.0	174.7	N/A	363,436	N/A	0.0	0.0	0.0	0.0	24200	5808		0.0	0.0	–
diethyl ketone		0.0	0.0	0.0	0.0	50.9	N/A	105,877	N/A	0.0	0.0	0.0	0.0	7050	1692		0.0	0.0	–
diethylamine		0.0	0.0	0.0	0.0	2.17	N/A	4,505	N/A	0.0	0.0	0.0	0.0	300	72		0.0	0.0	–
difluorodibromomethane		0.0	0.0	0.0	0.0	61.9	N/A	128,855	N/A	0.0	0.0	0.0	0.0	8580	2059.2		0.0	0.0	–
diisobutyl ketone ==> 2,6-dimethylheptanone		0.0	0.0	0.0	0.0	10.5	N/A	21,776	N/A	0.0	0.0	0.0	0.0	1450	348		0.0	0.0	–
diisopropylamine		0.0	0.0	0.0	0.0	1.52	N/A	3,154	N/A	0.0	0.0	0.0	0.0	210	50.4		0.0	0.0	–
dimethyl acetamide		0.0	0.0	0.0	0.0	2.60	N/A	5,406	N/A	0.0	0.0	0.0	0.0	360	86.4		0.0	0.0	–
dimethylamine		0.0	0.0	0.0	0.0	1.30	N/A	2,703	N/A	0.0	0.0	0.0	0.0	180	43.2		0.0	0.0	–
dimethyloxymethane ==> methylal		0.0	0.0	0.0	0.0	449.1	N/A	934,121	N/A	0.0	0.0	0.0	0.0	62200	14928		0.0	0.0	–
DIOXANE	Y	208.8	8.03	1.61	0.20	6.50	N/A	13,516	N/A	208.8	8.0	1.6	0.20	900.0	216.0	–	16.7	6.67	–
diphenylamine		0.0	0.0	0.0	0.0	0.722	N/A	11,420	N/A	0.0	0.0	0.0	0.0	100	24	2.00E+01	0.0	0.0	0.0
dipropyl ketone		0.0	0.0	0.0	0.0	16.8	N/A	34,992	N/A	0.0	0.0	0.0	0.0	2330	559.2		0.0	0.0	–
divinyl benzene		0.0	0.0	0.0	0.0	3.83	N/A	7,960	N/A	0.0	0.0	0.0	0.0	530	127.2		0.0	0.0	–
ETHANOL		10018.2	385.3	77.1	9.6	271.5	N/A	564,678	N/A	10018.2	385.3	77.1	9.6	37600.0	9024.0	–	799.7	320.2	–
ETHOXYETHYL ACETATE,2		100.0	3.8	0.77	0.10	1.95	N/A	4,055	N/A	100.0	3.8	0.8	0.10	270.0	64.8	–	8.0	3.20	–
ETHYL ACETATE		14.9	0.57	0.11	0.01	207.9	N/A	432,519	N/A	14.9	0.57	0.115	1.4E-02	28800.0	6912.0	–	1.19	0.48	–
ethyl acrylate	Y	0.0	0.0	0.0	0.0	1.44	N/A	3,004	N/A	0.0	0.0	0.0	0.0	200	48		0.0	0.0	–
ethyl amyl ketone ==> 5-methyl-3-heptanone		0.0	0.0	0.0	0.0	9.46	N/A	19,674	N/A	0.0	0.0	0.0	0.0	1310	314.4		0.0	0.0	–
ethyl bromide		0.0	0.0	0.0	0.0	64.3	N/A	133,811	N/A	0.0	0.0	0.0	0.0	8910	2138.4		0.0	0.0	–
ethyl butyl ketone ==> 3-heptanone		0.0	0.0	0.0	0.0	16.9	N/A	35,142	N/A	0.0	0.0	0.0	0.0	2340	561.6		0.0	0.0	–
ethyl chloride	Y	0.0	0.0	0.0	0.0	381.2	N/A	5,710,113	N/A	0.0	0.0	0.0	0.0	52800	12672	1.00E+04	0.0	0.0	0.0
ethyl formate		0.0	0.0	0.0	0.0	21.9	N/A	45,505	N/A	0.0	0.0	0.0	0.0	3030	727.2		0.0	0.0	–
ethylamine		0.0	0.0	0.0	0.0	1.30	N/A	2,703	N/A	0.0	0.0	0.0	0.0	180	43.2		0.0	0.0	–
ethylbenzene	Y	0.0	0.0	0.0	0.0	31.3	N/A	571,011	N/A	0.0	0.0	0.0	0.0	4340	1041.6	1.00E+03	0.0	0.0	0.0
ethylene		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
ethylene chlorohydrin ==> 2-chloroethanol		0.0	0.0	0.0	0.0	0.238	N/A	495.6	N/A	0.0	0.0	0.0	0.0	33	7.92		0.0	0.0	–
ETHYLENE GLYCOL	Y	300.0	11.54	2.31	0.29	9.17	N/A	19,073	N/A	300.0	11.5	2.31	0.29	1270.0	304.8	–	23.95	9.59	–
ethylene glycol methyl ether acetate		0.0	0.0	0.0	0.0	1.73	N/A	3,604	N/A	0.0	0.0	0.0	0.0	240	57.6		0.0	0.0	–
ETHYLENE GLYCOL MONOBUTYL ETHER		730.0	28.1	5.6	0.7	N/A	N/A	11,420	N/A	730.0	28.1	5.6	0.7			2.00E+01	–	--	1.3
ethylene imine (aziridine)	Y	0.0	0.0	0.0	0.0	0.0635	N/A	132.2	N/A	0.0	0.0	0.0	0.0	8.8	2.112		0.0	0.0	–
ethylene oxide	Y	0.0	0.0	0.0	0.0	0.130	N/A	270.3	N/A	0.0	0.0	0.0	0.0	18	4.32		0.0	0.0	–
ethylidene chloride ==> 1,1-dichloroethane	Y	0.0	0.0	0.0	0.0	58.5	N/A	121,646	N/A	0.0	0.0	0.0	0.0	8100	1944		0.0	0.0	–
ethylidene norbornene		0.0	0.0	0.0	0.0	1.81	N/A	3,755	N/A	0.0	0.0	0.0	0.0	250	60		0.0	0.0	–
FORMALDEHYDE	Y	13.8	0.53	0.11	0.01	0.0866	N/A	43.97	N/A	13.8	0.53	0.106	1.3E-02	12.0	2.9	0.1	1.10	0.44	0.024
formamide		0.0	0.0	0.0	0.0	1.30	N/A	2,703	N/A	0.0	0.0	0.0	0.0	180	43.2		0.0	0.0	–
furfural		0.0	0.0	0.0	0.0	0.570	N/A	1,186	N/A	0.0	0.0	0.0	0.0	79	18.96		0.0	0.0	–
furfuryl alcohol		0.0	0.0	0.0	0.0	2.89	N/A	6,007	N/A	0.0	0.0	0.0	0.0	400	96		0.0	0.0	–
gasoline		0.0	0.0	0.0	0.0	64.3	N/A	133,860	N/A	0.0	0.0	0.0	0.0	8900	2136		0.0	0.0	–
GLYCOL ETHER		0.70	0.027	5.4E-03	6.7E-04	N/A	N/A	N/A	N/A	0.70	0.027	5.4E-03	6.7E-04	–	–	–	–	–	–
halothane		0.0	0.0	0.0	0.0	29.2	N/A	60,673	N/A	0.0	0.0	0.0	0.0	4040	969.6		0.0	0.0	–
HEPTANE		30.00	1.154	0.231	2.9E-02	236.8	N/A	492,591	N/A	30.00	1.154	0.231	2.9E-02	32800.0	7872.0	–	2.39	0.96	–
HEXANE	Y	700.0	26.9	5.38	0.67	12.7	N/A	114,202	N/A	700.0	26.9	5.4	0.67	1760.0	422.4	200.0	55.9	22.4	1.2
hydrocyanic acid		0.0	0.0	0.0	0.0	0.181	N/A	11,420	N/A	0.0	0.0	0.0	0.0	25	6	2.00E+01	0.0	0.0	0.0
indene		0.0	0.0	0.0	0.0	3.47	N/A	7,209	N/A	0.0	0.0	0.0	0.0	480	115.2		0.0	0.0	–
iron pentacarbonyl		0.0	0.0	0.0	0.0	0.0166	N/A	34.54	N/A	0.0	0.0	0.0	0.0	2.3	0.552		0.0	0.0	–
isoamyl acetate		0.0	0.0	0.0	0.0	38.4	N/A	79,896	N/A	0.0	0.0	0.0	0.0	5320	1276.8		0.0	0.0	–
isoamyl acetate		0.0	0.0	0.0	0.0	51.5	N/A	107,079	N/A	0.0	0.0	0.0	0.0	7130	1711.2		0.0	0.0	–
isoamyl alcohol		0.0	0.0	0.0	0.0	26.1	N/A	54,215	N/A	0.0	0.0	0.0	0.0	3610	866.4		0.0	0.0	–
ISOBUTANOL		66.7	2.57	0.51	0.06	11.0	N/A	171,303	N/A	66.7	2.6	0.51	0.064	1520.0	364.8	300.0	5.33	2.13	0.1
isopropyl acetate		0.0	0.0	0.0	0.0	150.2	N/A	312,375	N/A	0.0	0.0	0.0	0.0	20800	4992		0.0	0.0	–
ISOPROPYL ALCOHOL		15687.6	603.4	120.7	15.08	71.0	N/A	147,627	N/A	15687.6	603.4	120.7	15.1	9830.0	2359.2	–	1252.2	501.4	–
isopropyl ether		0.0	0.0	0.0	0.0	150.2	N/A	312,375	N/A	0.0	0.0	0.0	0.0	20800	4992		0.0	0.0	–
isopropyl glycidyl ether (IGE)		0.0	0.0	0.0	0.0	17.2	N/A	35,743	N/A	0.0	0.0	0.0	0.0	2380	571.2		0.0	0.0	–
isopropylamine		0.0	0.0	0.0	0.0	0.866	N/A	1,802	N/A	0.0	0.0	0.0	0.0	120	28.8		0.0	0.0	–
l-chloro-l-nitropropane		0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
l-chloro,2,3-epoxy-propane ==> epichlorohydrin	Y	0.0	0.0	0.0	0.0	0.549	N/A	473.9	N/A	0.0	0.0	0.0	0.0	76	18.24	8.30E-01	0.0	0.0	0.0
mesityl oxide		0.0	0.0	0.0	0.0	4.33	N/A	9,011	N/A	0.0	0.0	0.0	0.0	600	144		0.0	0.0	–

APPENDIX 6-- MAXIMUM ANNUAL AND HOURLY CHEMICAL USAGES, MAXIMUM ANNUAL AND HOURLY EMISSIONS, AND IMPACT ANALYSIS RESULTS USING ISCST2 MODEL FOR DOE PINELLAS PLANT
REVISED (4/17/96)

Chemicals	HAP	Maximum Usages (a) Annual (lb/yr)	Maximum Usages (a) Weekly (lb/wk)	Maximum Usages (a) Daily (lb/day)	Maximum Usages (a) Hourly (lb/hr)	Impact Based Maximum Emission Rate (b) 100 % NTL (lb/hr)	Impact Based Maximum Emission Rate (b) 25 % NTL (lb/hr)	Impact Based Maximum Emission Rate (b) 100 % NTL (lb/yr)	Impact Based Maximum Emission Rate (b) 25 % NTL (lb/yr)	Maximum Permitted Emission Rates (a) Annual (lb/yr)	Maximum Permitted Emission Rates (a) Max. wkly (lb/wk)	Maximum Permitted Emission Rates (a) Max. Daily (lb/day)	Maximum Permitted Emission Rates (a) Max Hourly (lb/hr)	No-Threat Levels (µg/m³) 8-Hour	No-Threat Levels (µg/m³) 24-Hour	No-Threat Levels (µg/m³) Annual	Predicted Maximum Impacts (µg/m³) (c) Short-term 8-Hour	Predicted Maximum Impacts (µg/m³) (c) Short-term 24-Hour	Predicted Maximum Impacts (µg/m³) (c) Annual
methacrylic acid		0.0	0.0	0.0	0.0	5.05	N/A	10,513	N/A	0.0	0.0	0.0	0.0	700	168		0.0	0.0	-
methacrylonitrile ==> methylacrylonitrile		0.0	0.0	0.0	0.0	0.195	N/A	57.10	N/A	0.0	0.0	0.0	0.0	27	6.48	1.00E-01	0.0	0.0	0.0
methanethiol ==> methyl mercaptan		0.0	0.0	0.0	0.0	0.0708	N/A	147.2	N/A	0.0	0.0	0.0	0.0	9.8	2.352		0.0	0.0	-
methanol ==> methyl alcohol	Y	0.0	0.0	0.0	0.0	18.9	N/A	39,347	N/A	0.0	0.0	0.0	0.0	2620	628.8		0.0	0.0	-
methyl acetylene-propadiene mixture (MAPP)		0.0	0.0	0.0	0.0	236.8	N/A	492,591	N/A	0.0	0.0	0.0	0.0	32800	7872		0.0	0.0	-
methyl acrylate		0.0	0.0	0.0	0.0	2.53	N/A	5,256	N/A	0.0	0.0	0.0	0.0	350	84		0.0	0.0	-
METHYL ALCOHOL	Y	1760.9	67.7	13.5	1.69	18.9	N/A	39,347	N/A	1760.9	67.7	13.5	1.7	2620.0	628.8	-	140.6	56.3	-
methyl amyl alcohol/methyl isobutyl carbinol		0.0	0.0	0.0	0.0	7.51	N/A	15,619	N/A	0.0	0.0	0.0	0.0	1040	249.6		0.0	0.0	-
methyl bromide ==> bromomethane	Y	0.0	0.0	0.0	0.0	1.37	N/A	456.8	N/A	0.0	0.0	0.0	0.0	190	45.6	8.00E-01	0.0	0.0	0.0
methyl chloride	Y	0.0	0.0	0.0	0.0	7.44	N/A	15,469	N/A	0.0	0.0	0.0	0.0	1030	247.2		0.0	0.0	-
methyl chloroform ==> 1,1,1 trichloroethane	Y	0.0	0.0	0.0	0.0	275.8	N/A	573,688	N/A	0.0	0.0	0.0	0.0	38200	9168		0.0	0.0	-
methyl ethyl ketone (2-butanone)	Y	0.0	0.0	0.0	0.0	42.6	N/A	45,681	N/A	0.0	0.0	0.0	0.0	5900	1416	8.00E+01	0.0	0.0	0.0
methyl formate		0.0	0.0	0.0	0.0	17.8	N/A	36,944	N/A	0.0	0.0	0.0	0.0	2460	590.4		0.0	0.0	-
methyl hydrazine	Y	0.0	0.0	0.0	0.0	0.0274	N/A	57.07	N/A	0.0	0.0	0.0	0.0	3.8	0.912		0.0	0.0	-
methyl iodide (iodomethane)	Y	0.0	0.0	0.0	0.0	0.866	N/A	1,802	N/A	0.0	0.0	0.0	0.0	120	28.8		0.0	0.0	-
methyl isocyanate	Y	0.0	0.0	0.0	0.0	3.4E-03	N/A	7.06	N/A	0.0	0.0	0.0	0.0	0.47	0.1128		0.0	0.0	-
methyl isobutyl ketone ==> hexone	Y	0.0	0.0	0.0	0.0	14.8	N/A	30,787	N/A	0.0	0.0	0.0	0.0	2050	492		0.0	0.0	-
methyl methacrylate	Y	0.0	0.0	0.0	0.0	29.6	N/A	61,574	N/A	0.0	0.0	.0.0	0.0	4100	984		0.0	0.0	-
methyl propyl ketone ==> 2-pentanone		0.0	0.0	0.0	0.0	50.9	N/A	105,877	N/A	0.0	0.0	0.0	0.0	7050	1692		0.0	0.0	-
methylamine		0.0	0.0	0.0	0.0	0.939	N/A	1,952	N/A	0.0	0.0	0.0	0.0	130	31.2		0.0	0.0	-
methylcyclohexane		0.0	0.0	0.0	0.0	232.5	N/A	483,580	N/A	0.0	0.0	0.0	0.0	32200	7728		0.0	0.0	-
methylcyclohexanol		0.0	0.0	0.0	0.0	16.9	N/A	35,142	N/A	0.0	0.0	0.0	0.0	2340	561.6		0.0	0.0	-
metyl acetate		0.0	0.0	0.0	0.0	43.8	N/A	91,009	N/A	0.0	0.0	0.0	0.0	6060	1454.4		0.0	0.0	-
morpholine		0.0	0.0	0.0	0.0	5.13	N/A	10,663	N/A	0.0	0.0	0.0	0.0	710	170.4		0.0	0.0	-
m-xylene alpha, alpha' - diamine		0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
n - ethylmorpholine		0.0	0.0	0.0	0.0	1.73	N/A	3,604	N/A	0.0	0.0	0.0	0.0	240	57.6		0.0	0.0	-
n-amyl acetate		0.0	0.0	0.0	0.0	38.4	N/A	79,896	N/A	0.0	0.0	0.0	0.0	5320	1276.8		0.0	0.0	-
nickel carbonyl		0.0	0.0	0.0	0.0	8.7E-03	N/A	18.02	N/A	0.0	0.0	0.0	0.0	1.2	0.288		0.0	0.0	-
nitrobenzene	Y	0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
nitroethane		0.0	0.0	0.0	0.0	22.2	N/A	46,105	N/A	0.0	0.0	0.0	0.0	3070	736.8		0.0	0.0	-
nitromethane		0.0	0.0	0.0	0.0	18.1	N/A	37,545	N/A	0.0	0.0	0.0	0.0	2500	600		0.0	0.0	-
nitrotoluene		0.0	0.0	0.0	0.0	0.794	N/A	1,652	N/A	0.0	0.0	0.0	0.0	110	26.4		0.0	0.0	-
n-methyl aniline		0.0	0.0	0.0	0.0	0.159	N/A	330.4	N/A	0.0	0.0	0.0	0.0	22	5.28		0.0	0.0	-
n-nitrosodimethylamine ==> dimethylnitrosamine	Y	0.0	0.0	0.0	0.0	N/A	N/A	0.0405	N/A	0.0	0.0	0.0	0.0			7.10E-05	-	-	0.0
nonane		0.0	0.0	0.0	0.0	151.6	N/A	315,378	N/A	0.0	0.0	0.0	0.0	21000	5040		0.0	0.0	-
n-propyl acetate		0.0	0.0	0.0	0.0	60.3	N/A	125,400	N/A	0.0	0.0	0.0	0.0	8350	2004		0.0	0.0	-
n-propyl alcohol		0.0	0.0	0.0	0.0	35.5	N/A	73,889	N/A	0.0	0.0	0.0	0.0	4920	1180.8		0.0	0.0	-
n-propyl nitrate		0.0	0.0	0.0	0.0	7.73	N/A	16,069	N/A	0.0	0.0	0.0	0.0	1070	256.8		0.0	0.0	-
n,n-dimethylaniline	Y	0.0	0.0	0.0	0.0	1.81	N/A	3,755	N/A	0.0	0.0	0.0	0.0	250	60		0.0	0.0	-
o-chlorobenzylidene malononitrile		0.0	0.0	0.0	0.0	0.0282	N/A	58.57	N/A	0.0	0.0	0.0	0.0	3.9	0.936		0.0	0.0	-
o-chlorostyrene		0.0	0.0	0.0	0.0	20.4	N/A	42,501	N/A	0.0	0.0	0.0	0.0	2830	679.2		0.0	0.0	-
o-chlorotoluene		0.0	0.0	0.0	0.0	18.7	N/A	38,897	N/A	0.0	0.0	0.0	0.0	2590	621.6		0.0	0.0	-
octane		0.0	0.0	0.0	0.0	202.2	N/A	420,505	N/A	0.0	0.0	0.0	0.0	28000	6720		0.0	0.0	-
o-dichlorobenzene		0.0	0.0	0.0	0.0	21.7	N/A	5,710	N/A	0.0	0.0	0.0	0.0	3010	722.4	1.00E+01	0.0	0.0	0.0
o-methylcyclohexanone		0.0	0.0	0.0	0.0	16.5	N/A	34,391	N/A	0.0	0.0	0.0	0.0	2340	549.6		0.0	0.0	-
o-sec butylphenol		0.0	0.0	0.0	0.0	2.24	N/A	4,656	N/A	0.0	0.0	0.0	0.0	310	74.4		0.0	0.0	-
OXALIC ACID		62.9	2.42	0.48	0.06	0.0722	N/A	150.2	N/A	62.9	2.4	0.48	0.061	10.0	2.4	-	5.02	2.01	-
PARAFFINIC OIL		4.00	0.154	0.031	3.8E-03	N/A	N/A	N/A	N/A	4.00	0.15	0.031	3.8E-03	-	-	-	-	-	-
PENTANE		1.00	0.038	7.7E-03	9.6E-04	255.6	N/A	531,638	N/A	1.00	0.038	7.7E-03	9.6E-04	35400.0	8496.0	-	0.08	0.03	-
PERCHLOROETHYLENE	Y	452.4	17.4	3.48	0.43	24.5	N/A	50,911	N/A	452.4	17.4	3.5	0.43	3390.0	813.6	-	36.1	14.46	-
perchloromethyl mercaptan		0.0	0.0	0.0	0.0	0.0549	N/A	114.1	N/A	0.0	0.0	0.0	0.0	7.6	1.824		0.0	0.0	-
PETROLEUM DISTILLATES		9346.1	359.47	71.89	8.99	N/A	N/A	N/A	N/A	9346.1	359.5	71.89	8.99	-	-	-	-	-	-
PHENOL		0.90	3.5E-02	6.9E-03	8.7E-04	1.37	N/A	17,130	N/A	0.90	0.035	6.9E-03	8.7E-04	190.0	45.6	30.0	0.07	0.03	0.002
phenylhydrazine		0.0	0.0	0.0	0.0	0.0318	N/A	66.08	N/A	0.0	0.0	0.0	0.0	4.4	1.056		0.0	0.0	-
phosgene ==> carbonyl chloride	Y	0.0	0.0	0.0	0.0	0.0289	N/A	60.07	N/A	0.0	0.0	0.0	0.0	4	0.96		0.0	0.0	-
PROPANE		30.0	1.15	0.23	0.03	N/A	N/A	N/A	N/A	30.0	1.15	0.231	2.9E-02	-	-	-	-	-	-
propionic acid		0.0	0.0	0.0	0.0	2.17	N/A	4,505	N/A	0.0	0.0	0.0	0.0	300	72		0.0	0.0	-
propylene		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
propylene dichloride ==> 1,2-dichloropropane	Y	0.0	0.0	0.0	0.0	25.1	N/A	52,113	N/A	0.0	0.0	0.0	0.0	3470	832.8		0.0	0.0	-
propylene oxide ==> 1,2-epoxypropane	Y	0.0	0.0	0.0	0.0	3.47	N/A	154.2	N/A	0.0	0.0	0.0	0.0	480	115.2	2.70E-01	0.0	0.0	0.0
propyne ==> methyl acetylene		0.0	0.0	0.0	0.0	236.8	N/A	492,591	N/A	0.0	0.0	0.0	0.0	32800	7872		0.0	0.0	-
p-tert-butyltoluene		0.0	0.0	0.0	0.0	4.40	N/A	9,161	N/A	0.0	0.0	0.0	0.0	610	146.4		0.0	0.0	-
pyridine		0.0	0.0	0.0	0.0	1.16	N/A	571.0	N/A	0.0	0.0	0.0	0.0	160	38.4	1.00E+00	0.0	0.0	0.0
sec amyl acetate		0.0	0.0	0.0	0.0	48.0	N/A	99,870	N/A	0.0	0.0	0.0	0.0	6650	1596		0.0	0.0	-
sec-butyl acetate		0.0	0.0	0.0	0.0	68.6	N/A	142,671	N/A	0.0	0.0	0.0	0.0	9500	2280		0.0	0.0	-
sec-butyl alcohol		0.0	0.0	0.0	0.0	21.9	N/A	45,505	N/A	0.0	0.0	0.0	0.0	3030	727.2		0.0	0.0	-
sec-hexyl acetate		0.0	0.0	0.0	0.0	21.3	N/A	44,303	N/A	0.0	0.0	0.0	0.0	2950	708		0.0	0.0	-
stoddard solvent		0.0	0.0	0.0	0.0	37.9	N/A	78,845	N/A	0.0	0.0	0.0	0.0	5250	1260		0.0	0.0	-
styrene,monomer/phenylethylene/vinyl benzene	Y	0.0	0.0	0.0	0.0	15.6	N/A	32,384	N/A	0.0	0.0	0.0	0.0	2130	517.2		0.0	0.0	-
tert-butyl acetate		0.0	0.0	0.0	0.0	68.6	N/A	142,671	N/A	0.0	0.0	0.0	0.0	9500	2280		0.0	0.0	-
tert-butyl alcohol		0.0	0.0	0.0	0.0	21.7	N/A	45,054	N/A	0.0	0.0	0.0	0.0	3000	720		0.0	0.0	-
tetrachloroethylene ==> perchloroethylene	Y	0.0	0.0	0.0	0.0	24.5	N/A	50,911	N/A	0.0	0.0	0.0	0.0	3390	813.6		0.0	0.0	-

APPENDIX 6– MAXIMUM ANNUAL AND HOURLY CHEMICAL USAGES, MAXIMUM ANNUAL AND HOURLY EMISSIONS, AND IMPACT ANALYSIS RESULTS USING ISCST2 MODEL FOR DOE PINELLAS PLANT
REVISED (4/17/96)

		Maximum Usages (a)				Impact Based Maximum Emission Rate (b)				Maximum Permitted Emission Rates (a)				No-Threat Levels (ug/m³)			Predicted Maximum Impacts (ug/m³) (c)		
Chemicals	HAP	Annual (lb/yr)	Weekly (lb/wk)	Daily (lb/day)	Hourly (lb/hr)	100 % NTL (lb/hr)	25 % NTL (lb/hr)	100 % NTL (lb/yr)	25 % NTL (lb/yr)	Annual (lb/yr)	Max. wkly (lb/wk)	Max. Daily (lb/day)	Max. Hourly (lb/hr)	8-Hour	24-Hour	Annual	Short-term 8-Hour	Short-term 24-Hour	Annual
TETRAHYDROFURAN		2.52	0.097	0.019	2.4E-03	42.6	N/A	5,710	N/A	2.52	0.10	0.019	2.4E-03	5900.0	1416.0	10.0	0.20	0.08	0.004
tetramethyl lead (as Pb)		0.0	0.0	0.0	0.0	0.0108	N/A	22.53	N/A	0.0	0.0	0.0	0.0	1.5	0.36		0.0	0.0	–
tetranitromethane		0.0	0.0	0.0	0.0	0.578	N/A	1,201	N/A	0.0	0.0	0.0	0.0	80	19.2		0.0	0.0	–
TOLUENE	Y	227.0	8.7	1.75	0.22	27.0	N/A	171,303	N/A	227.0	8.7	1.7	0.22	3770.0	898.0	300.0	18.1	7.3	0.4
toluol ==> toluene	Y	0.0	0.0	0.0	0.0	27.2	N/A	171,303	N/A	0.0	0.0	0.0	0.0	3770	904.8	3.00E+02	0.0	0.0	0.0
tributyl phosphate		0.0	0.0	0.0	0.0	0.159	N/A	330.4	N/A	0.0	0.0	0.0	0.0	22	5.28		0.0	0.0	–
TRICHLOROETHYLENE	Y	400.0	15.4	3.1	0.4	19.4	N/A	40,398	N/A	400.0	15.4	3.1	0.4	2690.0	645.6	–	31.9	12.8	–
trichloronaphthalene		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	–
triethylamine	Y	0.0	0.0	0.0	0.0	2.96	N/A	3,997	N/A	0.0	0.0	0.0	0.0	410	98.4	7.00E+00	0.0	0.0	0.0
trimethyl phosphite		0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
trimethylamine		0.0	0.0	0.0	0.0	1.73	N/A	3,604	N/A	0.0	0.0	0.0	0.0	240	57.6		0.0	0.0	–
turpentine		0.0	0.0	0.0	0.0	40.1	N/A	83,500	N/A	0.0	0.0	0.0	0.0	5560	1334.4		0.0	0.0	–
vinyl acetate	Y	0.0	0.0	0.0	0.0	2.53	N/A	114,202	N/A	0.0	0.0	0.0	0.0	350	84	2.00E+02	0.0	0.0	0.0
vinyl benzene ==> styrene ==> phenylethylene	Y	0.0	0.0	0.0	0.0	15.4	N/A	31,988	N/A	0.0	0.0	0.0	0.0	2130	511.2		0.0	0.0	–
vinyl bromide	Y	0.0	0.0	0.0	0.0	1.59	N/A	3,304	N/A	0.0	0.0	0.0	0.0	220	52.8		0.0	0.0	–
vinyl chloride ==> chloroethylene	Y	0.0	0.0	0.0	0.0	0.939	N/A	1,952	N/A	0.0	0.0	0.0	0.0	130	31.2		0.0	0.0	–
vinyl cyanide ==> acrylonitrile	Y	0.0	0.0	0.0	0.0	0.310	N/A	8.57	N/A	0.0	0.0	0.0	0.0	43	10.32	1.50E-02	0.0	0.0	0.0
VINYL CYCLOHEXENE DIOXIDE		0.38	0.015	2.9E-03	3.7E-04	4.12	N/A	8,560	N/A	0.38	0.015	2.9E-03	3.7E-04	570.0	136.8	–	0.03	0.01	–
vinyl toluene		0.0	0.0	0.0	0.0	17.5	N/A	36,344	N/A	0.0	0.0	0.0	0.0	2420	580.8		0.0	0.0	–
VM&P NAPHTHA		200.0	7.69	1.54	0.19	197.8	N/A	411,494	N/A	200.0	7.69	1.54	0.192	27400.0	6576.0	–	15.96	6.39	–
XYLENES	Y	397.4	15.3	3.06	0.38	31.3	N/A	45,681	N/A	397.4	15.3	3.1	0.38	4340.0	1041.6	80.0	31.7	12.70	0.7
(alpha) - methyl styrene		0.0	0.0	0.0	0.0	17.5	N/A	36,344	N/A	0.0	0.0	0.0	0.0	2420	580.8		0.0	0.0	–
(beta)-propiolactone		0.0	0.0	0.0	0.0	0.108	N/A	225.3	N/A	0.0	0.0	0.0	0.0	15	3.6		0.0	0.0	–
TOTAL OF VOC:		21.6 TPY								21.58 TPY									
OCs										For Organic Compounds (VOC) - See Note (e)									
1,2-diphenylhydrazine	Y	0.0	0.0	0.0	0.0	N/A	N/A	2.57	N/A	0.0	0.0	0.0	0.0			4.50E-03	–	–	0.0
1,2-epoxybutane	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
1,2,4-trichlorobenzene	Y	0.0	0.0	0.0	0.0	2.87	N/A	11,420	N/A	0.0	0.0	0.0	0.0	370	88.8	2.00E+01	0.0	0.0	0.0
1,2,4,5-tetrachlorobenzene		0.0	0.0	0.0	0.0	N/A	N/A	171.3	N/A	0.0	0.0	0.0	0.0			3.00E-01	–	–	0.0
1,3-dichloro-5,5-dimethyl hydantoin		0.0	0.0	0.0	0.0	0.0144	N/A	30.04	N/A	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	–
1,3, propene sultone	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
2 2-dichloropropionic acid		0.0	0.0	0.0	0.0	0.419	N/A	871.0	N/A	0.0	0.0	0.0	0.0	58	13.92		0.0	0.0	–
2-acetylaminofluorene	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
2-aminopyridine		0.0	0.0	0.0	0.0	0.137	N/A	285.3	N/A	0.0	0.0	0.0	0.0	19	4.56		0.0	0.0	–
2-chloro-6-(trichloromethyl)pyridine/nitrapyrin		0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
2-chloropropionic acid		0.0	0.0	0.0	0.0	0.0318	N/A	66.08	N/A	0.0	0.0	0.0	0.0	4.4	1.056		0.0	0.0	–
2-hydroxypropyl acrylate		0.0	0.0	0.0	0.0	0.202	N/A	420.5	N/A	0.0	0.0	0.0	0.0	28	6.72		0.0	0.0	–
2-methylcyclopentadienyl manganese tricarbonyl		0.0	0.0	0.0	0.0	0.0144	N/A	30.04	N/A	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	–
2-n-dibutylaminoethanol		0.0	0.0	0.0	0.0	1.01	N/A	2,103	N/A	0.0	0.0	0.0	0.0	140	33.6		0.0	0.0	–
2, 4-dinitrotoluene	Y	0.0	0.0	0.0	0.0	0.108	N/A	225.3	N/A	0.0	0.0	0.0	0.0	15	3.6		0.0	0.0	–
2,3,4,6-tetrachlorophenol		0.0	0.0	0.0	0.0	N/A	N/A	17,130	N/A	0.0	0.0	0.0	0.0			3.00E+01	–	–	0.0
2,3,7,8 TCDD (dioxin)	Y	0.0	0.0	0.0	0.0	N/A	N/A	1.3E-05	N/A	0.0	0.0	0.0	0.0			2.20E-08	–	–	0.0
2,4-D (salts & esters)	Y	0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
2,4-dichlorophenol		0.0	0.0	0.0	0.0	N/A	N/A	1,713	N/A	0.0	0.0	0.0	0.0			3.00E+00	–	–	0.0
2,4-dinitrophenol	Y	0.0	0.0	0.0	0.0	N/A	N/A	1,142	N/A	0.0	0.0	0.0	0.0			2.00E+00	–	–	0.0
2,4-toluene diamine	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
2,4,5-T		0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
2,4,5-trichlorophenol	Y	0.0	0.0	0.0	0.0	N/A	N/A	57,101	N/A	0.0	0.0	0.0	0.0			1.00E+02	–	–	0.0
2,4,6-trichlorophenol	Y	0.0	0.0	0.0	0.0	N/A	N/A	182.7	N/A	0.0	0.0	0.0	0.0			3.20E-01	–	–	0.0
2,4,6-trinitrotoluene **(TNT)**		0.0	0.0	0.0	0.0	0.0361	N/A	75.09	N/A	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	–
2,6-di-tert-butyl-p-cresol		0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
3-methylcholanthrene		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
3, 3-dichlorobenzidine	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
4-aminodiphenyl	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
4-methoxyphenol		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	–
4-nitrodiphenyl	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
4-nitrophenol	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
4,4-methylene bis(2-chloroaniline)	Y	0.0	0.0	0.0	0.0	0.0159	N/A	33.04	N/A	0.0	0.0	0.0	0.0	2.2	0.528		0.0	0.0	–
4,4-methylene dianiline	Y	0.0	0.0	0.0	0.0	0.0585	N/A	121.6	N/A	0.0	0.0	0.0	0.0	8.1	1.944		0.0	0.0	–
4,4'-thiobis(6-tert-butyl-m-cresol)		0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
4,6-dinitro-o-cresol and salts	Y	0.0	0.0	0.0	0.0	0.0144	N/A	30.04	N/A	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	–
acetamide	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
ACETONE		6948.4	267.2	53.4	6.68	257.0	N/A	534,642	N/A	6948.4	267.2	53.4	6.7	35600.0	8544.0	–	554.8	222.1	–
ACETONITRILE	Y	100.00	3.8E+00	7.7E-01	9.6E-02	4.84	N/A	5,710	N/A	100.0	3.8E+00	7.7E-01	9.6E-02	670.0	160.8	10.0	8.0E+00	3.2E+00	1.8E-01
acetylene tetrabromide		0.0	0.0	0.0	0.0	1.01	N/A	2,103	N/A	0.0	0.0	0.0	0.0	140	33.6		0.0	0.0	–
acrylamide	Y	0.0	0.0	0.0	0.0	2.2E-03	N/A	0.440	N/A	0.0	0.0	0.0	0.0	0.3	0.072	7.70E-04	0.0	0.0	0.0
allyl propyl disulfide		0.0	0.0	0.0	0.0	0.866	N/A	1,802	N/A	0.0	0.0	0.0	0.0	120	28.8		0.0	0.0	–
alpha-hexachlorocyclohexane		0.0	0.0	0.0	0.0	N/A	N/A	0.320	N/A	0.0	0.0	0.0	0.0			5.60E-04	–	–	0.0
anisidine o	Y	0.0	0.0	0.0	0.0	0.0361	N/A	75.09	N/A	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	–
anisidine p		0.0	0.0	0.0	0.0	0.0361	N/A	75.09	N/A	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	–
asphalt fumes		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	–

APPENDIX 6-- MAXIMUM ANNUAL AND HOURLY CHEMICAL USAGES, MAXIMUM ANNUAL AND HOURLY EMISSIONS, AND IMPACT ANALYSIS RESULTS USING ISCST2 MODEL FOR DOE PINELLAS PLANT
REVISED (4/17/96)

		Maximum Usages (a)				Impact Based Maximum Emission Rate (b)				Maximum Permitted Emission Rates (a)				No-Threat Levels (ug/m³)			Predicted Maximum Impacts (ug/m³) (c)		
Chemicals	HAP	Annual (lb/yr)	Weekly (lb/wk)	Daily (lb/day)	Hourly (lb/hr)	100 % NTL (lb/hr)	25 % NTL (lb/hr)	100 % NTL (lb/yr)	25 % NTL (lb/yr)	Annual (lb/yr)	Max. wkly (lb/wk)	Max. Daily (lb/day)	Max. Hourly (lb/hr)	8-Hour	24-Hour	Annual	Short-term 8-Hour	Short-term 24-Hour	Annual
atrazine		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
azinphos-methyl		0.0	0.0	0.0	0.0	0.0144	N/A	30.04	N/A	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	-
barium cyanide		0.0	0.0	0.0	0.0	N/A	N/A	28,551	N/A	0.0	0.0	0.0	0.0			5.00E+01	-	-	0.0
benzidine	Y	0.0	0.0	0.0	0.0	N/A	N/A	8.6E-03	N/A	0.0	0.0	0.0	0.0			1.50E-05	-	-	0.0
benzotrichloride	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
benzoyl peroxide		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
benzo(a)pyrene		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
benz(a)anthracene		0.0	0.0	0.0	0.0	N/A	N/A	0.628	N/A	0.0	0.0	0.0	0.0			1.10E-03	-	-	0.0
beta-hexachlorocyclohexane		0.0	0.0	0.0	0.0	N/A	N/A	1.08	N/A	0.0	0.0	0.0	0.0			1.90E-03	-	-	0.0
biphenyl ==> diphenyl	Y	0.0	0.0	0.0	0.0	0.0939	N/A	195.2	N/A	0.0	0.0	0.0	0.0	13	3.12		0.0	0.0	-
calcium cyanide		0.0	0.0	0.0	0.0	N/A	N/A	17,130	N/A	0.0	0.0	0.0	0.0			3.00E+01	-	-	0.0
camphor (synthetic)		0.0	0.0	0.0	0.0	0.866	N/A	1,802	N/A	0.0	0.0	0.0	0.0	120	28.8		0.0	0.0	-
captafol		0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
captan	Y	0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
carbaryl	Y	0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
carbofuran		0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
chloramben	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
chlordane	Y	0.0	0.0	0.0	0.0	0.0361	N/A	1.54	N/A	0.0	0.0	0.0	0.0	5	1.2	2.70E-03	0.0	0.0	0.0
chlorinated diphenyl oxide		0.0	0.0	0.0	0.0	0.0361	N/A	75.09	N/A	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	-
chloroacetic acid	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
chlorobenzilate	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
CHLORODIFLUOROMETHANE (CFC-22)		426.1	16.4	3.28	0.41	511.2	N/A	1,063,276	N/A	426.1	16.390	3.278	4.1E-01	70800.0	16992.0	-	34.02	13.620	-
chlorodiphenyl (42% chlorine)/ polychlorobiphenyls	Y	0.0	0.0	0.0	0.0	0.0722	N/A	0.474	N/A	0.0	0.0	0.0	0.0	10	2.4	8.30E-04	0.0	0.0	0.0
chlorodiphenyl (54% chlorine)/polychlorobiphenyls	Y	0.0	0.0	0.0	0.0	0.0361	N/A	0.474	N/A	0.0	0.0	0.0	0.0	5	1.2	8.30E-04	0.0	0.0	0.0
chloromethyl methyl ether	Y	0.0	0.0	0.0	0.0	N/A	N/A	0.211	N/A	0.0	0.0	0.0	0.0			3.70E-04	-	-	0.0
CHLOROPENTAFLUOROETHANE (CFC-115)		68.8	2.65	0.53	0.07	912.6	N/A	1,898,278	N/A	68.8	2.648	5.3E-01	6.6E-02	126400.0	30336.0	-	5.496	2.201	-
chlorpyrifos		0.0	0.0	0.0	0.0	0.0144	N/A	30.04	N/A	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	-
chrysene		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
cobalt hydrocarbonyl		0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
crufomate		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
cyanamide		0.0	0.0	0.0	0.0	0.144	N/A	300.4	N/A	0.0	0.0	0.0	0.0	20	4.8		0.0	0.0	-
cyanides, (as Cn)	Y	0.0	0.0	0.0	0.0	0.361	N/A	11,420	N/A	0.0	0.0	0.0	0.0	50	12	2.00E+01	0.0	0.0	0.0
cyclohexylamine		0.0	0.0	0.0	0.0	2.96	N/A	6,157	N/A	0.0	0.0	0.0	0.0	410	98.4		0.0	0.0	-
cyclonite = RDX		0.0	0.0	0.0	0.0	0.108	N/A	225.3	N/A	0.0	0.0	0.0	0.0	15	3.6		0.0	0.0	-
cyclopentadiene		0.0	0.0	0.0	0.0	14.7	N/A	30,487	N/A	0.0	0.0	0.0	0.0	2030	487.2		0.0	0.0	-
cyhexatin ==> tricyclohexyltin hydroxide		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
DDE	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
DDT		0.0	0.0	0.0	0.0	0.0722	N/A	5.71	N/A	0.0	0.0	0.0	0.0	10	2.4	1.00E-02	0.0	0.0	0.0
diazinon		0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
dibenzofurans	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
dibenz(a,h)anthracene		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
dibutyl phenyl phosphate		0.0	0.0	0.0	0.0	0.253	N/A	525.6	N/A	0.0	0.0	0.0	0.0	35	8.4		0.0	0.0	-
dibutyl phthalate(Di-N)	Y	0.0	0.0	0.0	0.0	0.361	N/A	57,101	N/A	0.0	0.0	0.0	0.0	50	12	1.00E+02	0.0	0.0	0.0
dichloroacetylene		0.0	0.0	0.0	0.0	0.0282	N/A	58.57	N/A	0.0	0.0	0.0	0.0	3.9	0.936		0.0	0.0	-
DICHLORODIFLUOROMETHANE (CFC-12)		340.5	13.1	2.62	0.33	714.8	N/A	114,202	N/A	340.5	13.097	2.619	3.3E-01	99000.0	23760.0	200.0	27.18	10.884	8.0E-01
DICHLOROTETRAFLUOROETHANE (CFC-114)		10.00	0.385	0.077	9.6E-03	1009.4	N/A	2,099,520	N/A	10.00	3.8E-01	7.7E-02	9.6E-03	139800.0	33552.0	-	8.0E-01	3.2E-01	-
dicyclopentadiene		0.0	0.0	0.0	0.0	1.95	N/A	4,055	N/A	0.0	0.0	0.0	0.0	270	64.8		0.0	0.0	-
dicyclopentadienyl iron		0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
dieldrin		0.0	0.0	0.0	0.0	0.0181	N/A	0.126	N/A	0.0	0.0	0.0	0.0	2.5	0.6	2.20E-04	0.0	0.0	0.0
DIETHANOLAMINE ¦	Y	724.4	27.9	5.57	0.70	0.939	N/A	1,952	N/A	3.6	0.14	0.028	3.5E-03	130.0	31.2	-	0.29	0.118	-
diethyl phthalate		0.0	0.0	0.0	0.0	0.361	N/A	456,809	N/A	0.0	0.0	0.0	0.0	50	12	8.00E+02	0.0	0.0	0.0
diethyl sulfate	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
DIETHYLAMINOETHANOL,2 ¦		5.10	0.196	3.9E-02	4.9E-03	3.47	N/A	7,209	N/A	2.6E-02	9.8E-04	2.0E-04	2.5E-05	480.0	115.2	-	2.0E-03	8.2E-04	-
DIETHYLENETRIAMINE ¦		1.04	0.040	8.0E-03	1.0E-03	0.303	N/A	630.8	N/A	5.2E-03	2.0E-04	4.0E-05	5.0E-06	42.0	10.1	-	4.2E-04	1.7E-04	-
diethylstilbestrol		0.0	0.0	0.0	0.0	N/A	N/A	4.1E-03	N/A	0.0	0.0	0.0	0.0			7.10E-06	-	-	0.0
diglycidyl ether (DGE)		0.0	0.0	0.0	0.0	0.0383	N/A	79.60	N/A	0.0	0.0	0.0	0.0	5.3	1.272		0.0	0.0	-
dihydroxybenzene ==> hydroquinone	Y	0.0	0.0	0.0	0.0	0.144	N/A	300.4	N/A	0.0	0.0	0.0	0.0	20	4.8		0.0	0.0	-
dimethoate		0.0	0.0	0.0	0.0	N/A	N/A	456.8	N/A	0.0	0.0	0.0	0.0			8.00E-01	-	-	0.0
dimethoxybenzidine		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
dimethyl carbamoyl chloride	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
DIMETHYL FORMAMIDE ¦	Y	0.28	0.011	2.2E-03	2.7E-04	2.17	N/A	17,130	N/A	1.4E-03	5.4E-05	1.1E-05	1.3E-06	300.0	72.0	30.0	1.1E-04	4.5E-05	2.5E-06
dimethyl sulfate	Y	0.0	0.0	0.0	0.0	0.0375	N/A	78.09	N/A	0.0	0.0	0.0	0.0	5.2	1.248		0.0	0.0	-
dimethylaminoazobenzene		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
dimethylbenzene ==> xylene	Y	0.0	0.0	0.0	0.0	31.3	N/A	45,681	N/A	0.0	0.0	0.0	0.0	4340	1041.6	8.00E+01	0.0	0.0	0.0
dimethylphthalate	Y	0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
dimethyl, 1,2-dibromo-2-dichloroethyl phosphate		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
dinitolmide ==> 3,5-dinitro-o-toluamide		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
dinitrobenzene (all isomers)		0.0	0.0	0.0	0.0	0.0722	N/A	150.2	N/A	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-
dioctyl phthalate ==> bis(2-ethylhexyl) phthalate	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
dioxathion		0.0	0.0	0.0	0.0	0.0144	N/A	30.04	N/A	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	-
dipropylene glycol methyl ether		0.0	0.0	0.0	0.0	43.8	N/A	91,009	N/A	0.0	0.0	0.0	0.0	6060	1454.4		0.0	0.0	-
diquat		0.0	0.0	0.0	0.0	0.0361	N/A	75.09	N/A	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	-

APPENDIX 6-- MAXIMUM ANNUAL AND HOURLY CHEMICAL USAGES, MAXIMUM ANNUAL AND HOURLY EMISSIONS, AND IMPACT ANALYSIS RESULTS USING ISCST2 MODEL FOR DOE PINELLAS PLANT
REVISED (4/17/96)

		Maximum Usages (a)				Impact Based Maximum Emission Rate (b)				Maximum Permitted Emission Rates (a)				No-Threat Levels (µg/m³)			Predicted Maximum Impacts (µg/m³) (c)		
Chemicals	HAP	Annual (lb/yr)	Weekly (lb/wk)	Daily (lb/day)	Hourly (lb/hr)	100 % NTL (lb/hr)	25 % NTL (lb/hr)	100 % NTL (lb/yr)	25 % NTL (lb/yr)	Annual (lb/yr)	Max wkly (lb/wk)	Max. Daily (lb/day)	Max Hourly (lb/hr)	8-Hour	24-Hour	Annual	Short-term 8-Hour	Short-term 24-Hour	Annual
EPICHLOROHYDRIN ;	Y	4941.1	190.0	38.0	4.75	0.549	N/A	473.9	N/A	24.7	0.95	0.19	0.024	76.0	18.2	0.8	1.97	0.79	0.043
ethyl carbamate	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
ethylene glycol dinitrate		0.0	0.0	0.0	0.0	0.0224	N/A	46.56	N/A	0.0	0.0	0.0	0.0	3.1	0.744		0.0	0.0	-
ethylene thiourea	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
fluorotrichloromethane/trichlorofluoromethane		0.0	0.0	0.0	0.0	811.6	N/A	171,303	N/A	0.0	0.0	0.0	0.0	112400	26976	3.00E+02	0.0	0.0	0.0
gama-hexachlorocyclohexane	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
glutaraldehyde		0.0	0.0	0.0	0.0	0.0592	N/A	123.1	N/A	0.0	0.0	0.0	0.0	8.2	1.968		0.0	0.0	-
glycerin mist		0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
glycidylaldehyde		0.0	0.0	0.0	0.0	N/A	N/A	171.3	N/A	0.0	0.0	0.0	0.0			3.00E-01	-	-	0.0
heptachlor	Y	0.0	0.0	0.0	0.0	0.0361	N/A	0.440	N/A	0.0	0.0	0.0	0.0	5	1.2	7.70E-04	0.0	0.0	0.0
heptachlor epoxide		0.0	0.0	0.0	0.0	N/A	N/A	0.217	N/A	0.0	0.0	0.0	0.0			3.80E-04	-	-	0.0
hexachlorobenzene	Y	0.0	0.0	0.0	0.0	N/A	N/A	1.26	N/A	0.0	0.0	0.0	0.0			2.20E-03	-	-	0.0
hexachlorobutadiene	Y	0.0	0.0	0.0	0.0	0.0152	N/A	25.70	N/A	0.0	0.0	0.0	0.0	2.1	0.504	4.50E-02	0.0	0.0	0.0
hexachlorocyclopentadiene	Y	0.0	0.0	0.0	0.0	7.9E-03	N/A	2,855	N/A	0.0	0.0	0.0	0.0	1.1	0.264	5.00E+00	0.0	0.0	0.0
hexachlorodibenzo-p-dioxin (mixture)		0.0	0.0	0.0	0.0	N/A	N/A	4.4E-04	N/A	0.0	0.0	0.0	0.0			7.70E-07	-	-	0.0
hexachloroethane	Y	0.0	0.0	0.0	0.0	0.700	N/A	142.8	N/A	0.0	0.0	0.0	0.0	97	23.28	2.50E-01	0.0	0.0	0.0
hexachloronaphthalene		0.0	0.0	0.0	0.0	0.0144	N/A	30.04	N/A	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	-
hexachloroprene		0.0	0.0	0.0	0.0	N/A	N/A	171.3	N/A	0.0	0.0	0.0	0.0			3.00E-01	-	-	0.0
hexafluoroacetone		0.0	0.0	0.0	0.0	0.0491	N/A	102.1	N/A	0.0	0.0	0.0	0.0	6.8	1.632		0.0	0.0	-
hexamethylene-1,6-diisocyanate	Y	0.0	0.0	0.0	0.0	2.5E-03	N/A	5.11	N/A	0.0	0.0	0.0	0.0	0.34	0.0816		0.0	0.0	-
hexamethylphosphoramide	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
hexylene glycol		0.0	0.0	0.0	0.0	8.74	N/A	18,172	N/A	0.0	0.0	0.0	0.0	1210	290.4		0.0	0.0	-
hydrazine sulfate	Y	0.0	0.0	0.0	0.0	N/A	N/A	0.114	N/A	0.0	0.0	0.0	0.0			2.00E-04	-	-	0.0
hydrogenated terphenyls		0.0	0.0	0.0	0.0	0.354	N/A	735.9	N/A	0.0	0.0	0.0	0.0	49	11.76		0.0	0.0	-
HYDROQUINONE ;	Y	5.77	0.22	0.044	0.006	0.144	N/A	300.4	N/A	0.029	1.1E-03	2.2E-04	2.8E-05	20.0	4.8	-	2.3E-03	9.2E-04	-
iodoform		0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.000	0.000	-
isooctyl alcohol		0.0	0.0	0.0	0.0	19.2	N/A	39,948	N/A	0.0	0.0	0.0	0.0	2660	638.4		0.0	0.0	-
isophorone	Y	0.0	0.0	0.0	0.0	2.02	N/A	4,205	N/A	0.0	0.0	0.0	0.0	280	67.2		0.0	0.0	-
isophorone diisocyanate		0.0	0.0	0.0	0.0	3.2E-03	N/A	6.76	N/A	0.0	0.0	0.0	0.0	0.45	0.108		0.0	0.0	-
isopropoxyethanol		0.0	0.0	0.0	0.0	7.65	N/A	15,919	N/A	0.0	0.0	0.0	0.0	1060	254.4		0.0	0.0	-
ketene		0.0	0.0	0.0	0.0	0.0621	N/A	129.2	N/A	0.0	0.0	0.0	0.0	8.6	2.064		0.0	0.0	-
maganese cyclopentadienyl tricarbonyl, (as Mn)		0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
malathion		0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
maleic anhydride	Y	0.0	0.0	0.0	0.0	0.0722	N/A	57,101	N/A	0.0	0.0	0.0	0.0	10	2.4	1.00E+02	0.0	0.0	0.0
methomyl		0.0	0.0	0.0	0.0	0.181	N/A	11,420	N/A	0.0	0.0	0.0	0.0	25	6	2.00E+01	0.0	0.0	0.0
methoxychlor	Y	0.0	0.0	0.0	0.0	0.722	N/A	28,551	N/A	0.0	0.0	0.0	0.0	100	24	5.00E+01	0.0	0.0	0.0
methyl chlorocarbonate		0.0	0.0	0.0	0.0	N/A	N/A	571,011	N/A	0.0	0.0	0.0	0.0			1.00E+03	-	-	0.0
methyl demeton		0.0	0.0	0.0	0.0	0.0361	N/A	75.09	N/A	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	-
methyl ethyl ketone peroxide		0.0	0.0	0.0	0.0	0.108	N/A	225.3	N/A	0.0	0.0	0.0	0.0	15	3.6		0.0	0.0	-
methyl isoamyl ketone		0.0	0.0	0.0	0.0	16.9	N/A	35,142	N/A	0.0	0.0	0.0	0.0	2340	561.6		0.0	0.0	-
methyl isopropyl ketone		0.0	0.0	0.0	0.0	50.9	N/A	105,877	N/A	0.0	0.0	0.0	0.0	7050	1692		0.0	0.0	-
methyl parathion		0.0	0.0	0.0	0.0	0.0144	N/A	171.3	N/A	0.0	0.0	0.0	0.0	2	0.48	3.00E-01	0.0	0.0	0.0
methyl silicate		0.0	0.0	0.0	0.0	0.433	N/A	901.1	N/A	0.0	0.0	0.0	0.0	60	14.4		0.0	0.0	-
METHYL STYRENE, ALPHA ;		0.13	5.0E-03	1.0E-03	1.3E-04	17.5	N/A	36,344	N/A	6.5E-04	2.5E-05	5.0E-06	6.3E-07	2420.0	580.8	-	5.2E-05	2.1E-05	-
methyl tert butyl ether	Y	0.0	0.0	0.0	0.0	N/A	N/A	265,506	N/A	0.0	0.0	0.0	0.0			5.00E+02	-	-	0.0
METHYL-2-CYANOACRYLATE ;		6.30	0.24	0.048	0.006	0.657	N/A	1,367	N/A	0.031	1.2E-03	2.4E-04	3.0E-05	91.0	21.8	-	2.5E-03	1.0E-03	-
methylene bis(4-cyclohexylisocyanate)		0.0	0.0	0.0	0.0	3.9E-03	N/A	8.11	N/A	0.0	0.0	0.0	0.0	0.54	0.1296		0.0	0.0	-
methylene bisphenyl isocyanate (MDI)	Y	0.0	0.0	0.0	0.0	3.7E-03	N/A	7.66	N/A	0.0	0.0	0.0	0.0	0.51	0.1224		0.0	0.0	-
METHYLENE CHLORIDE	Y	2090.5	80.4	16.1	2.0	8.123	N/A	8,448	N/A	2090.5	80.40	16.08	2.010	1740.0	417.6	2.1	11.00	4.81	0.50
MONOETHANOLAMINE (ethanolamine)		467.9	18.0	3.60	0.45	0.540	N/A	563.2	N/A	467.9	17.995	3.599	4.5E-01	75	18		37.3	15.0	-
m-phthalodinitrile		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
m-toluidine		0.0	0.0	0.0	0.0	0.635	N/A	1,322	N/A	0.0	0.0	0.0	0.0	88	21.12		0.0	0.0	-
m,o,p-phenylene diamine	Y	0.0	0.0	0.0	0.0	7.2E-03	N/A	2,855	N/A	0.0	0.0	0.0	0.0	1	0.24	5.00E+00	0.0	0.0	0.0
n-valeraldehyde		0.0	0.0	0.0	0.0	12.7	N/A	26,432	N/A	0.0	0.0	0.0	0.0	1760	422.4		0.0	0.0	-
naphthalene	Y	0.0	0.0	0.0	0.0	3.75	N/A	7,809	N/A	0.0	0.0	0.0	0.0	520	124.8		0.0	0.0	-
n-butyl lactate		0.0	0.0	0.0	0.0	2.17	N/A	4,505	N/A	0.0	0.0	0.0	0.0	300	72		0.0	0.0	-
nickel cyanide		0.0	0.0	0.0	0.0	N/A	N/A	11,420	N/A	0.0	0.0	0.0	0.0			2.00E+01	-	-	0.0
nicotine		0.0	0.0	0.0	0.0	0.0361	N/A	75.09	N/A	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	-
n-isopropylaniline		0.0	0.0	0.0	0.0	0.794	N/A	1,652	N/A	0.0	0.0	0.0	0.0	110	26.4		0.0	0.0	-
nitroglycerin		0.0	0.0	0.0	0.0	0.0332	N/A	69.06	N/A	0.0	0.0	0.0	0.0	4.6	1.104		0.0	0.0	-
n-nitrosodiethylamine ==> diethylnitrosamine		0.0	0.0	0.0	0.0	N/A	N/A	0.0131	N/A	0.0	0.0	0.0	0.0			2.30E-05	-	-	0.0
n-nitrosomorpholine	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
n-nitroso-n-butylamine		0.0	0.0	0.0	0.0	N/A	N/A	0.360	N/A	0.0	0.0	0.0	0.0			6.30E-04	-	-	0.0
n-nitroso-n-methylurea	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
n-nitrosopyrrolidine		0.0	0.0	0.0	0.0	N/A	N/A	0.914	N/A	0.0	0.0	0.0	0.0			1.60E-03	-	-	0.0
n-phenyl-beta-naphthylamine		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
octachloronaphthalene		0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
o-toluidine	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
parathion	Y	0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
parrafin wax fume		0.0	0.0	0.0	0.0	0.144	N/A	300.4	N/A	0.0	0.0	0.0	0.0	20	4.8		0.0	0.0	-
particulate PAH's ==> coal tar pitch volatiles		0.0	0.0	0.0	0.0	0.0144	N/A	30.04	N/A	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	-
p-dichlorobenzene	Y	0.0	0.0	0.0	0.0	32.6	N/A	5,710	N/A	0.0	0.0	0.0	0.0	4510	1082.4	1.00E+01	0.0	0.0	0.0

APPENDIX 6-- MAXIMUM ANNUAL AND HOURLY CHEMICAL USAGES, MAXIMUM ANNUAL AND HOURLY EMISSIONS, AND IMPACT ANALYSIS RESULTS USING ISCST2 MODEL FOR DOE PINELLAS PLANT
REVISED (4/17/96)

Chemicals	HAP	Maximum Usages (a) Annual (lb/yr)	Weekly (lb/wk)	Daily (lb/day)	Hourly (lb/hr)	Impact Based Maximum Emission Rate (b) 100 % NTL (lb/hr)	25 % NTL (lb/hr)	100 % NTL (lb/yr)	25 % NTL (lb/yr)	Maximum Permitted Emission Rates (a) Annual (lb/yr)	Max. wkly (lb/wk)	Max. Daily (lb/day)	Max. Hourly (lb/hr)	No-Threat Levels (µg/m³) 8-Hour	24-Hour	Annual	Predicted Maximum Impacts (µg/m³) (c) Short-term 8-Hour	Short-term 24-Hour	Annual
pentachlorobenzene		0.0	0.0	0.0	0.0	N/A	N/A	456.8	N/A	0.0	0.0	0.0	0.0			8.00E-01	–	–	0.0
pentachloronapthalene		0.0	0.0	0.0	0.0	0.0361	N/A	75.09	N/A	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	–
pentachloronitrobenzene	Y	0.0	0.0	0.0	0.0	0.0361	N/A	75.09	N/A	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	–
pentachlorophenol	Y	0.0	0.0	0.0	0.0	0.0361	N/A	17,130	N/A	0.0	0.0	0.0	0.0	5	1.2	3.00E+01	0.0	0.0	0.0
pentaerythritol		0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
phenacyl chloride/(alpha)-chloroacetophenone	Y	0.0	0.0	0.0	0.0	0.0231	N/A	48.06	N/A	0.0	0.0	0.0	0.0	3.2	0.768		0.0	0.0	–
phenothiazine		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	–
phenyl ether		0.0	0.0	0.0	0.0	0.505	N/A	1,051	N/A	0.0	0.0	0.0	0.0	70	16.8		0.0	0.0	–
phenyl glycidyl ether		0.0	0.0	0.0	0.0	0.440	N/A	916.1	N/A	0.0	0.0	0.0	0.0	61	14.64		0.0	0.0	–
phenyl mercaptan		0.0	0.0	0.0	0.0	0.166	N/A	345.4	N/A	0.0	0.0	0.0	0.0	23	5.52		0.0	0.0	–
phenylmercuric acetate		0.0	0.0	0.0	0.0	N/A	N/A	42.83	N/A	0.0	0.0	0.0	0.0			7.50E-02	–	–	0.0
phenylphosphine		0.0	0.0	0.0	0.0	0.0166	N/A	34.54	N/A	0.0	0.0	0.0	0.0	2.3	0.552		0.0	0.0	–
phosdrin ==> mevinphos		0.0	0.0	0.0	0.0	6.6E-03	N/A	13.82	N/A	0.0	0.0	0.0	0.0	0.92	0.2208		0.0	0.0	–
PHTHALIC ANHYDRIDE ;		0.13	5.0E-03	1.0E-03	1.3E-04	0.440	N/A	1,142,023	N/A	6.5E-04	2.5E-05	5.0E-06	6.3E-07	61.0	14.6	2000.0	5.2E-05	2.1E-05	1.1E-06
picric acid ==> 2,4,6-trinitrophenol		0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	–
pindone ==> 2-pivalyl-1,3-indandione		0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	–
piperazine dihydrochloride		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	–
p-nitroaniline		0.0	0.0	0.0	0.0	0.217	N/A	450.5	N/A	0.0	0.0	0.0	0.0	30	7.2		0.0	0.0	–
p-nitrochlorobenzene		0.0	0.0	0.0	0.0	0.0462	N/A	96.12	N/A	0.0	0.0	0.0	0.0	6.4	1.536		0.0	0.0	–
polychlorobiphenyls/chlorodiphenyls (PCB)	Y	0.0	0.0	0.0	0.0	0.0722	N/A	0.474	N/A	0.0	0.0	0.0	0.0	10	2.4	8.30E-04	0.0	0.0	0.0
polycyclic organic matter	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
pronamide		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
propargyl alcohol		0.0	0.0	0.0	0.0	0.166	N/A	345.4	N/A	0.0	0.0	0.0	0.0	23	5.52		0.0	0.0	–
propionaldehyde	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
propoxur ==> baygone	Y	0.0	0.0	0.0	0.0	0.0361	N/A	75.09	N/A	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	–
propylene glycol dinitrate		0.0	0.0	0.0	0.0	0.0245	N/A	51.06	N/A	0.0	0.0	0.0	0.0	3.4	0.816		0.0	0.0	–
propyleneglycol monomethyl ether		0.0	0.0	0.0	0.0	26.6	N/A	1,142,023	N/A	0.0	0.0	0.0	0.0	3690	885.6	2.00E+03	0.0	0.0	0.0
p-toluidine		0.0	0.0	0.0	0.0	0.635	N/A	1,322	N/A	0.0	0.0	0.0	0.0	88	21.12		0.0	0.0	–
pyrethrum		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	–
pyrocatechol ==> catechol	Y	0.0	0.0	0.0	0.0	1.66	N/A	3,454	N/A	0.0	0.0	0.0	0.0	230	55.2		0.0	0.0	–
quinoline	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
quinone	Y	0.0	0.0	0.0	0.0	0.0318	N/A	66.08	N/A	0.0	0.0	0.0	0.0	4.4	1.056		0.0	0.0	–
resorcinol		0.0	0.0	0.0	0.0	3.25	N/A	6,758	N/A	0.0	0.0	0.0	0.0	450	108		0.0	0.0	–
rotenone, (commercial)		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	–
rubber solvent, (naphtha)		0.0	0.0	0.0	0.0	229.6	N/A	477,573	N/A	0.0	0.0	0.0	0.0	31800	7632		0.0	0.0	–
selenourea		0.0	0.0	0.0	0.0	N/A	N/A	2,855	N/A	0.0	0.0	0.0	0.0			5.00E+00	–	–	0.0
sodium 2-4-dichloro-phenoxyethyl sulfate==>sesone		0.0	0.0	0.0	0.0	0.722	N/A	1,502	N/A	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
sodium azide		0.0	0.0	0.0	0.0	0.0209	N/A	43.55	N/A	0.0	0.0	0.0	0.0	2.9	0.696		0.0	0.0	–
sodium fluoroacetate		0.0	0.0	0.0	0.0	3.6E-03	N/A	7.51	N/A	0.0	0.0	0.0	0.0	0.5	0.12		0.0	0.0	–
strychnine		0.0	0.0	0.0	0.0	0.0108	N/A	171.3	N/A	0.0	0.0	0.0	0.0	1.5	0.36	3.00E-01	0.0	0.0	0.0
styrene oxide	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
terphenyls		0.0	0.0	0.0	0.0	0.339	N/A	705.6	N/A	0.0	0.0	0.0	0.0	47	11.28		0.0	0.0	–
tert-butyl chromate		0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	–
tetrachloronaphthalene		0.0	0.0	0.0	0.0	0.144	N/A	300.4	N/A	0.0	0.0	0.0	0.0	20	4.8		0.0	0.0	–
tetraethyl lead, (as Pb)		0.0	0.0	0.0	0.0	7.2E-03	N/A	0.057	N/A	0.0	0.0	0.0	0.0	1	0.24	1.00E-04	0.0	0.0	0.0
tetramethyl sussinonitrile		0.0	0.0	0.0	0.0	0.202	N/A	420.5	N/A	0.0	0.0	0.0	0.0	28	6.72		0.0	0.0	–
tetrasodium pyrophosphate		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	–
thallium acetate		0.0	0.0	0.0	0.0	N/A	N/A	285.5	N/A	0.0	0.0	0.0	0.0			5.00E-01	–	–	0.0
thioglycolic acid		0.0	0.0	0.0	0.0	0.274	N/A	570.7	N/A	0.0	0.0	0.0	0.0	38	9.12		0.0	0.0	–
THIONYL CHLORIDE		2.30	0.088	0.018	2.2E-03	0.354	N/A	735.9	N/A	2.30	8.8E-02	1.8E-02	2.2E-03	49.0	11.8	–	1.8E-01	7.4E-02	–
TOLUENE DIISOCYANATE ;	Y	500.0	19.2	3.85	0.48	2.6E-03	N/A	5.41	N/A	2.5	0.10	0.019	2.4E-03	0.36	0.086	–	0.20	0.080	–
toxaphene ==> chlorinated camphene	Y	0.0	0.0	0.0	0.0	0.0361	N/A	1.77	N/A	0.0	0.0	0.0	0.0	5	1.2	3.10E-03	0.0	0.0	0.0
trichloroacetic acid		0.0	0.0	0.0	0.0	0.484	N/A	1,006	N/A	0.0	0.0	0.0	0.0	67	16.08		0.0	0.0	–
TRICHLOROETHANE, 1,1,1-		20000.0	769.2	153.8	19.2	275.8	N/A	573,688	N/A	20000.0	769.23	153.85	19.231	38200.0	9168.0	–	1596.40	639.23	–
TRICHLOROFLUOROMETHANE (CFC-11)		1800.0	69.2	13.8	1.73	811.6	N/A	171,303	N/A	1800.0	69.23	13.85	1.7E+00	112400.0	26978.0	300.0	143.68	57.53	3.152
TRICHLOROPHENOL ;	Y	23.7	0.91	0.18	0.023	N/A	N/A	182.7	N/A	0.118	4.6E-03	9.1E-04	1.1E-04	–	–	0.3	–	–	2.1E-04
TRICHLOROTRIFLUOROETHANE (CFC-13)		900.0	34.6	6.9	0.9	1107.6	N/A	2,303,765	N/A	900.0	34.62	6.92	0.865	153400.0	36816.0	–	71.84	28.77	–
trifluorobromomethane		0.0	0.0	0.0	0.0	879.4	N/A	1,829,195	N/A	0.0	0.0	0.0	0.0	121800	29232		0.0	0.0	–
trifluralin	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
trimellitic anhydride		0.0	0.0	0.0	0.0	2.8E-03	N/A	5.86	N/A	0.0	0.0	0.0	0.0	0.39	0.0936		0.0	0.0	–
trimethyl benzene		0.0	0.0	0.0	0.0	8.88	N/A	18,472	N/A	0.0	0.0	0.0	0.0	1230	295.2		0.0	0.0	–
triorthocresyl phosphate		0.0	0.0	0.0	0.0	7.2E-03	N/A	15.02	N/A	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	–
triphenyl amine		0.0	0.0	0.0	0.0	0.361	N/A	750.9	N/A	0.0	0.0	0.0	0.0	50	12		0.0	0.0	–
triphenyl phosphate		0.0	0.0	0.0	0.0	0.217	N/A	450.5	N/A	0.0	0.0	0.0	0.0	30	7.2		0.0	0.0	–
warfarin		0.0	0.0	0.0	0.0	7.2E-03	N/A	171.3	N/A	0.0	0.0	0.0	0.0	1	0.24	3.00E-01	0.0	0.0	0.0
xylidine ==> dimethylaminobenzene		0.0	0.0	0.0	0.0	0.181	N/A	375.5	N/A	0.0	0.0	0.0	0.0	25	6		0.0	0.0	–
(beta)-naphthylamine		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
MISC. OC's NOT IDENTIFIED AS FAT		5800.0	223.1	44.6	5.6	N/A	N/A	N/A	N/A	5800.0	223.1	44.6	5.6				–	–	–
TOTAL OF OC:		19.7	TPY							19.5	TPY								
TOTAL OF OC/VOC:		41.3	TPY							41.1	TPY								

APPENDIX 6-- MAXIMUM ANNUAL AND HOURLY CHEMICAL USAGES, MAXIMUM ANNUAL AND HOURLY EMISSIONS, AND IMPACT ANALYSIS RESULTS USING ISCST2 MODEL FOR DOE PINELLAS PLANT
REVISED (4/17/96)

		Maximum Usages (a)				Impact Based Maximum Emission Rate (b)				Maximum Permitted Emission Rates (a)				No-Threat Levels (ug/m³)			Predicted Maximum Impacts (ug/m³) (c)		
Chemicals	HAP	Annual (lb/yr)	Weekly (lb/wk)	Daily (lb/day)	Hourly (lb/hr)	100 % NTL (lb/hr)	25 % NTL (lb/hr)	100 % NTL (lb/yr)	25 % NTL (lb/yr)	Annual (lb/yr)	Max. wkly (lb/wk)	Max. Daily (lb/day)	Max. Hourly (lb/hr)	8-Hour	24-Hour	Annual	Short-term 8-Hour	Short-term 24-Hour	Annual
Miscellaneous		For Miscellaneous Gases ; Acids, Bases and Electrolytes ; and Particulate Matter (PM) - See Note (f)																	
ACETIC ACID ;		439.8	16.9	3.38	0.42	1.81	0.451	3,755	939	8.8	0.3	0.068	8.5E-03	250.0	60.0	–	0.70	0.26	–
aldicarb		0.0	0.0	0.0	0.0	2.17	0.542	571.0	142.753	0.0	0.0	0.0	0.0	300	72	1.00E+00	0.0	0.0	0.0
aldrin		0.0	0.0	0.0	0.0	0.0181	0.005	0.114	0.029	0.0	0.0	0.0	0.0	2.5	0.6	2.00E-04	0.0	0.0	0.0
ALUMINUM OXIDE		12918.1	496.9	99.4	12.4	0.722	0.181	1,502	375.451	645.9	24.8	5.0	0.62	100.0	24.0	–	51.6	20.6	–
aluminum phosphide		0.0	0.0	0.0	0.0	N/A	N/A	171.3	42.826	0.0	0.0	0.0	0.0			3.00E-01	–	–	0.0
ALUMINUM POWDER		15.0	0.58	0.12	0.014	0.722	0.181	1,502	375.451	0.8	0.0	0.0	0.0	100.0	24.0	–	0.06	0.024	–
amitrole		0.0	0.0	0.0	0.0	0.0144	0.004	30.04	7.509	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	–
AMMONIA _		88.2	3.39	0.68	0.085	1.23	0.307	57,101	14275.282	88.2	3.4	0.7	0.08	170.0	40.8	100.0	7.04	2.82	0.15
AMMONIUM CHLORIDE		0.3	0.012	2.3E-03	2.9E-04	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100.0	24.0	–	1.2E-03	4.8E-04	–
ammonium perfluorooctanoate		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	–
ammonium sulfamate		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
ANTIMONY	Y	0.0	0.0	0.0	0.0	0.0361	0.009	171.3	42.826	0.0	0.0	0.0	0.0	5.0	1.2	0.3	0.0	0.0	0.0
antimony trioxide		0.0	0.0	0.0	0.0	0.0361	0.009	75.09	18.773	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	–
ANTU		0.0	0.0	0.0	0.0	0.0217	0.005	45.05	11.264	0.0	0.0	0.0	0.0	3	0.72		0.0	0.0	–
ARGON _		1998.3	76.9	15.4	1.92	N/A	N/A	N/A	N/A	1998.3	76.9	15.4	1.92	–	–	–	–	–	–
arsenic trioxide (production)		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
arsenic & soluble compounds	Y	0.0	0.0	0.0	0.0	0.0144	0.004	0.131	0.033	0.0	0.0	0.0	0.0	1.6	0.48	2.30E-04	0.0	0.0	0.0
arsine		0.0	0.0	0.0	0.0	0.0116	0.003	24.03	6.007	0.0	0.0	0.0	0.0	2	0.384		0.0	0.0	–
ASBESTOS	Y	17.65	0.68	0.14	0.017	N/A	N/A	N/A	N/A	0.88	0.03	0.007	8.49E-04	–	–	–	–	–	–
barium sulfate		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
barium , soluble compounds		0.0	0.0	0.0	0.0	0.0361	0.009	28,551	7137.641	0.0	0.0	0.0	0.0	5	1.2	5.00E+01	0.0	0.0	0.0
benomyl		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
beryllium & compounds	Y	0.0	0.0	0.0	0.0	1.4E-04	0.000	0.240	0.060	0.0	0.0	0.0	0.0	0.02	0.0048	4.20E-04	0.0	0.0	0.0
bismuth telluride		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
bismuth telluride, se-doped		0.0	0.0	0.0	0.0	0.361	0.090	750.9	187.725	0.0	0.0	0.0	0.0	50	12		0.0	0.0	–
borates, tetra , sodium salts		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	–
boron oxide		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
boron tribromide		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
boron trifluoride		0.0	0.0	0.0	0.0	0.202	0.051	420.5	105.126	0.0	0.0	0.0	0.0	28	6.72		0.0	0.0	–
bromacil		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
bromine		0.0	0.0	0.0	0.0	0.0477	0.012	99.12	24.780	0.0	0.0	0.0	0.0	6.6	1.584		0.0	0.0	–
bromine pentafluoride		0.0	0.0	0.0	0.0	0.0520	0.013	108.1	27.032	0.0	0.0	0.0	0.0	7.2	1.728		0.0	0.0	–
CADMIUM	Y	1.12	0.043	8.6E-03	0.0011	3.6E-03	0.001	0.320	0.080	0.06	2.15E-03	0.0004	5.38E-05	0.5	0.12	0.00056	4.5E-03	1.8E-03	9.8E-05
cadmium oxide		0.0	0.0	0.0	0.0	3.6E-03	0.001	0.320	0.080	0.0	0.0	0.0	0.0	0.5	0.12	5.60E-04	0.0	0.0	0.0
CALCIUM CARBONATE		41.80	1.61	0.32	0.040	0.722	0.181	1,502	375.451	2.09	0.08	0.016	2.01E-03	100	24	–	0.17	0.07	–
calcium chromate		0.0	0.0	0.0	0.0	7.2E-05	0.000	0.150	0.038	0.0	0.0	0.0	0.0	0.01	0.0024		0.0	0.0	–
calcium cyanamide	Y	0.0	0.0	0.0	0.0	0.0361	0.009	75.09	18.773	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	–
calcium hydroxide		0.0	0.0	0.0	0.0	0.361	0.090	750.9	187.725	0.0	0.0	0.0	0.0	50	12		0.0	0.0	–
CALCIUM OXIDE		28.28	1.09	0.22	0.027	0.144	0.036	300.4	75.090	1.41	0.05	0.011	1.36E-03	20	4.8	–	0.11	0.045	–
calcium silicate		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
CALCIUM SULFATE		31.28	1.20	0.24	0.030	0.722	0.181	1,502	375.451	1.56	0.06	0.012	1.50E-03	100	24	–	0.12	0.05	–
caprolactam, vapor		0.0	0.0	0.0	0.0	1.44	0.361	3,004	750.901	0.0	0.0	0.0	0.0	200	48		0.0	0.0	–
CARBON BLACK		123.06	4.73	0.95	0.12	0.253	0.063	525.6	131.408	6.15	0.24	0.047	5.92E-03	35	8.4	–	0.49	0.20	–
carbonyl sulfide	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				–	–	–
cesium hydroxide		0.0	0.0	0.0	0.0	0.144	0.036	300.4	75.090	0.0	0.0	0.0	0.0	20	4.8		0.0	0.0	–
chlorine	Y	0.0	0.0	0.0	0.0	0.108	0.027	228.4	57.101	0.0	0.0	0.0	0.0	15	3.6	4.00E-01	0.0	0.0	0.0
chlorine dioxide		0.0	0.0	0.0	0.0	0.0202	0.005	114.2	28.551	0.0	0.0	0.0	0.0	2.8	0.672	2.00E-01	0.0	0.0	0.0
chlorine trifluoride		0.0	0.0	0.0	0.0	0.0274	0.007	57.07	14.267	0.0	0.0	0.0	0.0	3.8	0.912		0.0	0.0	–
chromate, (as Cr)		0.0	0.0	0.0	0.0	3.6E-03	0.001	7.51	1.877	0.0	0.0	0.0	0.0	0.5	0.12		0.0	0.0	–
CHROMIC ACID	Y	50.0	1.92	0.38	0.048	6.7E-02	0.017	1.14	0.286	0.370	0.010	0.0020	3.6E-04	0.50	0.12	8.5E-05	1.9E-03	6.4E-04	2.8E-05
chromium IV compounds	Y	0.0	0.0	0.0	0.0	3.6E-03	0.001	0.0474	0.012	0.0	0.0	0.0	0.0	0.5	0.12	8.30E-05	0.0	0.0	0.0
chromium metal (total III & IV cmpds.)	Y	0.0	0.0	0.0	0.0	0.0361	0.009	75.09	18.773	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	–
chromyl chloride		0.0	0.0	0.0	0.0	0.0116	0.003	24.03	6.007	0.0	0.0	0.0	0.0	1.6	0.384		0.0	0.0	–
clopidol		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
coal, dust		0.0	0.0	0.0	0.0	0.144	0.036	300.4	75.090	0.0	0.0	0.0	0.0	20	4.8		0.0	0.0	–
cobalt, dust & fumes	Y	0.0	0.0	0.0	0.0	3.6E-03	0.001	7.51	1.877	0.0	0.0	0.0	0.0	0.5	0.12		0.0	0.0	–
coke oven emissions	Y	0.0	0.0	0.0	0.0	N/A	0.000	0.091	0.023	0.0	0.0	0.0	0.0			1.60E-04	–	–	0.0
COPPER		22.38	0.86	0.17	0.021	0.0722	0.018	150.2	37.545	1.12	0.04	0.009	1.08E-03	10	2.4	–	0.089	0.036	–
copper cyanide		0.0	0.0	0.0	0.0	N/A	N/A	2,855	713.764	0.0	0.0	0.0	0.0			5.00E+00	–	–	0.0
copper, dusts & mists		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	–
cotton, dust		0.0	0.0	0.0	0.0	0.0144	0.004	30.04	7.509	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	–
decaborane		0.0	0.0	0.0	0.0	0.0181	0.005	37.55	9.386	0.0	0.0	0.0	0.0	2.5	0.6		0.0	0.0	–
demeton ==> systox		0.0	0.0	0.0	0.0	7.9E-03	0.002	16.52	4.130	0.0	0.0	0.0	0.0	1.1	0.264		0.0	0.0	–
diborane		0.0	0.0	0.0	0.0	7.9E-03	0.002	16.52	4.130	0.0	0.0	0.0	0.0	1.1	0.264		0.0	0.0	–
dichlorvos	Y	0.0	0.0	0.0	0.0	0.0650	0.016	135.2	33.791	0.0	0.0	0.0	0.0	9	2.16		0.0	0.0	–
dicrotophos		0.0	0.0	0.0	0.0	0.0181	0.005	37.55	9.386	0.0	0.0	0.0	0.0	2.5	0.6		0.0	0.0	–
dinoseb		0.0	0.0	0.0	0.0	N/A	N/A	513.9	128.478	0.0	0.0	0.0	0.0			9.00E-01	–	–	0.0
disulfiram		0.0	0.0	0.0	0.0	0.144	0.036	300.4	75.090	0.0	0.0	0.0	0.0	20	4.8		0.0	0.0	–
disulfoton		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	–
diuron		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–
emery		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	–

APPENDIX 6-- MAXIMUM ANNUAL AND HOURLY CHEMICAL USAGES, MAXIMUM ANNUAL AND HOURLY EMISSIONS, AND IMPACT ANALYSIS RESULTS USING ISCST2 MODEL FOR DOE PINELLAS PLANT
REVISED (4/17/96)

		Maximum Usages (a)				Impact Based Maximum Emission Rate (b)				Maximum Permitted Emission Rates (a)				No-Threat Levels (µg/m³)			Predicted Maximum Impacts (µg/m³) (c)		
Chemicals	HAP	Annual (lb/yr)	Weekly (lb/wk)	Daily (lb/day)	Hourly (lb/hr)	100 % NTL (lb/hr)	25 % NTL (lb/hr)	100 % NTL (lb/yr)	25 % NTL (lb/yr)	Annual (lb/yr)	Max. wkly (lb/wk)	Max. Daily (lb/day)	Max. Hourly (lb/hr)	8-Hour	24-Hour	Annual	Short-term 8-Hour	Short-term 24-Hour	Annual
endosulfan		0.0	0.0	0.0	0.0	7.2E-03	0.002	28.55	7.138	0.0	0.0	0.0	0.0	1	0.24	5.00E-02	0.0	0.0	0.0
endrin		0.0	0.0	0.0	0.0	7.2E-03	0.002	171.3	42.826	0.0	0.0	0.0	0.0	1	0.24	3.00E-01	0.0	0.0	0.0
enflurane		0.0	0.0	0.0	0.0	40.9	10.217	85,002	21250.503	0.0	0.0	0.0	0.0	5660	1358.4		0.0	0.0	-
EPN		0.0	0.0	0.0	0.0	0.0361	0.009	75.09	18.773	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	-
ethanethiol ==> ethyl mercaptan		0.0	0.0	0.0	0.0	0.0939	0.023	195.2	48.809	0.0	0.0	0.0	0.0	13	3.12		0.0	0.0	-
ethion		0.0	0.0	0.0	0.0	0.0289	0.007	60.07	15.018	0.0	0.0	0.0	0.0	4	0.96		0.0	0.0	-
ETHYL SILICATE		1.60	0.062	0.012	0.0015	6.14	1.534	12,765	3191.330	0.08	3.08E-03	6.15E-04	7.69E-05	850	204	-	6.4E-03	2.6E-03	-
fenamiphos		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
fensulfothion		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
fenthion		0.0	0.0	0.0	0.0	0.0144	0.004	30.04	7.509	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	-
ferbam		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
ferrovanadium dust		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-
FIBROUS GLASS		0.95	0.037	7.3E-03	0.0009	0.722	0.181	1,502	375.451	0.05	1.83E-03	3.65E-04	4.57E-05	100	24	-	3.8E-03	1.5E-03	-
FLUORIDE		0.09	3.5E-03	6.9E-04	8.7E-05	0.181	0.045	375.5	93.863	0.0045	1.73E-04	3.46E-05	4.33E-06	25	6	-	3.6E-04	1.4E-04	-
fluorine		0.0	0.0	0.0	0.0	0.116	0.029	28,551	7137.641	0.0	0.0	0.0	0.0	16	3.84	5.00E+01	0.0	0.0	0.0
fonofos		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
FORMIC ACID ;		1.3	0.048	9.7E-03	0.0	0.679	0.170	1,142,023	285505.647	0.0	0.0	0.0	0.0	94.0	22.6	2000.0	2.0E-03	8.1E-04	4.4E-05
germanium tetrahydride		0.0	0.0	0.0	0.0	0.0455	0.011	94.61	23.653	0.0	0.0	0.0	0.0	6.3	1.512		0.0	0.0	-
graphite		0.0	0.0	0.0	0.0	0.144	0.036	300.4	75.090	0.0	0.0	0.0	0.0	20	4.8		0.0	0.0	-
gypsum ==> calcium sulfate		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
hafnium		0.0	0.0	0.0	0.0	0.0361	0.009	75.09	18.773	0.0	0.0	0.0	0.0	5	1.2		0.0	0.0	-
hydrazine		0.0	0.0	0.0	0.0	9.4E-03	0.002	0.114	0.029	0.0	0.0	0.0	0.0	1.3	0.312	2.00E-04	0.0	0.0	0.0
HYDROCHLORIC ACID ;	Y	2035.6	78.3	15.7	1.96	0.542	0.135	3,997	999.270	40.7	1.6	0.3	0.0	75.0	18.0	7.0	3.25	1.30	0.071
HYDROFLUORIC ACID ;	Y	238.5	9.17	1.83	0.23	0.188	0.047	390.5	97.617	4.8	0.2	0.0	0.0	26.0	6.2	-	0.38	0.15	-
hydrogen bromide		0.0	0.0	0.0	0.0	0.715	0.179	1,487	371.696	0.0	0.0	0.0	0.0	99	23.76		0.0	0.0	-
HYDROGEN PEROXIDE		2.25	8.7E-02	1.7E-02	2.2E-03	0.101	0.025	210.3	52.563	0.11	4.33E-03	8.65E-04	1.08E-04	14	3.36	-	9.0E-03	3.6E-03	-
hydrogen selenide (as Se)		0.0	0.0	0.0	0.0	0.0116	0.003	24.03	6.007	0.0	0.0	0.0	0.0	1.6	0.384		0.0	0.0	-
hydrogen sulfide		0.0	0.0	0.0	0.0	1.01	0.253	513.9	128.478	0.0	0.0	0.0	0.0	140	33.6	9.00E-01	0.0	0.0	0.0
indium compounds (as In)		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
iodine		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-
IRON OXIDE		43.16	1.66	0.33	0.041	0.361	0.090	750.9	187.725	2.16	0.08	0.017	2.07E-03	50	12	-	0.17	0.069	-
iron salts ,soluble (as Fe)		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-
kaolin		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
LEAD COMPOUNDS	Y	19.50	0.75	0.15	0.019	3.6E-03	0.001	51.39	12.848	0.98	0.04	0.008	9.38E-04	0.5	0.12	0.09	0.078	0.031	1.7E-03
lithium hydride		0.0	0.0	0.0	0.0	1.8E-03	0.000	3.75	0.939	0.0	0.0	0.0	0.0	0.25	0.06		0.0	0.0	-
magnesite		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
MAGNESIUM OXIDE		44.57	1.71	0.343	0.0429	0.722	0.181	1,502	375.451	2.23	0.09	0.017	2.14E-03	100	24	-	0.178	0.071	-
MANGANESE CHLORIDE TETRAHYDRATE	Y	0.5	0.019	3.8E-03	4.8E-04	0.361	0.090	228.4	57.101	0.0	0.0	0.0	0.0	50.0	12.0	0.4	8.0E-04	3.2E-04	1.8E-05
manganese compounds, (as Mn)	Y	0.0	0.0	0.0	0.0	0.361	0.090	228.4	57.101	0.0	0.0	0.0	0.0	50	12	4.00E-01	0.0	0.0	0.0
MERCURY	Y	0.00	0.00	0.00	0.000	3.6E-03	0.001	171.3	42.826	0.00	0.00	0.000	0.0E+00	0.5	0.12	0.3	0.0E+00	0.0E+00	0.0E+00
mercury, (as Hg) alkyl compounds	Y	0.0	0.0	0.0	0.0	7.2E-04	0.000	1.50	0.375	0.0	0.0	0.0	0.0	0.1	0.024		0.0	0.0	-
mercury, (as Hg) all forms except alkyl vapor	Y	0.0	0.0	0.0	0.0	3.6E-03	0.001	171.3	42.826	0.0	0.0	0.0	0.0	0.5	0.12	3.00E-01	0.0	0.0	0.0
MERCURY, ARYL & INORGANIC COMPOUNDS (	Y	38.0	1.4	0.3	0.0346	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
metribuzin		0.0	0.0	0.0	0.0	0.361	0.090	750.9	187.725	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
mevinphos ==> phosdrin		0.0	0.0	0.0	0.0	6.9E-03	0.002	14.27	3.567	0.0	0.0	0.0	0.0	0.92	0.228		0.0	0.0	-
mineral wool fibers	Y	0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
molybdenum, soluble compounds, (as Mo)		0.0	0.0	0.0	0.0	0.361	0.090	750.9	187.725	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
monocrotophos		0.0	0.0	0.0	0.0	0.0181	0.005	37.55	9.386	0.0	0.0	0.0	0.0	2.5	0.6		0.0	0.0	-
naled		0.0	0.0	0.0	0.0	0.217	0.054	450.5	112.635	0.0	0.0	0.0	0.0	30	7.2		0.0	0.0	-
neon		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
NICKEL	Y	44.00	1.69	0.34	0.042	7.2E-03	0.002	2.40	0.600	2.20	0.08	0.017	2.12E-03	10	0.24	0.0042	0.18	0.070	0.0039
nickel sulfide roasting, fume & dust, (as Ni)		0.0	0.0	0.0	0.0	0.0722	0.018	1.20	0.300	0.0	0.0	0.0	0.0	10	2.4	2.10E-03	0.0	0.0	0.0
nickel, soluble compounds, (as Ni)	Y	0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
NITRIC ACID ;		2003.7	77.1	15.4	1.93	0.375	0.094	780.9	195.234	40.1	1.5	0.3	0.0	52.0	12.5	-	3.20	1.28	-
nitric oxide		0.0	0.0	0.0	0.0	2.24	0.560	57,101	14275.282	0.0	0.0	0.0	0.0	310	74.4	1.00E+02	0.0	0.0	0.0
NITROGEN DIOXIDE _		400.0	15.4	3.08	0.38	0.404	0.101	841.0	210.252	400.0	15.4	3.1	0.38	56.0	13.4	-	31.9	12.8	-
nitrogen trifluoride		0.0	0.0	0.0	0.0	2.09	0.523	4,355	1088.807	0.0	0.0	0.0	0.0	290	69.6		0.0	0.0	-
osmium tetroxide, (as Os)		0.0	0.0	0.0	0.0	1.2E-04	0.000	0.240	0.060	0.0	0.0	0.0	0.0	0.016	0.00384		0.0	0.0	-
oxygen difluoride		0.0	0.0	0.0	0.0	7.9E-03	0.002	16.52	4.130	0.0	0.0	0.0	0.0	1.1	0.264		0.0	0.0	-
paraquat		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
pentaborane		0.0	0.0	0.0	0.0	9.4E-04	0.000	1.95	0.488	0.0	0.0	0.0	0.0	0.13	0.0312		0.0	0.0	-
perchloryl fluoride		0.0	0.0	0.0	0.0	0.939	0.235	1,952	488.086	0.0	0.0	0.0	0.0	130	31.2		0.0	0.0	-
phorate		0.0	0.0	0.0	0.0	3.6E-03	0.001	7.51	1.877	0.0	0.0	0.0	0.0	0.5	0.12		0.0	0.0	-
phosphine	Y	0.0	0.0	0.0	0.0	0.0303	0.008	171.3	42.826	0.0	0.0	0.0	0.0	4.2	1.008	3.00E-01	0.0	0.0	0.0
PHOSPHORIC ACID ;		550.3	21.2	4.23	0.53	0.0722	0.018	150.2	37.545	11.0	0.4	0.1	0.0	10.0	2.4	-	0.88	0.35	-
PHOSPHORUS		0.11	4.2E-03	8.5E-04	1.1E-04	7.2E-03	0.002	15.02	3.755	0.01	2.12E-04	4.23E-05	5.29E-06	1	0.24	-	4.4E-04	1.8E-04	-
phosphorus oxychloride		0.0	0.0	0.0	0.0	0.0455	0.011	94.61	23.653	0.0	0.0	0.0	0.0	6.3	1.512		0.0	0.0	-
phosphorus pentachloride		0.0	0.0	0.0	0.0	0.0614	0.015	127.7	31.913	0.0	0.0	0.0	0.0	8.5	2.04		0.0	0.0	-
phosphorus pentasulfide		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-
phosphorus trichloride		0.0	0.0	0.0	0.0	0.0794	0.020	165.2	41.300	0.0	0.0	0.0	0.0	11	2.64		0.0	0.0	-
picloram		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
platinum metal		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-

APPENDIX 6— MAXIMUM ANNUAL AND HOURLY CHEMICAL USAGES, MAXIMUM ANNUAL AND HOURLY EMISSIONS, AND IMPACT ANALYSIS RESULTS USING ISCST2 MODEL FOR DOE PINELLAS PLANT
REVISED (4/17/96)

		Maximum Usages (a)				Impact Based Maximum Emission Rate (b)				Maximum Permitted Emission Rates (a)				No-Threat Levels (µg/m³)			Predicted Maximum Impacts (µg/m³) (c)		
Chemicals	HAP	Annual (lb/yr)	Weekly (lb/wk)	Daily (lb/day)	Hourly (lb/hr)	100 % NTL (lb/hr)	25 % NTL (lb/hr)	100 % NTL (lb/yr)	25 % NTL (lb/yr)	Annual (lb/yr)	Max. wkly (lb/wk)	Max. Daily (lb/day)	Max. Hourly (lb/hr)	8-Hour	24-Hour	Annual	Short-term 8-Hour	Short-term 24-Hour	Annual
platinum soluble salts (as Pt)		0.0	0.0	0.0	0.0	1.4E-04	0.000	0.300	0.075	0.0	0.0	0.0	0.0	0.02	0.0048		0.0	0.0	-
PORTLAND CEMENT		0.92	0.035	7.1E-03	0.0009	0.722	0.181	1,502	375.451	0.05	1.77E-03	3.54E-04	4.42E-05	100	24	-	3.7E-03	1.5E-03	-
POTASSIUM HYDROXIDE		175.1	6.73	1.35	0.168	0.144	0.036	300.4	75.090	3.5	0.1	0.0	0.0	20.0	4.8	-	0.28	0.1	-
radionuclides (including radon)	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
reserpine		0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
rhodium metal		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-
rhodium, insoluble compounds, (as Rh)		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-
rhodium, soluble compounds, (as Rh)		0.0	0.0	0.0	0.0	7.2E-04	0.000	1.50	0.375	0.0	0.0	0.0	0.0	0.1	0.024		0.0	0.0	-
ronnel		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
selenious acid		0.0	0.0	0.0	0.0	N/A	N/A	1,713	428.258	0.0	0.0	0.0	0.0			3.00E+00	-	-	0.0
selenium compounds, (as Se)	Y	0.0	0.0	0.0	0.0	0.0144	0.004	30.04	7.509	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	-
selenium hexafluoride		0.0	0.0	0.0	0.0	0.0116	0.003	24.03	6.007	0.0	0.0	0.0	0.0	1.6	0.384		0.0	0.0	-
silane ==> silicon tetrahydride		0.0	0.0	0.0	0.0	0.477	0.119	991.2	247.797	0.0	0.0	0.0	0.0	66	15.84		0.0	0.0	-
SILICA GEL		40.00	1.54	0.31	0.038	0.722	0.181	1,502	375.451	2.00	0.08	0.015	1.92E-03	100	24	-	0.16	0.06	-
silica-amorphous: diatomaceous earth		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
silica-amorphous: precipitated silica		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
silica-crystalline: cristobalite		0.0	0.0	0.0	0.0	3.6E-03	0.001	7.51	1.877	0.0	0.0	0.0	0.0	0.5	0.12		0.0	0.0	-
silica-crystalline: quartz		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
silica-crystalline: silica,fused		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
silica-crystalline: tridymite		0.0	0.0	0.0	0.0	3.6E-03	0.001	7.51	1.877	0.0	0.0	0.0	0.0	0.5	0.12		0.0	0.0	-
silica-crystalline: tripoli		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
SILICA, AMORPHOUS		14.25	0.55	0.11	0.0137	0.722	0.181	1,502	375.451	0.71	0.03	0.005	6.85E-04	100	24	-	0.057	0.023	-
silicon carbide		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
silicon tetrahydride ==> silane		0.0	0.0	0.0	0.0	0.477	0.119	991.2	247.797	0.0	0.0	0.0	0.0	66	15.84		0.0	0.0	-
SILICONE		38.54	1.48	0.30	0.037	0.722	0.181	1,502	375.451	1.93	0.07	0.015	1.85E-03	100	24	-	0.15	0.06	-
SILVER		2.52	0.097	0.019	0.0024	7.2E-03	0.002	1,713	428.258	0.13	4.84E-03	9.68E-04	1.21E-04	1	0.24	3	0.010	4.0E-03	2.2E-04
silver cyanide		0.0	0.0	0.0	0.0	N/A	N/A	57,101	14275.282	0.0	0.0	0.0	0.0			1.00E+02	-	-	0.0
silver; metal		0.0	0.0	0.0	0.0	7.2E-03	0.002	1,713	428.258	0.0	0.0	0.0	0.0	1	0.24	3.00E+00	0.0	0.0	0.0
silver; soluble compounds, (as Ag)		0.0	0.0	0.0	0.0	7.2E-04	0.000	1.50	0.375	0.0	0.0	0.0	0.0	0.1	0.024		0.0	0.0	-
sodium bisulfite		0.0	0.0	0.0	0.0	0.361	0.090	750.9	187.725	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
SODIUM HYDROXIDE		413.7	15.9	3.18	0.40	N/A	N/A	N/A	N/A	8.3	0.3	0.1	0.0	-	-	-	-	-	-
SODIUM METABISULFITE		7.25	0.28	0.056	0.0070	0.361	0.090	750.9	187.725	0.36	1.39E-02	0.0028	3.49E-04	50	12	-	0.029	0.012	-
stibine		0.0	0.0	0.0	0.0	0.0368	0.009	76.59	19.148	0.0	0.0	0.0	0.0	5.1	1.224		0.0	0.0	-
sulfotep ==> TEDP		0.0	0.0	0.0	0.0	0.0144	0.004	30.04	7.509	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	-
SULFUR DIOXIDE		1.0	0.038	7.7E-03	0.0	0.375	0.094	780.9	195.234	1.0	3.8E-02	7.7E-03	9.6E-04	52.0	12.5	-	0.080	0.032	-
sulfur monochloride		0.0	0.0	0.0	0.0	0.397	0.099	826.0	206.498	0.0	0.0	0.0	0.0	55	13.2		0.0	0.0	-
sulfur pentafluoride		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
sulfur tetrafluoride		0.0	0.0	0.0	0.0	0.0318	0.008	66.08	16.520	0.0	0.0	0.0	0.0	4.4	1.056		0.0	0.0	-
SULFURHEXAFLUORIDE		115.00	4.42	0.88	0.11	861.8	215.448	1,792,526	448131.562	5.75	0.22	0.044	5.53E-03	119,400	28,646	-	0.46	0.18	-
SULFURIC ACID		116864.5	4494.8	899.0	112.4	0.0722	0.018	150.2	37.545	9.7E-04	3.7E-05	7.5E-06	9.3E-07	10	2.4		0.0	0.0	-
sulfuryl fluoride		0.0	0.0	0.0	0.0	1.52	0.379	3,154	788.446	0.0	0.0	0.0	0.0	210	50.4		0.0	0.0	-
sulprofos		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-
tantalum, (metal and oxide dusts)		0.0	0.0	0.0	0.0	0.361	0.090	750.9	187.725	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
TEDP ==> sulfotep		0.0	0.0	0.0	0.0	0.0144	0.004	30.04	7.509	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	-
tellurium hexafluoride,(as Te)		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
tellurium & compounds, (as Te)		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
temephos		0.0	0.0	0.0	0.0	0.722	0.181	1,502	375.451	0.0	0.0	0.0	0.0	100	24		0.0	0.0	-
TEPP		0.0	0.0	0.0	0.0	3.4E-03	0.001	7.06	1.765	0.0	0.0	0.0	0.0	0.47	0.1128		0.0	0.0	-
tetryl		0.0	0.0	0.0	0.0	0.108	0.027	225.3	56.318	0.0	0.0	0.0	0.0	15	3.6		0.0	0.0	-
thallic oxide		0.0	0.0	0.0	0.0	N/A	N/A	171.3	42.826	0.0	0.0	0.0	0.0			3.00E-01	-	-	0.0
thallium carbonate		0.0	0.0	0.0	0.0	N/A	N/A	171.3	42.826	0.0	0.0	0.0	0.0			3.00E-01	-	-	0.0
thallium chloride		0.0	0.0	0.0	0.0	N/A	N/A	171.3	42.826	0.0	0.0	0.0	0.0			3.00E-01	-	-	0.0
thallium nitrate		0.0	0.0	0.0	0.0	N/A	N/A	285.5	71.376	0.0	0.0	0.0	0.0			5.00E-01	-	-	0.0
thallium selenite		0.0	0.0	0.0	0.0	N/A	N/A	285.5	71.376	0.0	0.0	0.0	0.0			5.00E-01	-	-	0.0
thallium soluble compounds, (as Tl)		0.0	0.0	0.0	0.0	7.2E-03	0.002	285.5	71.376	0.0	0.0	0.0	0.0	1	0.24	5.00E-01	0.0	0.0	0.0
thallium sulfate		0.0	0.0	0.0	0.0	N/A	N/A	42.83	10.706	0.0	0.0	0.0	0.0			7.50E-02	-	-	0.0
thiram		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-
TIN		38.92	1.50	0.30	0.037	0.144	0.036	300.4	75.090	1.95	0.07	0.015	1.87E-03	20	4.8	-	0.16	0.06	-
tin; organic compounds, (as Sn)		0.0	0.0	0.0	0.0	7.2E-03	0.002	15.02	3.755	0.0	0.0	0.0	0.0	1	0.24		0.0	0.0	-
TITANIUM DIOXIDE		39.51	1.52	0.30	0.038	0.722	0.181	1,502	375.451	1.98	0.08	0.015	1.90E-03	100	24	-	0.16	0.06	-
titanium tetrachloride	Y	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0				-	-	-
TUNGSTEN W/ INSOLUBLE COMPOUNDS		48.0	1.85	0.37	0.046	0.361	0.090	750.9	187.725	1.0	0.0	0.0	0.0	50.0	12.0	-	0.077	0.031	-
tungsten; soluble compounds, (as W)		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-
uranium; soluble & insoluble compounds, (as U)		0.0	0.0	0.0	0.0	0.0144	0.004	30.04	7.509	0.0	0.0	0.0	0.0	2	0.48		0.0	0.0	-
vanadium, as(V205)		0.0	0.0	0.0	0.0	3.6E-03	0.001	11,420	2855.056	0.0	0.0	0.0	0.0	0.5	0.12	2.00E+01	0.0	0.0	0.0
yttrium; metal & compounds, (as Y)		0.0	0.0	0.0	0.0	0.0722	0.018	150.2	37.545	0.0	0.0	0.0	0.0	10	2.4		0.0	0.0	-
ZINC CHLORIDE		11.50	0.44	0.088	0.0111	0.0722	0.018	150.2	37.545	0.58	0.02	0.004	5.53E-04	10	2.4	-	0.046	0.018	-
ZINC CHROMATE	Y	1.60	0.062	0.012	0.0015	7.2E-04	0.000	1.50	0.375	0.08	3.08E-03	0.0006	7.69E-05	0.1	0.024	-	6.4E-03	2.6E-03	-
zinc cyanide		0.0	0.0	0.0	0.0	N/A	N/A	28,551	7137.641	0.0	0.0	0.0	0.0			5.00E+01	-	-	0.0
zinc oxide		0.0	0.0	0.0	0.0	0.361	0.090	750.9	187.725	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-
zinc phosphide		0.0	0.0	0.0	0.0	N/A	0.000	171.3	42.826	0.0	0.0	0.0	0.0			3.00E-01	-	-	0.0
zirconium compounds, (as Zr)		0.0	0.0	0.0	0.0	0.361	0.090	750.9	187.725	0.0	0.0	0.0	0.0	50	12		0.0	0.0	-

APPENDIX 6-- MAXIMUM ANNUAL AND HOURLY CHEMICAL USAGES, MAXIMUM ANNUAL AND HOURLY EMISSIONS, AND IMPACT ANALYSIS RESULTS USING ISCST2 MODEL FOR DOE PINELLAS PLANT REVISED (4/17/96)

Chemicals	HAP	Maximum Usages (a) Annual (lb/yr)	Weekly (lb/wk)	Daily (lb/day)	Hourly (lb/hr)	Impact Based Maximum Emission Rate (b) 100 % NTL (lb/hr)	25 % NTL (lb/hr)	100 % NTL (lb/yr)	25 % NTL (lb/yr)	Maximum Permitted Emission Rates (a) Annual (lb/yr)	Max wkly (lb/wk)	Max. Daily (lb/day)	Max Hourly (lb/hr)	No-Threat Levels (µg/m³) 8-Hour	24-Hour	Annual	Predicted Maximum Impacts (µg/m³) (c) Short-term 8-Hour	Short-term 24-Hour	Annual
TOTAL MISC. GASES AND PM:		69.50 TPY				-				1.64 TPY									
SUMMARY:																			
TOTAL OF VOC:		21.58 TPY								21.58 TPY									
TOTAL OF OC:		19.68 TPY								19.49 TPY									
TOTAL MISC. GASES AND PM:		69.50 TPY								1.64 TPY									
OVERALL TOTAL USAGES AND EMISSIONS:		110.77 TPY								42.72 TPY									

Chemicals listed in ALL CAPS are currently in use at the Pinellas Plant (except DDE, DDT, EPN, TEDP, and TEPP)

(a) EMISSION CALCULATION NOTES REGARDING AVERAGING TIMES

For all chemicals both usages and emissions:

All short term rates are based on Annual rates times a factor of 2.0
Daily Rate = 2 x (Annual Rate/5 days x 52 weeks)
Weekly Rate = Daily Rate x 5
Hourly Rate = 2 x (Annual Rate/2,080 hrs)

(b) IMPACT BASED EMISSION RATES:

The impact based emission rate is calculated based on the maximum impacts from generic emissions (1 gram/s), except vent specific modeling has been performed for methylene chloride and chromic acid. Vent specific modeling employed maximum permitted emission rates for the DOE Pinellas Plant.
The 100% NTL hourly emission rate is the maximum lb/hr that will demonstrate compliance with the short term NTLs.
The 100% NTL annual emission rate is the maximum lb/yr that will demonstrate compliance with the annual NTLs.
This approach was taken to account separately for the maximum hourly emissions (defined as 2 x annual emissions over 2,080 hours), and maximum annual emissions
100 % NTL Emission Rate (lb/hr) For 8-hr and 24-hr = No-Threat-Level (µg/m³) / Maximum short term generic impact (µg/m³ / 1 g/s emission) x lb/454 g x 3600 s / hr = lb/hr
100% NTL Emission Rate (lb/yr) For annual = No Threat-Level (µg/m³) / (Maximum annual generic impact (µg/m³/ 1g/s emission) x lb/454 g x 3600 s/hr x 2,080 hr/yr
Maximum generic impacts are based on ISCST2 modeling with a single stack at an emission rate of 1 gram/s (see original construction permit application).
25 % NTL Emission Rate (lb/hr) = 100 % NTL (lb/hr) / 4 only for non-VOC/OC constituents
25 % NTL Emission Rate (lb/hr) = 100 % NTL (lb/hr) / 4 only for non-VOC/OC constituents

(c) PREDICTED MAXIMUM IMPACT NOTES:

The predicted short-term (8-hour and 24-hour) and long-term (annual) impacts are based on the generic impacts of 658.83 µg/m³ and 263.81 µg/m³ for the 8-hour and 24-hour averaging times, and 28.91 µg/m³ for the annual averaging period
The maximum hourly emission rate is used to calculate the short term maximum impacts. The maximum annual impact is based on the maximum annual emission rate
Example calculation: for Nickel:
Annual predicted impact = 28.91 µg/m³ /1 g/s x (2.2 lb/yr x yr/2,080 hr x 454g/lb x hr/3600 s) = 0.0039 µg/m³ ; NTL = 0.0042 µg/m³
24-hour predicted impact = 263.81 µg/m³ / 1g/s x (2.12E-3 lb/hr maximum x 454 g/lb x hr/3600 s) = 0.070 µg/m³ ; NTL = 0.24 µg/m³
8-hour predicted impact = 658.83 µg/m³ / 1g/s x (2.12E-3 lb/hr maximum x 454 g/lb x hr/3600 s) = 0.18 µg/m³ , NTL = 10 µg/m³

For chromic acid, the vent-specific maximum generic impacts (1 g/s emissions) are 1.23 µg/m³ for annual averaging time, 14.25 and 41.47 µg/m³ for the 24-hour and 8-hour, respectively.
For methylene chloride, maximum predicted impacts are based on most recent vent-specific modeling as submitted to the Department

EMISSION CALCULATION NOTES AND ASSUMPTIONS:

(d) The VOC emissions are assumed to be equal to the net usage (issuances - recovery)

(e) All organic compounds reactive ingredients (i.e., polyols, amines, and isocyanates) are designed to achieved at least 99.5% reaction; therefore, only a small amount of approximately 0.5% will be released as free organic emissions. For other solvents, the total solvent usages are assumed to be the potential emissions.

(f) Emissions of gases are 100% of usages. Emissions of acid used in plating baths are based on 10 percent evaporation from solution bath and 80% control efficiency by the scrubbers. Maximum PM emissions from plating baths are assumed to be 5% of usage. The majority of the PM usages are solid ingredients of hand-mixed materials; therefore, actual PM emissions are not generated by this processing manner. Chemicals as particulates from vapor blast media are controlled by baghouse with at least 99% control efficiency. Emissions of sulfuric acid are based on processing tank parameters (i.e. surface area, concentration, temperature, etc.)

(g) Usage of mercury inorganic compounds are not exhausted and therefore emissions are zero

APPENDIX G

Pinellas Plant
Hazardous Waste Operating Permit

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PERMITTEE:

Facility Owner/Operator/Landowner

U.S. Department of Energy
Pinellas Plant
Post Office Box 2908
Largo, Florida 34649 - 2900
Attn: Richard E. Glass, Area Manager

Co-Operator:

Martin Marietta Specialty Components
Post Office Box 2908
Largo, Florida 34649-2908
Attn: Edward E. Mayer
Director - Environmental Management

PERMIT/CERTIFICATION:

EPA ID No:	FL6 890 090 008
Permit No.:	HO52 - 228925
County:	Pinellas
Issue Date:	August 16, 1993
Expiration Date:	August 16, 1998

Latitude	/	Longitude
27°52'30"N	/	82°45'00"W
Section /	Township/	Range
13	30S	15E
Project:	Operation of a Hazardous Waste Storage Facility	

This permit is issued under the provisions of Chapter 403.722, Florida Statutes, and Florida Administrative Code Rules 17-730. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents, attached hereto or on file with the Department and made a part hereof and specifically described as follows:.

To operate hazardous waste storage tank and container storage units at the U.S. Department of Energy's Pinellas Plant located at 7887 Bryan Dairy Road, Largo, Pinellas County. Hazardous wastes are generated during the production and demilitarization and declassification of select nuclear weapons components including neutron generators, lightning arrestor connectors, capacitors, magnetics, optoelectronics and other components and/or subassemblies. The Pinellas Plant's primary function is changing from USDOE sponsored defense programs to transition activities such as disposition of materials, equipment, and inventory from defense production and support areas. Areas will be transitioned to similar manufacturing operations, made available for economic development, or deactivated, or decommissioned. The Pinellas Plant only stores hazardous waste generated at or by the facility. No hazardous waste is managed by the Pinellas Plant which was not generated at the Pinellas Plant. Hazardous wastes are stored in tanks and containers.

Hazardous wastes are also accumulated and managed in a 90 day storage area at Building 1010. Hazardous wastes in this building are accumulated in accordance with 40 CFR 262.34 regulations for generators. Other activities in Building 1010 include lab packing, fluorescent light bulb crushing, and non-hazardous wastewater treatment. Wastes managed in accordance with 40 CFR 262.34 are not regulated under this permit.

Permitted hazardous waste container storage facilities are authorized in Buildings 1040 and 1000. Building 1040 has three storage bays designated as Bay Numbers 1, 2, and 3. Hazardous waste storage in Building 1000 is permitted in Bay No. 2 only. Building 1000 is designated specifically for storage of low level mixed wastes containing RCRA metals above TCLP limits. Non-hazardous low level radioactive wastes are also stored in Bay 2. This hazardous waste permit regulates only the hazardous waste component of the mixed waste and not the radiological component. The radiological component is regulated by the U.S. Department of Energy. The management of unknown wastes/materials in any of these bays is not permitted. Capacities and waste placement within each permitted unit are shown as follows:

Building 1040 - Bay Number 1 (Solid/Liquid Wastes and Lab Packs)

<u>Capacity</u>
64 - 55 gallon containers or a total of 3,520 gallons, 28 - 55 gallon containers of which or a total of 1,540 gallons may be liquid waste.

<u>Dimensions</u>
61'4" by 23'4"

Bay 1 may be used for transferring permitted wastes from small containers into 55 gallon collection containers. Bay 1 may also be used as a transfer point for transferring waste from collection containers to the permitted hazardous waste tanks. Bay 1 receives and stores waste halogenated solvents and ignitable liquids from various generating points in the Pinellas Plant by pumping.

Building 1040 - Bay Number 2 (Non-liquid Reactive Wastes and Lab Packs)

<u>Capacity</u>
32 - 55 gallon containers or a total of 1,760 gallons of non-liquid reactive waste and lab pack waste combined. Lab pack waste shall not exceed 32-55 gallon containers each container having no more than 15 gallons of liquids.

<u>Dimensions</u>
9'4" by 23'4"

Building 1040 - Bay Number 3 (Laboratory Wastes and Small Quantities of Known Miscellaneous Liquid Materials)

<u>Capacity</u>
12 - 55 gallon containers of hazardous wastes and non-regulated materials or a total volume equivalent of 660 Gallons.

<u>Dimensions</u>
11'4" by 23'4"

Bay 3 may also be used for bulking and lab packing hazardous wastes into containers up to 55 gallons. Bay Number 3 may also be used to conduct pH adjustment of cyanide-containing wastes and preparation of nitrocellulose waste for off-site transportation via the addition of isopropyl alcohol. These operations shall all be conducted under one ventilated chemical hood located inside.

<u>Approved Waste Codes for Bldg. 1040, Bays 1, 2, and 3</u>

<u>"F" Wastes</u>
F001, F002, F003, F004, F005, F006, F007, F008, F009, F010, F011, F012, F019, F024, F025, F032, F033, F034, F035, F036,

"D" Wastes
D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D022, D023, D024, D025, D026, D027, D028, D029, D030, D031, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, D043,

"P" Wastes
P001, P002, P003, P004, P005, P006, P007, P008, P009, P010, P011, P012, P013, P014, P015, P016, P017, P018, P020, P021, P022, P023, P024, P026, P027, P028, P029, P030, P031, P033, P034, P036, P037, P038, P039, P040, P041, P042, P043, P044, P045, P046, P047, P048, P049, P050, P051, P054, P056, P057, P058, P059, P060, P062, P063, P064, P065, P066, P067, P068, P069, P070, P071, P072, P073, P074, P075, P076, P077, P078, P081, P082, P084, P085, P087, P088, P089, P092, P093, P094, P095, P096, P097, P098, P099, P101, P102, P103, P104, P105, P106, P108, P109, P110, P111, P112, P113, P114, P115, P116, P118, P119, P120, P121, P122, P123,

"U" Wastes
U001, U002, U003, U004, U005, U006, U007, U008, U009, U010, U011, U012, U013, U014, U015, U016, U017, U018, U019, U020, U021, U022, U023, U024, U025, U026, U027, U028, U029, U030, U031, U032, U033, U034, U035, U036, U037, U038, U039, U041, U042, U043, U044, U045, U046, U047, U048, U049, U050, U051, U052, U053, U054, U055, U056, U057, U058, U059, U060, U061, U062, U063, U064, U066, U067, U068, U069, U070, U071, U072, U073, U074, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U086, U087, U088, U089, U090, U091, U092, U093, U094, U095, U096, U097, U098, U099, U101, U102, U103, U104, U105, U106, U107, U108, U109, U110, U111, U112, U113, U114, U115, U116, U117, U118, U119, U120, U121, U122, U123, U124, U125, U126, U127, U128, U129, U130, U131, U132, U133, U134, U135, U136, U137, U138, U140, U141, U142, U143, U144, U145, U146, U147, U148, U149, U150, U151, U152, U153, U162, U163, U164, U165, U167, U168, U169, U170, U171, U172, U173, U174, U176, U177, U178, U179, U180, U181, U182, U183, U184, U185, U186, U187, U188, U189, U190, U191, U192, U193, U194, U196, U197, U200, U201, U202, U203, U204, U205, U206, U207, U208, U209, U210, U211, U213, U214, U215, U216, U217, U218, U219, U220, U221, U222, U223, U225, U226, U227, U228, U234, U235, U236, U237, U238, U239, U240, U243, U244, U246, U247, U248, U249, U328, U353, U359.

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Building 1000 - Bay Number 2 (Laboratory, Production, and Miscellaneous Wastes. No Free Liquids Stored)

Capacity
6 - 673 gallon B-25 boxes, or combinations of B-25 boxes and 55 gallon containers not to exceed a total of 4,038 gallons, or 48 - 55 gallon containers.

Dimensions
22'8" by 17'4"

Approved Wastes for Bldg. 1000, Bay 2

Low Level Radioactive Mixed Waste, hazardous for any of D004, D005, D006, D007, D008, D009, D010, D011 or any combination thereof. No free liquids.

TANK SYSTEMS STORAGE

Hazardous waste storage in tanks is permitted in four horizontal above ground hazardous waste storage tanks designated as Tank Numbers 1, 3, 4, and 5. These tank systems are equipped with secondary containment structures, having the noted specifications below:

TANK	LENGTH	DIAMETER (INNER)	CAPACITY (GALLONS)	MATERIAL	WALL THICKNESS
1	14' - 10 5/8"	8' - 0"	5,000	Carbon Steel	.375"
3	9' - 9"	6' - 0"	2,000	Stainless Steel	.375"
4	14' - 10 5/8"	8' - 0"	5,000	Carbon Steel	.375"
5	14' - 10.5/8"	8' - 0"	5,000	Carbon Steel	.375"

Tank 1 has an available secondary containment structure capacity of 6,043 gallons, which is only 96% of the necessary capacity; as such, annual integrity testing shall be conducted.

Tanks 4 and 5 are utilized as reserve storage capacity for liquid hazardous wastes identified for Tanks 1 and 3. Tanks 3, 4 and 5 are served by the same secondary containment structure. Tank 1 has its own secondary containment.

Approved Waste Codes for Tank Systems Storage

F001, F002, F003, F005,
D001, D018, D019, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042

Operation and management practices concerning units regulated under 40 CFR 264, Subpart X are not addressed in this operating permit as additional reviews related to groundwater, air monitoring, environmental impact analysis, and risk assessment may take additional time to complete, review and approve. This permit shall be modified in the future to include specific conditions as well as process descriptions for each Subpart X activity. The Subpart X activities as listed in Page II.I.-1 of the permit application include the thermal treatment unit (pertaining to waste explosives: heat paper, heat powder and detonators) and the chemical (reactive metal) treatment unit for calcium metal, calcium bimetal, and lithium metal. Until this permit is modified, operation of these units are subject to the Thermal Treatment and Chemical Treatment specific conditions noted in the previous permit HO52-159339. These conditions are shown in Sections V. and VI. of this permit.

Operation and management of equipment regulated under 40 CFR 264, Subpart BB are also not covered in this permit as the Department is not yet authorized to enforce this regulation. USEPA currently enforces this rule. Subpart BB equipment is to be addressed under the facility's Hazardous and Solid Waste Amendments (HSWA) permit or when Florida receives authorization.

The following submittals were utilized in the preparation of this permit and are considered part of the permit:

- Application for a Hazardous Waste Facility Permit on DER Form 17-730.900(2) submitted April 1, 1993.
- Page twelve of the application submitted April 16, 1993.
- Response to first notice of deficiency submitted October 12, 1993.
- Response to second notice of deficiency submitted January 19, 1994.
- Response clarifying tank management practices submitted March 9, 1994.
- Completed waiver of the 135 day time limit submitted June 1, 1994.
- Additional replacement pages to the permit application submitted June 10, 1994.
- Additional replacement pages to the permit application submitted August 11, 1994.

Replaces Permit Number HO52-159339, except as noted in Specific Conditions V. and VI. below.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, F.S.. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statues and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times access to the premises where the permitted activity is located or conducted to:

   (a) Have access to and copy any records that must be kept under conditions of the permit;

   (b) Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

   (c) Sample and monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

   Reasonable time may depend on the nature of the concern being investigated.

8. If for any reason, the permittee does not comply with, or will be unable to comply with, any condition or limitation specified in this permit, the permittee shall immediately provide the Department the following information:

(a) A description of and cause of non-compliance; and

(b) The period of non-compliance including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data, and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111, and 403.73, F.S.. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 17-302.500, F.A.C., shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard.

11. This permit is transferable only upon Department approval in accordance with Rules 17-4.120 and 17-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof is required to be kept at the work site of the permitted activity.

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Determination (PSD)
( ) Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)
( ) Compliance with New Source Performance Standards

14. The permittee shall comply with the following:

(a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

(b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

(c) Records of monitoring shall include:

1. the date, exact place, and time of sampling or measurements;
2. the person responsible for performing the sampling or measurements;
3. the dates analyses were performed;
4. the person responsible for performing the analyses;
5. the analytical techniques or methods used; and
6. the results of such analyses.

15. When requested by the Department, the permittee shall, within a reasonable time, furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

16. The following conditions shall also apply to a hazardous waste facility permit:

(a) The following reports shall be submitted to the Department:

1. Manifest discrepancy report. If a significant discrepancy in a manifest is discovered, the permittee shall attempt to rectify the discrepancy. If not resolved within 15 days after the waste is received, the permittee shall immediately submit a letter report, including a copy of the manifest, to the Department.

2. Unmanifested waste report. The permittee shall submit an unmanifested waste report to the Department within 15 days of receipt of unmanifested waste.

3. Biennial report. A biennial report covering facility activities during the previous calendar year shall be submitted to the Department by March 1, of each even numbered year pursuant to Chapter 17-730, F.A.C..

(b) Notification of any non-compliance which may endanger health or the environment including the release of any hazardous waste that may endanger public drinking water supplies, or the occurrence of a fire or explosion from the facility which could threaten the environment or human health outside the facility, shall be reported verbally to the Department within 24 hours, and a written report shall be provided within 5 days. The verbal report within 24 hours shall contain the name, address, I.D. number and telephone number of the facility, its owner or operator, the name and quantity of materials involved, the extent of any injuries, an assessment of actual or potential hazards, and the estimated quantity and disposition of recovered material. The written submission shall contain:

1. A description of and cause of non-compliance.
2. If not corrected, the expected time of correction and steps being taken to reduce, eliminate, and prevent recurrence of non-compliance.

(c) Reports of compliance or non-compliance with, or any progress reports on, requirements contained in any compliance schedule shall be submitted no later than 14 days after each schedule date.

(d) All reports or information required by the Department by a hazardous waste permittee shall be signed by a person authorized to sign a permit application.

SPECIFIC CONDITIONS:

I. GENERAL

1. The permittee shall operate the herein permitted facility in accordance with 40 CFR 264, the conditions of this permit, the permit application and other submittals considered part of this permit.

2. The permittee is allowed to operate only the hazardous waste storage units specified in pages 1, 2, 3, and 4 of 15 of this permit and as further described in the permit application.

3. The permittee is allowed to manage only those hazardous waste codes as listed and in the manner described in Pages 1, 2, 3, and 4 of 15 of this permit. The permittee must obtain a permit modification prior to storage of new hazardous wastes.

4. The permittee shall comply with the required notice of 40 CFR 264.12(c) before transferring ownership or operation of the facility during the duration its operating life.

5 In the event that the permittee submits an application sole for a permit transfer to Martin Marietta Specialty Components or a permit transfer to an organization that is no longer a state or federal government, the application shall include documented demonstration that the organization taking over complies with all the requirements of 40 CFR 264, Subpart H, Financial Requirements. This transfer application, including attachments, shall be submitted to the Department in triplicate as per Specific Condition I.12 and I.32. of this permit.

6. The permittee shall maintain a written operating record documenting the movement of each hazardous waste into and out of permitted storage units and movement of hazardous waste from storage or directly to bulking, lab packing, cyanide waste pH adjustment, nitrocellulose waste preparation and vice versa , as described and required in 40 CFR 264.73(b)(1) and (2).

7. The permittee shall comply with the record keeping requirements of 40 CFR 264.73, 264.74, 264.75 and all other records required to be maintained per the permit application.

8. The permittee shall apply for a closure permit at least 180 days prior to beginning closure at the facility pursuant to Section 17-730.260, F.A.C..

9. The permittee shall apply for renewal of this permit or shall apply for a closure permit whichever is applicable, at least 180 days prior to the expiration date of this permit pursuant to Section 17-730.300, F.A.C..

10. The Department may modify the conditions of this permit if any conditions of Section 17-730.290, F.A.C. applies.

11. All documents submitted pursuant to the conditions of this permit shall be accompanied by a cover letter stating the name and date of the document submitted, the specific condition number(s) affected, this permit number and the facility EPA ID number.

12. Documents to be submitted in response to the conditions of this permit shall be submitted in triplicate as follows. Each copy shall specify its distribution to other parties.

    a. One copy to:
    Director of District Management
    Southwest District Office
    Florida Department of Environmental Protection
    3804 Coconut Palm Drive
    Tampa, Florida 33619-8218

    b. One copy to:
    Environmental Administrator
    Hazardous Waste Regulation Section
    Bureau of Solid and Hazardous Waste Protection
    Department of Environmental Protection
    2600 Blair Stone Road
    Tallahassee, Florida 32399-2400

    c. One copy to:
    Chief, Waste Management Division
    United States Environmental Protection Division
    Region IV
    345 Courtland Street, N.E.
    Atlanta, Georgia 30365

13. As per Section II.A.1(c) of the permit application, the total number of hazardous waste shipments over the course of a calendar year outside the Pinellas Plant shall not exceed 365.

14. Pursuant to 40 CFR 268.50, the permittee may store hazardous waste or the hazardous waste component of the mixed waste as permitted for more than one year only if the permittee can demonstrate that such storage is solely for the purpose of accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment, or disposal.

Facility Security

15. The permittee shall prevent the unauthorized entry of persons into the hazardous waste unit to comply with the security requirements of 40 CFR 264.14. The permittee shall follow security procedures and maintain security equipment as described in II.A.4.(a) of the permit application.

Contingency Plan and Emergency Procedures

16. The permittee shall adhere to all of the operating and emergency procedures described in the Contingency Plan as written in Appendix B of the permit application and in 40 CFR 264.56.

17. The permittee shall give proper notification if an emergency situation arises and within 15 days shall submit to the Department a written report which includes all information required under 40 CFR 264.56(j) and as described in the Contingency Plan.

18. The permittee shall post next to each telephone shown in Figure II-A-9, a list containing the names and telephone numbers of all emergency coordinators, including facility emergency coordinators, local aid agencies, public utilities, environmental agencies, and clean-up contractors as listed in Appendix B of the permit application. The list shall be a one page list to facilitate contacting affected parties in the event of an emergency.

19. Revisions to the contingency plan which meet any of the criteria listed in 40 CFR 264.54 and Appendix I to 40 CFR 270.42 shall be submitted to the Department as a permit modification request requiring prior Department approval pursuant to Section 17-730.290, F.A.C..

20. The contingency plan and all its revisions shall be maintained at the facility and shall be submitted to the local police department, fire department, hospital, state and local emergency response teams.

Preparedness and Prevention

21. Daily, weekly, biweekly, monthly, quarterly, and annual inspections of the hazardous waste facility, preparedness and prevention equipment, and operating equipment shall be conducted as described in Section II.A.4(d) of the permit application. Inspection records shall be maintained in accordance with 40 CFR 264.15(d).

22. Preparedness and Prevention Procedures (40 CFR 264, Subpart C), General Inspection Requirements (40 CFR 264.15), and General Requirements for Ignitable, Reactive, and Incompatible Wastes (40 CFR 264.17), and other procedures as described in Section II.A.4(d) of the permit application and as stated in the aforementioned regulations shall be followed.

Waste Analysis Plan

23. As stated in Page I.D.2-2 of the permit application, the permittee is not authorized to accept any hazardous wastes from outside the Pinellas Plant.

24. The permittee shall manage only those wastes applicable for container and tank storage as listed in Section D., Page 4 of 6, 5 of 6, and 6 of 6, DER Form# 17-730.900(2)(a) and as described in pages 2, 3, and 4 of 15 of this permit.

25. Sampling and analysis of permitted and new hazardous wastes shall be conducted in accordance with Appendix D, Waste Analysis Plan of the permit application.

26. New hazardous waste streams generated at the Pinellas Plant and resulting from new processes and process changes shall undergo the permitted waste sampling and analysis prior to managing the waste for permitted storage.

27. Miscellaneous chemical wastes shall undergo sampling, analysis, and management as described in Section VI., Appendix D, Waste Analysis Plan of the permit application prior to managing the waste for permitted storage. Pursuant to 40 CFR 262.11, reasonable effort to identify the unknown waste shall also include determining whether each waste is listed in 40 CFR 261, Subpart D. The opening, storing, or management of unknown wastes in any of the permitted bays is not allowed.

28. There shall be no treatment of hazardous wastes or hazardous materials in the permitted tank or container storage areas except for the transfer of hazardous wastes from inside containers to the permitted storage tanks. Pursuant to 40 CFR 268.7(a)(4), other treatment such as resin solidification and fluorescent light bulb crushing shall be conducted outside of the permitted units and only in tanks and containers regulated under 40 CFR 262.34 (90 day generator storage).

29. Pursuant to 40 CFR 268.3, the permittee shall not in any way dilute a land disposal restricted hazardous waste or the residual from the treatment of a land disposal restricted hazardous waste as a substitute for adequate treatment to achieve compliance with 40 CFR 268, Subpart D, to circumvent the effective date of a prohibition in 40 CFR 268, Subpart C, or to circumvent a land disposal prohibition imposed by RCRA Section 3004.

30. Table 3, Page WAP-9, Appendix D of the permit application shall be updated every calendar quarter to include all types of hazardous wastes currently generated at the Pinellas Plant. The individual additions/deletions to Table 3 shall be shaded to facilitate Department review. Updates shall be submitted no later than 30 days from the end of each calendar quarter.

Personnel Training

31. Personnel training shall be conducted as described in Section II.A.4(e) of the permit application and in accordance with the training requirements of 40 CFR 264.16.

Financial Requirements

32. The permittee shall maintain compliance with the financial requirements of 40 CFR 264 Subpart H. All submittals in response to this Specific Condition shall be submitted to:

Financial Coordinator
Hazardous Waste Regulation Section
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

II. CONTAINERS

1. The permittee shall comply with the type, quality, and specification of drums utilized for storing hazardous wastes as described in Attachment II.B.4. of the permit application. Any change in container type must be previously approved by the Department.

2. The permittee shall use containers which are compatible with the hazardous waste to be stored to comply with the requirements of 40 CFR 264.173.

3. Containers shall be kept closed except when adding or removing waste and shall be handled in a manner that will not allow the containers to rupture or leak. If a container holding hazardous waste is not in good condition, or begins to leak, the waste shall be transferred to another container in good condition to comply with 40 CFR 264.171.

4. Container storage and management shall be conducted in accordance with Part II.B., Attachment I.D.2 and other applicable parts of the permit application.

5. Incompatible wastes shall not be stored in the same bay or in bays having the same containment system unless physically separated by a dike, berm, or other approved device in accordance with 40 CFR 264.177(c).

6. Signs showing the hazardous waste storage capacity shall be placed in a highly visible location in each bay. "No Smoking" signs shall be conspicuously posted at each location where ignitable wastes are stored and whenever flammable gases are generated.

7. Container storage secondary containment systems shall be operated and maintained in accordance with II.B.1. of the permit application.

8. The permittee shall, prior to the storage of hazardous waste, determine the compatibility of each waste to be added to a storage area according to the procedures identified in Section II.B.2. of the permit application and EPA publication 600/2-80-076, "A Method for Determining the Compatibility of Hazardous Wastes", latest edition.

9. The permittee may store non-regulated materials in the permitted storage bays provided:

   a. The permittee complies with the requirements of 40 CFR 264.175 and includes the volume of non-regulated materials in calculating the total volume to be stored in each permitted bay.

   b. No materials are stored outside of designated container locations as shown in Figures II-B-3 and II-B-4 of the permit application.

   c. The non-regulated materials are separate and apart from regulated waste. Signs shall be posted identifying the contents of the containers and that the materials are non-regulated.

d. The permittee shall identify the storage of these materials in the operating record as described in 40 CFR 264.73(b)(1) and (2). Compatibility of the material with the hazardous waste stored shall be conducted in accordance with Specific Condition II.C.8. and shall also be documented in the operating record.

10. There shall be no treatment of hazardous wastes conducted within any of the permitted storage bays except for other activities as specified in pages 1, 2, and 3 of 15 of this permit.

11. Radioactive mixed waste in containers managed under 40 CFR 264 regulations shall be stored only in Bay 2, Bldg. 1000.

12. As described in Page II.B-1 of the permit application, each container storing lab pack wastes shall contain no more than 15 gallons of free liquids.

III. <u>TANK SYSTEMS</u>

1. The permittee shall store hazardous wastes in Tanks 4 and 5 only as a reserve for contingent purposes to store any hazardous waste liquid normally stored in Tanks 1 and 3, as per Section II.C. of the permit application.

2. Operation and management of permitted tank system storage units shall conform to the designs and specifications described in Part II.C. and Appendices H and I of the application.

4. The permittee shall use appropriate controls and practices to prevent spills and overflows from tank systems in accordance with 40 CFR 264.194(b).

5. The permittee shall maintain, inspect, and operate the tank systems in such a manner that any leakage or release of hazardous waste from the tank system will be detected within 24 hours of occurrence.

6. Secondary containment structures shall be capable of preventing any migration of wastes or accumulated liquid to the soil, groundwater, or surface waters, and that spilled or leaked waste and accumulated precipitation will be removed within 24 hours of occurrence.

7. As described in Section II.C. of the permit application, the permittee shall install overfill protection controls as required under 40 CFR 264.194(b)(2) in each permitted tank in addition to the existing level sight glass by June 30, 1995. Proof of installation shall be shown in Section II.C.4 of the application and shall be submitted no later than 30 days from installation.

8. Radioactive mixed waste shall not be stored in the permitted storage tanks.

IV. CLOSURE

1. The permittee shall manage all hazardous waste, residues, sludges, spilled or leaked waste, or contaminated liquids and soils removed during closure of the units in accordance with the applicable provisions of 40 CFR 260 through 270 and 17-730, including the manifest requirements. A copy of each manifest required as a result of closure activities shall be submitted to the Department with the closure certification.

2. The permittee shall close the hazardous waste units in a manner that minimizes or eliminates, to the extent necessary to protect human health and the environment, post closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the groundwater, surface waters, or to the atmosphere (40 CFR 264.111).

3. The permittee shall submit a written request for a permit modification to authorize a change in the closure plans in accordance with the procedures in Chapter 17-730, F.A.C.. The written request must include a copy of the amended closure plan for Department approval (40 CFR 264.112).

4. The permittee shall notify the Department at least 45 days prior to the date on which he expects to begin partial closure or final closure of a unit(s) (40 CFR 264.112).

5. The permittee must complete closure activities within 180 days after Department approval of the closure plan. Any changes in the time allowed for closure of the units after approval shall require prior Department approval (40 CFR 264.113).

6. The permittee shall decontaminate or dispose of all facility equipment, structures, and residues resulting from the closure activities as required under 40 CFR 264.114.

7. Within 60 days after completion of closure, the permittee shall submit to the Department, by certified mail or hand delivery, a letter signed by the permittee and an independent Professional Engineer registered in the State of Florida, stating that the facility has been closed in compliance with the closure plan (40 CFR 264.115 and Section 17-730.220(7), F.A.C.).

8. The permitted units shall undergo partial or final closure as per Part II.K. of the permit application and 40 CFR 264, Subpart G.

V. Thermal Treatment Conditions

(The specific conditions below shall apply until this permit is modified to operate the Thermal Treatment Subpart X Units in accordance with the application submitted on April 1, 1993.)

1. The permittee is allowed to treat two (2) pounds per batch for heat powder, 1/2 pound per batch for heat paper, and ten (10) explosive squib charges at a time. The permittee is not allowed to treat more than one type of waste at a time.

2. The thermal treatment unit shall conform to the description and design provided in Section I-D-2(f) and Figure IX-A-1 of the permit application for HO52-159339.

3. The permittee shall manage and operate the thermal treatment unit as described in Section IX-A-1 of the permit application for HO52-159339.

4. The permittee shall comply with the open burning requirements for waste explosive of 40 CFR 265.382, and as specified in Section IX-A-4 of the permit application for HO52-159339.

5. The permittee shall prevent the migration of residues resulting from the thermal treatment operation into the soil, groundwater, or surface water. Contaminated soils and residues removed from the thermal treatment area shall be properly managed and disposed of in accordance with 40 CFR 262 and 263.

6. The permittee shall monitor the thermal treatment operation and inspect the thermal treatment units in accordance with 40 CFR 265.377, and as indicated in Section IX-A-3 and Exhibit IX-A-1 of the permit application for HO52-159339.

7. The permittee shall ensure that the wastes have undergone a complete treatment and reactive characteristic remains prior to disposal of the treatment residues.

VI. Chemical Treatment Conditions

(The specific conditions below shall apply until this permit is modified to operate the Chemical Treatment Subpart X Units in accordance with the application submitted on April 1, 1993.)

1. The permittee is not allowed to treat two or more different wastes in the same reaction vessel at one time.

2. The permittee shall allow the treatment operation sufficient time to achieve a complete reaction. No treatment residues exhibiting reactive characteristics shall be disposed of without undergoing a complete reaction.

3. The permittee shall store and transport the reactive wastes, prior to treatment, in accordance with Section X-B-1 of the permit application for HO52-159339.

4. The chemical treatment unit shall conform to the description and design provided in Section X-B-1 and Figure X-B-1 of the permit application for HO52-159339.

5. The permittee shall manage and operate the chemical treatment as described in Sections I-D-2(e) and X-B-1 of the permit application for HO52-159339 and in compliance with 40 CFR 265.401.

6. The permittee shall prevent the migration of residues resulting from the chemical treatment operation into the soil, groundwater or surface water. Contaminated soils and residue removed from the chemical treatment operation shall be properly managed and disposed of in accordance with 40 CFR 262 and 263.

7. The permittee shall monitor the chemical treatment operation and inspect the chemical treatment units in accordance with 40 CFR 265.403, and as indicated in Section X-B-3 and Exhibit X-B-1 of the permit application for HO52-159339.

8. The permittee is allowed to treat only those wastes shown in Table I-D-1 (T22), and Sections I-D-3(l) and I-D-3(m) of the permit application for HO52-159339.

9. The permittee shall ensure that the wastes have undergone a complete treatment and that no reactive characteristic remain prior to disposal of the treatment residues.

Issued this 7 day of Dec, 1994.

Richard D. Garrity, Ph. D.
Director of District Management
Southwest District

CERTIFICATION OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this Permit was mailed by certified mail and all copies mailed before the close of business on December 8, 1994 to the listed persons.

FILING AND ACKNOWLEDGMENT FILED, On this date, pursuant to §120.52 (11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby Acknowledged.

Anna Black 12/8/94
Clerk Date

Copies furnished to:
Alan Farmer, EPA Region IV w/Attachments
Satish Kastury, DEP/Tallahassee w/Attachments

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APPENDIX H

Final Radiological Status of the Pinellas Plant

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Survey Plan for Determining Final Radiological Status of the Pinellas Plant

Part I: Areas Ventilated by the West Stack Exhaust System - (7/95)

1.0 Introduction

The purpose of this survey plan is to document the programs in place and processes to be performed to evaluate the radiological status of areas served by the West Stack Exhaust System. The long-term goal which this plan supports is the cleanup and dispositioning of all areas of the Pinellas Plant in compliance with applicable state and federal regulations.

1.1 Background and Descriptive Information

The Pinellas Plant was constructed by General Electric (GE) in 1956 for the production of neutron generators for the nation's nuclear weapons program. The Atomic Energy Commission purchased the property from GE in 1957 and contracted them to manage and operate the site. GE Neutron Devices (GEND) served in this capacity until June, 1992, at which time Martin Marietta Specialty Components (MMSC) assumed operation of the plant. The major product lines at the plant have included: neutron generators and detectors, Radioisotopic Thermoelectric Generators (RTG), specialty capacitors, vacuum switch tubes, electromagnetic devices, quartz digital accelerometers, lightning arrestor connectors, ceramics, ferroelectric ceramics, foam support pads, and optoelectronics.

The Pinellas Plant property is located on an approximately 100-acre site in the center of Pinellas County, Florida. Approximately 35 acres of the plant site are occupied by buildings and other developed areas. (See Figure 1). The remaining acreage consists of parking lots and undeveloped cleared grassy lands and three manmade ponds. Building 100 is the largest of the 24 buildings on site, with a total area of over 600,000 square feet on two stories. The interior space includes areas used for manufacturing, laboratory, office, maintenance, and other support facilities.

A large portion of the western section of Building 100 was ventilated through a radiological exhaust system known as the West or Laboratory Stack. The stack, constructed in 1964, is 5 feet in diameter, and 100 feet high. The stack is fed by 2 large blowers located on the building roof, and several hundred feet of exhaust ducting which carry the exhaust air from individual rooms within the building. (See Figure 2).

Additional background information on the history and operation of the Pinellas Plant, as well as detailed Site Descriptions, can be found in a number of published documents including References 5-9.

1.2 Site Conditions at Time of Final Survey

At the present time, the Pinellas Plant is undergoing conversion to nongovernment ownership and operation. The property has already been officially sold to the Pinellas County Industry Council (PCIC), although a large portion of the plant is still being leased by the Department of Energy (DOE). As part of the sales contract, and in keeping with Federal Regulations, the DOE has agreed to clean up all areas contaminated during past performance of government-funded work as consistent with planned future use (industrial applications).

Most of the production equipment has now been removed from the west half of the main operating facility, Building 100, as part of safe shutdown. This effort has also resulted in space being freed for other tenants. One major activity in progress in support of the safe shutdown initiative is the removal of the West Stack, and associated fans and ducting.

2.0 Final Status Survey Overview

2.1 Survey Objectives

Sixty-four areas have been identified as affected to some degree by the operation of the West Stack Exhaust System. Each of these areas will be separately evaluated to verify the absence of residual radioactivity. In addition to surface contamination surveys, all areas will be scanned using a Micro-R survey meter to verify that dose levels due to any residual gamma radiation are less than applicable limits. This survey will serve to document the expected absence of gamma emitting residues.

It is intended that the survey data thus obtained will be used as the basis for recommendations on dispositioning areas relative to radiological concern. Disposition options are assumed to include:

release for unrestricted use - Residual contamination is within release limits and future potential doses from all pathways are less than 10 mrem/yr to an exposed individual

restricted release - Residual contamination or projected dose levels require the imposition of conditions or restrictions on the future use of all or part of an area. Such restrictions are normally communicated to future owners through notices attached to deeds, etc.

Note: Due to the lack of comprehensive sub-surface contamination information, all area releases per this plan will be considered to be restricted to above-ground building surfaces such as floors, walls, and overhead areas. Any disturbance to the soil or other materials under the concrete flooring will require further radiological evaluation.

3.0 Identity of Contaminants

Exhaustive review of the nuclides handled over the history of the Pinellas Plant, has revealed that only tritium, krypton-85, and uranium were handled in sufficient quantity and form to present a concern for residual radioactivity.

Two chemical forms of tritium are anticipated in removable radioactive residues: the oxide - HTO (water), and the hydride (primarily ScT2, ErT2, and TiT2). The tritium used in the Pinellas Plant was only handled as a gas (T2 or HT) or a solid hydride. A third compound, tritium oxide, is formed naturally whenever quantities of tritium come into contact with air. The tritium (radioactive hydrogen) exchanges with non-radioactive hydrogen in air moisture. From the air, the tritium oxide may deposit on surfaces such as floors and walls where further exchange with hydrogen-containing materials may occur.

As mentioned above, tritium was handled in the hydride (metal-bound) form during some production operations at this facility. The gas was allowed to react with solid metal surfaces, thin metal coatings, and metal powders for various purposes. In some cases the metal powders were spilled. In addition, some metal surfaces and coatings were known to have degraded into flakes which were subsequently spread onto other surfaces.

The krypton-85 was used in leak test equipment in one area of the plant. Krypton is a noble gas and is therefore only considered a concern due to external exposure. Only extremely small amounts of krypton-85 remain, associated with oil residues which were spilled onto floor and equipment surfaces during mechanical pump use and maintenance.

Uranium was used in four forms at the Pinellas Plant: Metal chunks were used as scale counterweights; Small metal bars of depleted uranium were stored prior to cleaning in an acid bath and use in tritium storage containers; Metal-hydride powders were used for tritium and deuterium storage; and glass tubing containing small quantities of natural uranium was cut to meet length requirements.

4.0 Organization and Responsibilities

A partial depiction of the organizational structure supporting the West stack removal is provided in Figure 3. Some non-radiological support activities expected to be completed prior to radiological area evaluations (such as rigging and asbestos control during duct removal) have been omitted for clarity. The following responsibilities have been assigned relative to radiological decommissioning:

Project Manager -	Overall control of the project and areas involved
Project Planner -	Maintain project schedule Track costs Coordinate various group activities
Survey QA Coordinator -	Develop QA plan for final surveys Track and verify completion of QA activities
Health Physics Manager -	Serve as interface between Facilities and ES&H personnel Establish release criteria
Health Physicists -	Issue Special Work Permits for control of stack removal activities Monitor contamination levels on all wastes and assoc. surfaces Minimize further contamination of building surfaces during stack removal Coordinate final survey activities
HP Support Aides -	Perform and document surveys as directed
Chemists -	Coordinate sample analysis Direct the activities of the Chemistry Technicians
Chemistry Technicians -	Perform radiological analyses as directed
Waste Mgmt Spec.-	Coordinate decontamination and removal of radioactive waste materials
Waste Facility Oper. -	Perform decontamination and waste removal as directed
Safety Programs -	Issue Special Work Permits for asbestos floor tile removal

5.0 Laboratory Services

All tritium analyses are performed by the in-house Radioanalytical Laboratory (RAL) using liquid scintillation counting. The RAL also performs Kr-85 analyses using the same liquid scintillation equipment. Uranium analyses are performed by the RAL using an EG&G Ortec Model 920-16 Alpha counter.

The RAL works to documented procedures and a strict quality assurance program involving routine counting of blanks, standards, and intercomparison samples. The RAL QA program is described in their Quality Program Plan, MMSC-QPP-0025.

6.0 General Survey Plan

This survey plan consists of systematic processes and procedures as described in NUREG/CR-5849 which have been deemed acceptable by industry standards. Activities have been defined and tasks have been delegated to the appropriate team members. Table 1 shows the activities and tasks that are currently part of the survey plan.

Table 1: Overview of Major Activities and Tasks

Activities:	Tasks:
1. Evaluate Contamination Potential (Manager, Risk and Rad. Protection)	1. Review operating history with respect to facility use, spills, releases, etc. 2. Review radiological data 3. Identify nuclides of concem and determine guidelines 4. Classify areas as "affected" or "unaffected"
2. Perform Direct Measurements (Health Physics)	1. Determine frequency and location of measurements to meet criteria 2. Conduct surface activity measurements 3. Measure exposure rates
3. Analyze Samples (RAL)	1. Count smears and swabs
4. Interpret Data (Manager, Risk and Rad. Protection)	1. Calculate average levels 2. Compare data with criteria in Section 10
5. Prepare Report (Manager, Risk and Rad. Protection)	

7.0 Tentative Schedule

Complete removal of all contaminated equipment and materials is pre-requisite to the start of the final survey in each area; therefore, progress of the stack removal project will dictate the scheduling of all final surveys. (See Attachments 1 and 2 of the Radiological Area Disposition Plan for project plans related to the West Stack removal.)

8.0 Survey Report

A report describing the survey procedures and findings will be prepared and submitted to DOE/PAO. Report format and content will follow the recommendations contained in the Manual for Conducting Radiological Surveys in Support of License Termination, NUREG/CR-5849.

9.0 Survey Plan and Procedures

A detailed survey procedure has been developed for use by the Health Physics group in performing final release surveys. This procedure addresses all areas impacted by the West Stack Removal Project.

9.1 Area Classification

For the purpose of establishing sampling and measurement frequency, the site has been divided into affected and unaffected areas. The bases for these classifications are:

> Affected Areas: Areas that have potential radioactive contamination (based on plant operating history) or known radioactive contamination based on preliminary or past radiological surveillance. This includes areas where radioactive materials were used and stored, and where records indicate spills or other unusual occurrences that could have resulted in the spread of contamination. Areas immediately surrounding or adjacent to locations where radioactive materials were used, stored, or spilled are included in this classification because of the potential for spread of contamination.
>
> Unaffected Areas: All areas not classified as affected. These areas are not expected to contain residual radioactivity based on known site history and previous survey information. Table 2 gives the classifications for the 64 areas of interest in the vicinity of the West Stack.

The major source of information used to make the above classifications was the Building Characterization Team (BCT) data collected between April 1994 and February 1995. This data set comprises input from review of more than 15 data sources including interviews with 275 current and previous employees, and is considered to be the most reliable source of historical information available.

9.2 Instrumentation

The Liquid Scintillation units used for analyzing smears and swabs will be Beckman Models LS-5000TA, 5801, 6000, and 6500. These instruments are calibrated in-house using NIST-traceable calibration standards.

TSA Systems Model HHD-440A micro-R meters will be used for all area scanning. These instruments are maintained and used in accordance with Sections 5.9 and 5.10 of the Pinellas Plant RadCon Manual. These instruments are calibrated by vendors to meet ANSI-N323 requirements.

9.3 Surface Activity Measurements

The surface contamination survey method used for tritium will be the same method in use at this facility for many years and described in the Pinellas Plant RadCon Manual (ES&H Standards Manual - Section 5, paragraph 2.3.2). The smears are either water-moistened cotton balls or Q-tips transported in numbered cups or vials. All surface surveys will be documented using area layout maps showing the smear locations. Q-tips will be used when there is a likelihood that the contamination is in an insoluble form such as a metal hydride. The survey area is 1000 sq. cm. for cotton balls and 100 sq. cm. for Q-tips and alpha smears. The result is reported as disintegrations per minute (dpm)/100 square centimeters (sq. cm.). Cotton ball smears are analyzed using a sample of the water on the cotton, while Q-tips are counted whole in vials to retain particles or oils.

Any areas found to be contaminated above the limits in Section 10 will be cleaned as necessary to allow release. Decontamination methods will be consistent with the instructions in RadCon Manual Section 5.8 "Decontamination."

9.4 Exposure Rate Measurements

Area scans for gamma radiation will be conducted at a height of 3 feet with a Micro-R meter as described in the RadCon Manual Section 5.10 Attachment on use of the Model HHD-440A.

10.0 Data Interpretation

10.1 Release Criteria

The radiological release criteria for tritium, uranium, and krypton-85 surface contamination are taken from RadCon Manual Table 2-2 and DOE Order 5400.5 as:

Site limit:	1000 dpm/100 sq. cm.
ALARA Objective:	220 dpm/100 sq. cm.

For direct radiation exposure:

DOE Order 5400.5 limit:	20 microrem/hr above background
ALARA Objective:	5 microrem/hr above background

The ALARA Objective is defined as the level to which reasonable decontamination efforts are directed, above and beyond the legal limits.

10.2 Statistical Analysis

Following preliminary review of survey data for areas found less than 1000 dpm/100 square centimeters, a statistical analysis will be performed to verify that the average contamination level is less than the limit with 95% confidence.

11.0 Records

All smears are documented on the FC-232 Radioactive Contamination Smear Survey Form and an area map. Analysis results are documented on standard report forms which are reviewed by the chemist, the surveyor, and the Health Physicist prior to filing with the original survey maps in the Health Physics files. Copies of all analysis results are also maintained in the Chemistry Lab.

Radiation surveys are documented using a Health Physics Radiation Survey Form (RadCon Manual Section 5.6 - Attachment 2) and an area map. Reviews of results and record retention will be performed as stated in RadCon Manual Paragraphs 5.6.4.6.

12.0 References

1. MMSC-ESH-0006 ES&H Standards Manual, Section 5 Radiological Controls
2. NUREG/CR-5849 Manual for Conducting Radiological Surveys in Support of License Termination (6/92)
3. DOE Order 5400.5 Radiation Protection of the Public and the Environment
4. DOE/EP-0100 Guide for Radiological Characterization and Measurement for Decommissioning of US DOE Surplus Facilities (8/83)
5. Annual Pinellas Plant Site Environmental Reports
6. Pinellas Plant Site-Wide Environmental Information Document - (3/93)
7. Pinellas Plant Environmental Baseline Report - MMSC-EM-95010 (2/8/95)
8. Historical Report on Radiation Protection at GE Neutron Devices (7/90)
9. Pinellas Plant Radiological Area Disposition Program Plan (Draft 4/6/95)
10. DOE Order 5820.2 Radioactive Waste Management
11. 42USC9620 Section 120 CERCLA paragraph (h) as amended by Public Law 102-426 (CERFA) 10/19/92.

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APPENDIX J

Health Physics Desk Procedures

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Health Physics Desk Procedure

Approved: A. J. Weaver Date: 12-7-95
Radiological Control Manager Revision: B

Final Area Surveys

1.0 Purpose

The purpose of this procedure is to document the process of performing final evaluations to support unrestricted radiological release of Pinellas Plant areas.

2.0 Scope

This procedure applies to the final radiological release of Pinellas Plant areas. It is intended to complement other procedures for non-radiological evaluation and release of the same plant areas.

3.0 Definitions

Affected Areas: Areas that have potential radioactive contamination (based on plant operating history) or known radioactive contamination based on preliminary or past radiological surveillance. This includes areas where radioactive materials were used and stored, and where records indicate spills or other unusual occurrences that could have resulted in the spread of contamination. Areas immediately surrounding or adjacent to locations where radioactive materials were used, stored, or spilled are included in this classification because of the potential for spread of contamination.

Unaffected Areas: All areas not classified as affected. These areas are not expected to contain residual radioactivity based on known site history and previous survey information.

Note: Besides the Health Physics survey files, the major source of information used to make the above classifications will be the Building Characterization Team (BCT) data collected between April 1994 and February 1995. This data set comprises input from review of more than 15 different data sources including interviews with 275 current and previous employees, and is considered to be the most reliable source of historical information available.

4.0 Responsibilities

4.1 Radiological Control Manager (RCM):

Evaluate the potential for, and form of, residual area contamination by reviewing operating histories and available prior survey information and categorize each area as appropriate

Approve final survey results and formally approve radiological release of areas for unrestricted use

4.2 Health Physicist -

Review area status and plan out survey locations and have smears conducted as needed with the RCM.

Direct the performance of surveys and as appropriate review and evaluate all survey results.

4.3 Health Physics Support Aides -

Perform radiation and contamination surveys as directed. Area release smear survey data and maps MUST be performed using the smear identification key and example maps in attachment 3.

5.0 Requirements

5.1 A **"Notice: No Radioactive Material Allowed in Area"** sign must be posted on all entrances to the area prior to final release surveys of an area.

5.2 As shown in Attachment 1, the ***steps*** involved in evaluating areas for radiological release are:

1. Review operating history and previous survey records to determine the likelihood that residual radioactive contamination may be present in an area. Attachment 2, details how many smears should be taken to release an area based on it past history.

2. Classify each area as either "Affected" or "Unaffected" and particle or oil bearing. All areas will be surveyed for tritium. Only areas where krypton-85 or uranium were known to have been present ("Affected Areas") will be surveyed for those nuclides (RCM)

3. For Unaffected Areas: Survey the floor using cotton balls at appropriate intervals and proceed to Step 5. (HP)

4. For Affected Areas: Determine the likelihood that particulate or oil-borne (Krypton 85) contamination may be present in the area. (RCM)

   a. For non-particle, non-oily areas: Survey the floor and walls using cotton balls at appropriate intervals and proceed to step 5. (HP)

   b. For particle or oily areas: Survey the floor and walls with cotton balls at appropriate intervals and use Q-tips at joints. (HP)

5. If contamination levels are below 220 dpm/100cm2, proceed to step 6, otherwise:

IF RESULT ARE NOT EXPECTED: Prior to cleaning, mark 100 ft2 around the smear location, take at least 50 smears per 1000 ft2 to confirm result.

   a. Have the area cleaned and resurvey with at lease 50 smears per 1000 ft2. (HP)

b. Repeat Step a. until less than 1000 dpm/100cm2. Note: If more than 2 cleanings are required or cleaning fails to further reduce the contamination levels contact the RCM for further evaluation. (HP)

6. Perform a Micro-R survey of the area (SA or HP)

7. For Unaffected Areas proceed to step 10.

8. For Affected Areas: determine the likelihood that contamination is present under floor tiles or (unlikely) trapped under painted surfaces (RCM)

   a. For areas unlikely to have contamination under tiles, proceed to step 10.

   b. For areas where contamination is suspected to be present under tiles or paint: Remove random tiles or paint and survey using cotton balls at appropriate intervals or use Q-tips. (HP)

9. If contamination levels are below 220 dpm/100cm2, proceed to step 10, otherwise:

   a. Based on survey results have all contaminated tile removed and dispose of as radioactive waste. (HP)

   b. Have newly exposed surfaces cleaned and survey with cotton balls at appropriate intervals. (HP)

   c. Repeat Step b. until less than 220 dpm/100cm2. Area can be released at the 1000 dpm/100cm2 limit with the approval of the RCM.(HP)

   Note: If more than 2 cleanings are required or cleaning fails to further reduce the contamination levels contact the Manager, Risk and Radiation Protection for further evaluation. (HP)

10. a. Document all results on area maps and annotate (highlight) the path to release which was actually followed on the Flow Sheet, Attachment 1. (HP)

    b. Have the RCM review survey data and sign the Flow Sheet documenting the process as performed for that area and place in permanent HP area closure file. (HP)

5.3 Surface Contamination Surveys

5.3.1 The surface contamination survey method used for tritium and krypton-85 will be the routine method in use at this facility for many years and described in the Pinellas Plant RadCon Manual (ES&H Standards Manual - Section 5, paragraph 2.3.2). The smears are either water-moistened cotton balls or Q-tips transported in numbered cups or vials.

5.3.2 All surface surveys will be documented using FC-232 forms and area layout maps showing the smear locations.

5.3.3 Q-tips will be used when there is a likelihood that the contamination is in an insoluble form such as a metal hydride or oil residue.

5.3.5 The survey area is 1000 sq. cm. for cotton balls and 100 sq. cm. for alpha smears and Q-tips. The result in both cases is reported as dpm/100 sq.cm.

5.4 Direct Radiation Measurements

5.4.1 Area scans for gamma radiation will be conducted at a height of 3 feet with a Micro-R meter as described in the RadCon Manual Section 5.10 Attachment on use of the Model HHD-440A.

5.4.2 Radiation surveys are documented using a Health Physics Radiation Survey Form (RadCon Manual Section 5.6 - Attachment 2) and an area map.

5.5 Evaluation of Results

5.5.1 Reviews of results and record retention will be performed as stated in RadCon Manual Paragraphs 5.6.4.6.

5.5.2 Following preliminary review of survey data for areas found less than 1000 dpm/100cm2, a statistical analysis will be performed to verify that the average contamination level is less than the limit with 95% confidence. The formula is:

$$\mu_\alpha = \bar{x} + t_{(1-\alpha,\ df)} (s_x / \sqrt{n})$$

where

μ_α is the estimated upper bound of the true mean at the 95% confidence level
t is the 95% confidence level obtained from Table 1
df is the number of degrees of freedom = n-1
α is the probability of a false positive determination

$\bar{x}$ is the mean of the survey results in dpm/100cm2 in an area
s_x is the standard deviation of the survey results
n is the number of smears taken in the area

If μ_α is less than 1000 dpm/100cm2, then the area being tested meets this guideline at the 95% confidence level and can be released. If μ_α is greater than 1000 dpm/100cm2 then the area must either be cleaned and resurveyed, or additional smears must be taken to demonstrate compliance.

5.6 Overhead surveys

5.6.1 The overhead of affected areas must be surveyed for removal contamination.

5.6.2 Only overhead areas that can be **safely** accessed are surveyed.

5.6.3 Areas surveyed should be near where RadExh ductwork was located, based on process knowledge/history.

6.0 References

6.1 MMSC-ESH-0006 ES&H Standards Manual, Section 5 Radiological Controls

6.2 NUREG/CR-5849 Manual for Conducting Radiological Surveys in Support of License Termination (6/92)

6.3 DOE Order 5400.5 Radiation Protection of the Public and the Environment

6.4 DOE/EP-0100 Guide for Radiological Characterization and Measurement for Decommissioning of US DOE Surplus Facilities (8/83)

Table 1

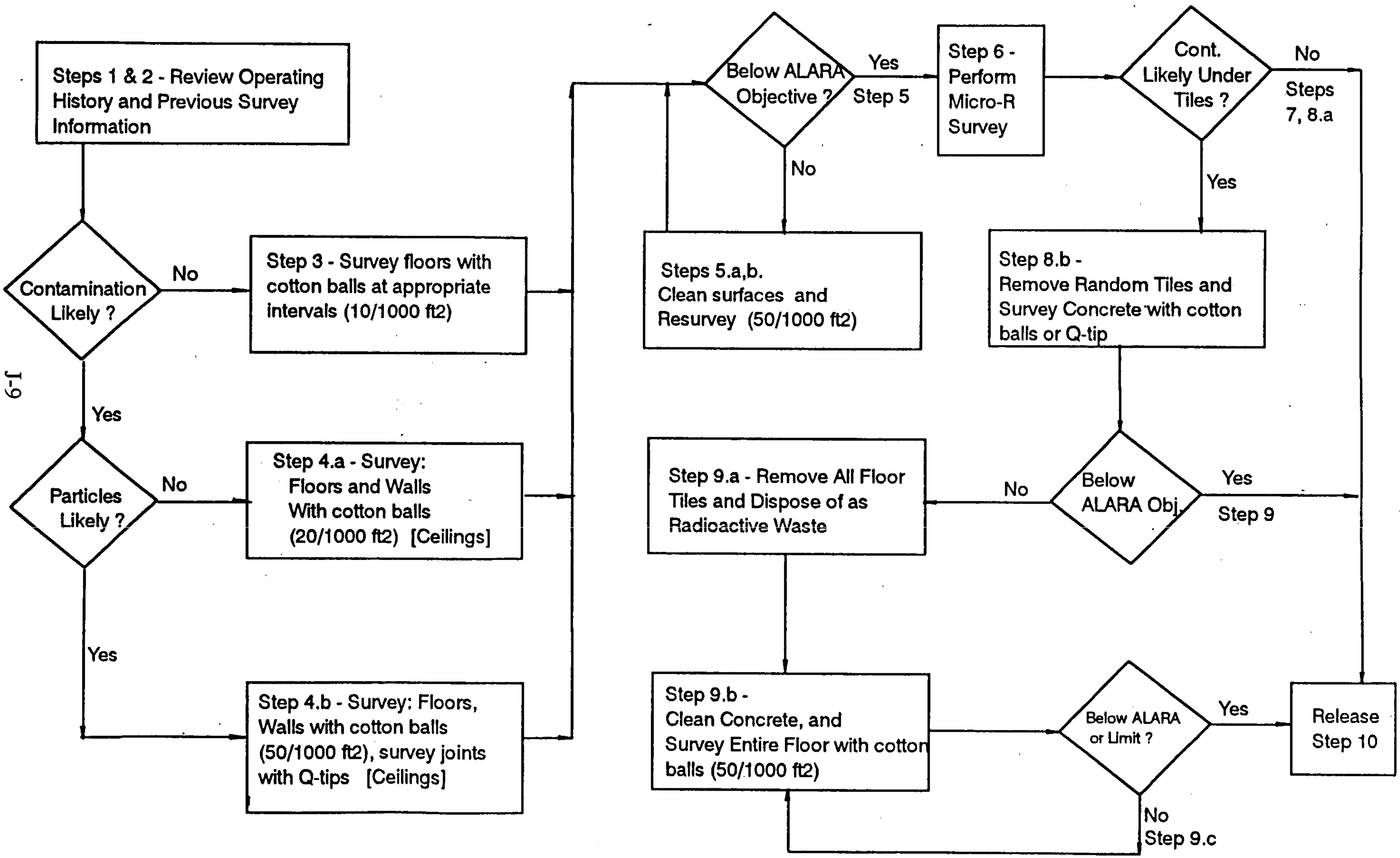
Factors for Comparison of Survey Data with Guidelines and Determining Additional Data Needs

(Taken from NUREG/CR-5849, Appendix B)

Degrees of Freedom[a]	$t_{95\%}$	$t_{97.5\%}$
1	6.314	12.706
2	2.920	4.303
3	2.353	3.182
4	2.132	2.776
5	2.015	2.571
6	1.943	2.447
7	1.895	2.365
8	1.860	2.306
9	1.833	2.262
10	1.812	2.228
11	1.796	2.201
12	1.782	2.179
13	1.771	2.160
14	1.761	2.145
15	1.753	2.131
16	1.746	2.120
17	1.740	2.110
18	1.734	2.101
19	1.729	2.093
20	1.725	2.086
21	1.721	2.080
22	1.717	2.074
23	1.714	2.069
24	1.711	2.064
25	1.708	2.060
26	1.706	2.056
27	1.703	2.052
28	1.701	2.048
29	1.699	2.045
30	1.697	2.042
40	1.684	2.021
60	1.671	2.000
120	1.658	1.980
400	1.649	1.966
infinite	1.645	1.960

[a]Degree of freedom is the number of items of data minus 1; for values of degrees of freedom not in table, interpolate between values listed.

Attachment 1 - HP Release of Area(s)______ for Unrestricted Use



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Radiological Control Manager:____________________ Date:________

Attachment 2, HP desk "final area surveys"

Smears per area

Type of area	LOCATION examples	Notes/smear amounts
Rated as a:		
HIGH prob YYY or YYN	108, 107, 157 157/158, 182 RMMA	* Detail smearing needed to locate past LTA habits * At least 50 per 1000 ft2
Mod prob YNN	Handled NG, NGT 112, 183, 184, 128/131	* Smears will be based process knowledge, history where parts were used * At least 20 per 1000 sq ft
Low prob NNN	Most office areas, 117, 110, 134, 170 Computor Rms.	* Smears will be RANDOM using history of past uses * At least 10 per 1000 sq. ft

KEY:

NG = neutron generator
NGT = NG tube
Prob = probability
LOCATION = Pinellas Plant locations
LTA = Less Than Acceptable

ATTACHMENT 3

FINAL AREA RELEASE SURVEY

MAP KEY

(Smear #)F= Floor

(Smear #)W = Wall survey 1-3 feet above the floor

(Smear #)* = Wall survey 3-5 feet above the floor

(Smear #) # = Wall survey 5-10 feet above the floor

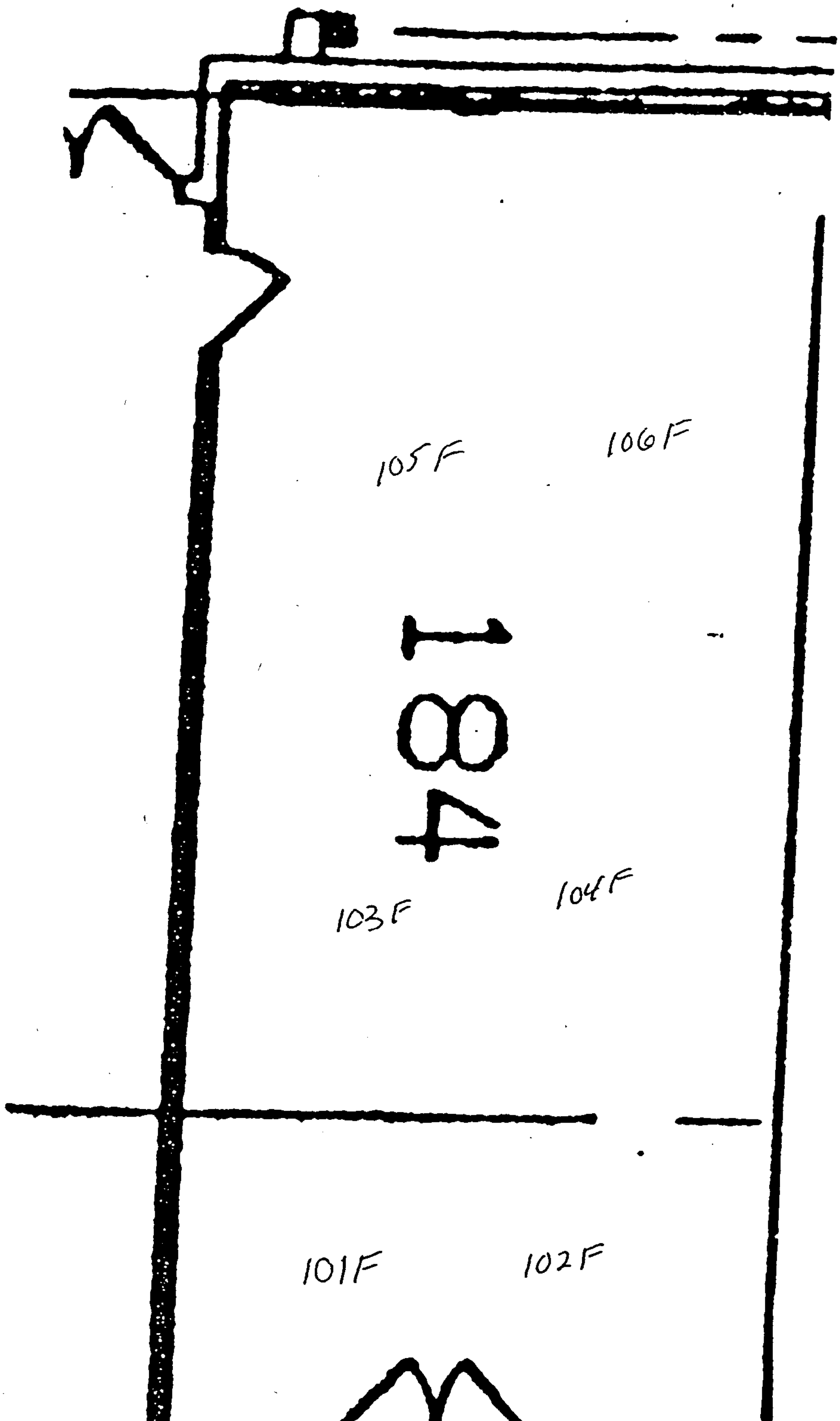
(Smear #)C= ceiling

SEE EXAMPLE MAPS

Final Area Release Survey

Example Map

Floor Surveys



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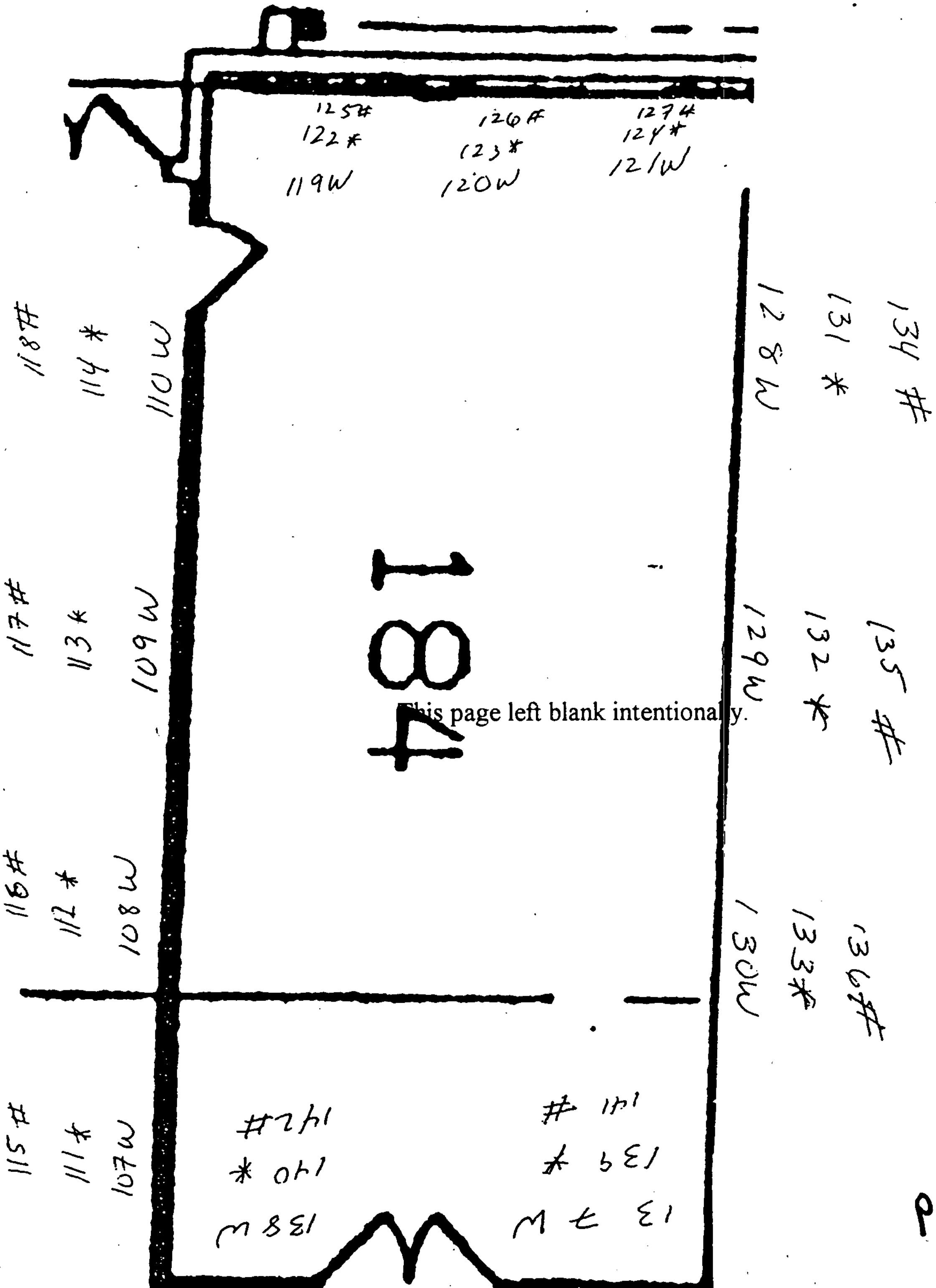
Final Area Release Survey

Sample Map

Wall Survey



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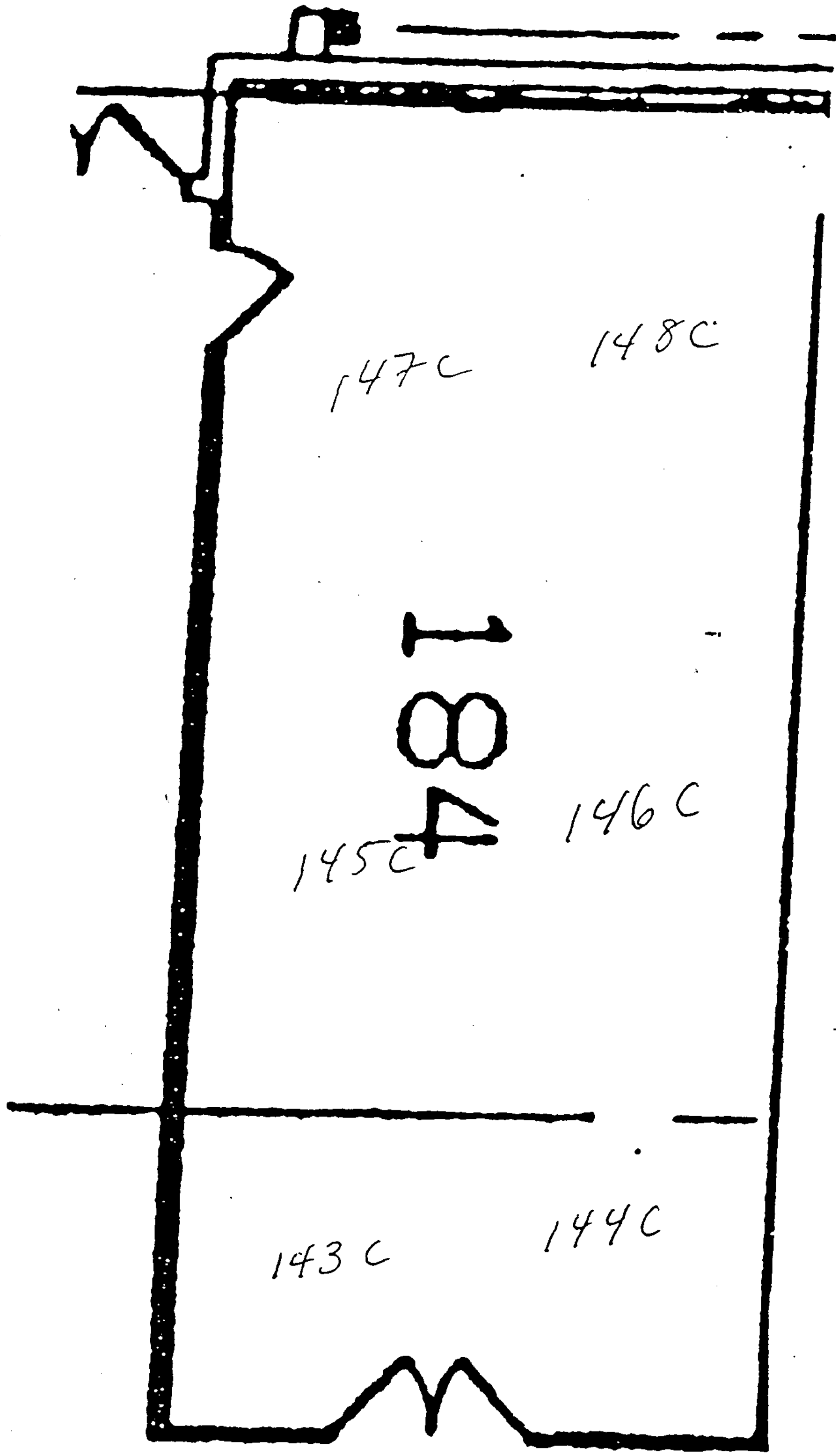
H. Barclay
11/22/95

FINAL Area Release
Sample map



Ceilings

H. Barclay
11/22/95

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APPENDIX K

List of Hazardous Substances and Extremely Hazardous Substances

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Hazardous Substances as defined in 40 CFR, (302.4, Appendix B) as of 07/01/94					
Chemical Name (Radionuclides)	**Synonym**	**CAS #**	**RCRA Hazardous Waste #**	**>Ci Limit**	**Data Source**
AMERICIUM-241		7440-35-9	N/A	YES	INVENTORY
BARIUM-133		7440-39-3	N/A	NO	INVENTORY
BISMUTH-210		7440-69-9	N/A	NO	INVENTORY
CADMIUM-109		7440-43-9	N/A	NO	INVENTORY
CARBON-14		74440-44-0	N/A	NO	INVENTORY
CESIUM-137		7440-46-2	N/A	YES	INVENTORY
COBALT-57		7440-48-4	N/A	NO	INVENTORY
COBALT-60		7440-48-4	N/A	NO	INVENTORY
CURIUM-244		7440-51-9	N/A	NO	INVENTORY
GADOLINIUM-148		7440-54-2	N/A	NO	INVENTORY
HYDROGEN-3	TRITIUM	1333-74-0	N/A	YES	INVENTORY
IRON-55		7439-89-6	N/A	NO	INVENTORY
KRYPTON-85		7439-90-9	N/A	NO	INVENTORY
LEAD-210		7439-92-1	N/A	NO	INVENTORY
MANGANESE-54		7439-96-5	N/A	NO	INVENTORY
NICKEL-59		7440-02-0	N/A	NO	INVENTORY
NICKEL-63		7440-02-0	N/A	NO	INVENTORY
PLUTONIUM-238		7440-07-5	N/A	YES	INVENTORY
PLUTONIUM-239		7440-07-5	N/A	YES	INVENTORY
POLONIUM-210		7440-08-6	N/A	YES	INVENTORY
PROMETHIUM-147		7440-12-2	N/A	NO	INVENTORY
PROTACTINIUM-234		7440-13-3	N/A	NO	INVENTORY
RADIUM-226		7440-14-4	N/A	NO	INVENTORY
SODIUM-22		7440-23-5	N/A	NO	INVENTORY
STRONTIUM-90		7440-24-6	N/A	NO	INVENTORY
THALLIUM-204		13494-80-9	N/A	NO	INVENTORY
THORIUM-230		7440-29-1	N/A	NO	INVENTORY
URANIUM-238		7440-61-1	N/A	NO	INVENTORY

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Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1000 Kg**
(1,1'-BIPHENYL)-4,4'DIAMINE-3,3'DICHLORO-	3,3'-DICHLOROBENZIDENE	91-94-1		
(1,1'-BIPHENYL)-4,4'DIAMINE-3,3'DIMETHOXY-	3,3'-DIMETHOXYBENZIDINE	119-90-4		
(1,1'-BIPHENYL)-4,4'DIAMINE-3,3'DIMETHYL-	3,3'-DIMETHYLBENZIDINE	119-93-7		
(MONO) CHLOROPENTAFLUOROETHANE		76-15-3		
0,0-DIETHYL 0-PYRAZINYL PHOSPHOROTHIOATE	PHOSPHOROTHIOIC ACID	297-97-2		
1,1-DICHLOROETHANE	ETHYLIDENE DICHLORIDE	75-34-3		
1,1-DICHLOROETHYLENE	ETHENE, 1,1-DICHLORO-, VINYLIDENE CHLORIDE	75-35-4		
1,1-DICHLOROPROPANE		78-99-9		
1,1-DIMETHYL HYDRAZINE		57-14-7		
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		76-13-1	F002	
1,10-(1,2-PHENYLENE)PYRENE	INDE [1,2,3-CD]PYRENE	193-39-5		
1,2,4-TRICHLOROBENZENE		120-82-1		
1,2-BENZANTHRACENE	BENZO(A)ANTRACENE	56-55-3		
1,2-BENZENEDICARBOXYLIC ACID [BIS(2-ETHYLHEXYL)] ESTER	BIS (2-ETHYLHEXYL)PHTHALATE	117-81-7		
1,2-DIBROMO-3-CHLOROPROPANE	PROPANE 1,2-DIBROMO-3-CHLORO	96-12-8		
1,2-PROPYLENIMINE	AZRIDINE 2-METHYL	75-55-8		
1,3-DICHLOROPROPANE		142-28-9		
1,3-PENTADIENE	1-1-METHYLBUTADIENE	504-60-9		
1,3-PROPANE SULTONE	1,2-OXATHIOLANE, 2,2-DIOXIDE	1120-71-4		
1,4-DIOXANE	1,4-DIETHYLNEDIOXIDE	123-91-1		
1,4-NAPHTHOQUINONE	1,4-NAPHTHALENEDIONE	130-15-4		
1-ACETYL-2-THIOUREA	ACTEMIDE, N-(AMINOTHIOXOMETHYL)-	591-08-2		
1-NAPHTHALENAMINE	ALPHA-NAPHTHYLAMINE	134-32-7		
1-PROPA L, 2,3-DIBROMO-, PHOSPHATE (3:1)	TRIS (2,3-DIBROMOPROPYL) PHOSPHATE	126-72-7		
1-PROPA L, 2-METHYL	ISOBUTYL ALCOHOL	78-83-1		
1-PROPANAMINE	N-PROPYLAMINE	107-10-8		
2,2'-BIOXIRANE	1,2:3,4-DIEPOXYBUTANE	1464-53-5		
2,2-DICHLOROPROPIONIC ACID		75-99-0		
2,3,4-TRICHLOROPHENOL		15950-66-0		
2,3,5-TRICHLOROPHENOL		933-78-8		
2,3,6-TRICHLOROPHENOL		933-75-5		
2,3-DICHLOROPROPENE		78-88-6		

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Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1000 Kg**
2,4,5-T ACID	2,4,5-T, ACETIC ACID, (2,4,5-TRICHLOROPHE XY)	93-76-5		
2,4,5-T AMINES		3813-14-7		
2,4,5-T ESTERS		25168-15-4		
2,4,5-T SALTS		13560-99-1		
2,4,5-TP ESTERS		32534-95-5		
2,4-D ACID	ACETIC ACID (2,4-DICHLOROPHE XY)-2,4-D, SALTS AND ESTERS	94-75-7		
2,4-D ESTERS		94-80-4		
2,4-DIMETHYLPHENOL	PHENOL, 2,4-DIMETHYL-	1505-67-9		
2,4-DINITROPHENOL	PHENOL, 2,4-DINITRO-	51-28-5		
2,5-DINITROPHENOL		329-71-5		
2,5-FURANDIONE	MALEIC ANHYDRIDE	108-31-6		
2,6-DICHLOROPHENOL	PHENOL, 2,6-DICHLORO-	87-65-0		
2,6-DINITROPHENOL		573-56-8		
2-BUTENAL- 1,4-DICHLORO-	1,4-DICHLORO-2-BUTENE	764-41-0		
2-CHLOROETHYL VINYL ETHER	ETHENE, 2-CHLOROETHOXY-	110-75-8		
2-CHLORONAPHTHALENE	BETA-CHLOROAPHTHALENE	91-58-7		
2-FURANCARBOXALDEHYDE	FURFURAL	98-01-1		
2-NAPHTHYLAMINE	BETA-NAPHTHYLAMINE	91-59-8		
2-NITROPHENOL	O-NITROPHENOL	88-75-5		
2-NITROPROPANE	PROPANE, 2-NITRO-	79-46-9		
2-PICOLINE	PYRIDINE, 2-METHYL-	109-06-8		
3,4,5-TRICHLOROPHENOL		609-19-8		
3,4-BENZACRIDINE	BENZ[C]ACRIDINE	225-51-4		
3,4-BENZOPYRENE	BENZO[A]PYRENE	50-32-8		
3,4-DINITROTOLUENE		610-39-9		
4,4 METHYLENE BIS, 2CHLOROANILINE		101-14-4		
4,6-DINITRO-O-CRESOL AND SALTS	PHENOL, 2-METHYL-4,6-DINITRO-	534-52-1		
4-AMINOPYRIDINE	4-PYRIDINAMINE	504-24-5		
4-CHLORO-M-CRESOL	p-CHLORO-M-CRESOL	59-50-7		
4-CHLOROPHENYL PHENYL ETHER		7005-72-3		
4-NITROPHENOL	p-NITROPHENOL PHENOL, 4-NITRO-	100-02-7		
ACENAPHTHLENE		83-32-9		

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
ACENAPHTHYLENE		208-96-8		
ACETALDEHYDE	ETHANAL	75-07-0		
ACETAMIDE, N-9H-FLUOREN-2-YL-	2-ACETYLAMI FLUORENE	53-96-3		
ACETIC ACID		64-19-7		YES
ACETIC ACID, ETHYL ESTER	ETHYL ACETATE	141-78-6		
ACETIC ACID, FLUORO-, SODIUM SALT	FLUOROACETATE ACID, SODIUM SALT	62-74-8		
ACETIC ACID, THALIUM (1+) SALT	THALIUM(I) ACETATE	563-68-8		
ACETIC ANHYDRIDE		108-24-7		
ACETONE	2-PROPANONE	67-64-1		YES
ACETONE CYANOHYDRIN	PROPANENITRILE	75-86-5		
ACETONITRILE		75-05-8		
ACETOPHENONE	ETHANONE, 1-PHENYL-	98-86-2		
ACETYL BROMIDE		506-96-7		
ACETYL CHLORIDE		75-36-5		
ACROLEIN	2-PROPENAL	107-02-8		
ACRYLAMIDE	2-PROPENAMIDE	79-06-1		
ACRYLIC ACID	2-PROPENOIC ACID	79-10-7		
ACRYLONITRILE	2-PROPENENITRILE	107-13-1		
ACTALDEHYDE, CHLORO	CHLOROACETALDEHYDE	107-20-0		
ADHESIVES			D001, D008, D011	
ADIPIC ACID		124-04-9		
ALCOHOL			D001, F003, F005	
ALDICARB	PROPANAL	116-06-3		
ALDRIN	1,2,3,4,10-10-HEXACHLORO-1,4,4A,5,8,8A-HEXAHYDRO-	309-00-2		
ALKALINE LIQUID			D002, D008, D011	YES
ALKYLAMINES			D001, D002	
ALLYL ALCOHOL	2-PROPEN-1-OL	107-18-6		
ALLYL CHLORIDE		107-05-1		
ALPHA, ALPHA-DIMETHYLPHENETHYLAMINE	BENZENEETHANAMINE, ALPHA, ALPHA-DIMETHYL-	122-09-8		
ALPHA-BHC		319-84-6		
ALPHA-ENDOSULFAN		959-98-8		
ALPHA-NAPHTHYLTHIOUREA	ANTU	86-88-4		

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
ALUMINUM PHOSPHIDE		20859-73-8		
ALUMINUM SULFATE		10043-01-3		
AMITROLE	1H-1,2,4-TRIAZOL-3-AMINE	61-82-5		
AMMONIA		7664-41-7		
AMMONIUM ACETATE		631-61-8		
AMMONIUM BENZOATE		1863-63-4		
AMMONIUM BICARBONATE		1066-33-7		
AMMONIUM BICHROMATE		7789-09-5		
AMMONIUM BIFLUORIDE		1341-49-7		
AMMONIUM BISULFITE		10192-30-0		
AMMONIUM CARBAMATE		1111-78-0		
AMMONIUM CARBONATE		506-87-6		
AMMONIUM CHLORIDE		12125-02-9		
AMMONIUM CHROMATE		7788-98-9		
AMMONIUM CITRATE, DIBASIC		3012-65-5		
AMMONIUM FLUORBORATE		13826-83-0		
AMMONIUM FLUORIDE		12125-01-8		
AMMONIUM HYDROXIDE		1336-21-6		
AMMONIUM HYDROXIDE			D002	
AMMONIUM OXALATE		5972-73-6		
AMMONIUM PERSULFATE			D001	
AMMONIUM PICRATE	PHENOL, 2,4,6-TRINITRO- AMMONIUM SALT	131-74-8		
AMMONIUM SULFAMATE		7773-06-0		
AMMONIUM SULFIDE		12135-76-1		
AMMONIUM SULFITE		10196-04-0		
AMMONIUM TARTRATE		3164-29-2		
AMMONIUM THIOCYANATE		1762-95-4		
AMMONIUM VANADATE	VANADIC ACID, AMMONIUM SLAT	7803-55-6		
AMYL ACETATE		628-63-7		YES
ANILINE	BENZENAMINE	62-53-3		
ANTHRACENE		120-12-7		
ANTIMONY		7440-36-0		

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
ANTIMONY PENTACHLORIDE		7647-18-9		
ANTIMONY POTASSIUM TARTRATE		28300-74-5		
ANTIMONY TRIBROMIDE		7789-61-9		
ANTIMONY TRICHLORIDE		10025-91-9		
ANTIMONY TRIFLUORIDE		7783-56-4		
ANTIMONY TRIOXIDE		1309-64-4		
AROCLOR 1016	POLYCHLORINATED BIPHENYLS (PCB's)	12674-11-2		
AROCLOR 1221	POLYCHLORINATED BIPHENYLS (PCB's)	11104-28-2		
AROCLOR 1232	POLYCHLORINATED BIPHENYLS (PCB's)	11141-16-5		
AROCLOR 1242	POLYCHLORINATED BIPHENYLS (PCB's)	53469-21-9		
AROCLOR 1248	POLYCHLORINATED BIPHENYLS (PCB's)	12672-29-6		
AROCLOR 1254	POLYCHLORINATED BIPHENYLS (PCB's)	11097-69-1		
AROCLOR 1260	POLYCHLORINATED BIPHENYLS (PCB's)	11096-82-5		
ARSENIC		7440-38-2		
ARSENIC ACID		7778-39-4		
ARSENIC COMPOUNDS				
ARSENIC DISULFIDE		1303-32-8		
ARSENIC PENTOXIDE	ARSENIC OXIDE	1303-28-2		
ARSENIC TRICHLORIDE		7784-34-1		
ARSENIC TRIOXIDE	ARSENIC OXIDE	1327-53-3		
ARSENIC TRISULFIDE		1303-33-9		
ARSINE, DIETHYL	DIETHYLARSINE	692-42-2		
ARSINIC ACID	CACODYLIC ACID	75-60-5		
AURAMINE	BENZENAMINE	492-80-8		
AZASERINE	L-SERINE	115-02-6		
AZINPHOSMETHYL	GUTHION	86-50-0		
AZIRI (2',3':3,4)PYRROLO(1,2-A)INDOLE-4,7-DIONE,6-AMI -8-[((AMI -	MITOMYCIN C	50-07-7		
AZIRIDINE	ETHYLENEIMINE	151-56-4		
BARIUM CARBONATE			D005	
BARIUM CYANIDE		542-62-1		
BENZ[J]ACEANTHRYLENE, 1,2-DIHYDRO-3-METHYL-	3-METHYLCHOLANTHRENE	56-49-5		
BENZAL CHLORIDE	BENZENE, DICHLOROMETHYL-	98-87-3		

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1000 Kg**
BENZANTHRACENE, 7,12-DIMETHYL-	7,12-DIMETHYLBENZ[A]ANTHRACENE	57-97-6		
BENZENAMINE 4,4'-METHYLENEBIX(2-CHLORO-	4,4'-4,4'-METHYLENEBIS(2-CHLOROANILINE)	101-14-4		
BENZENAMINE, 2-METHYL-, HYDROCHLORIDE	O-TOLUIDINE HYDROCHLORIDE	636-21-5		
BENZENAMINE, 2-METHYL-5-NITRO	5-NITRO-O-TOLUIDINE	99-55-8		
BENZENAMINE, 4-CHLORO	P-CHLOROANILINE	106-47-8		
BENZENAMINE, 4-CHLORO-2-METHYL-, HYDROCHLORIDE	4-CHLORO-O-TOLUIDINE, HYDROCHLORIDE	3165-93-3		
BENZENAMINE, N,N-DIMETHYL-4-PHENYLAZO-	4-DIMETHYLAMI AZOBENZENE	60-11-7		
BENZENAMINE,4-NITRO-	P-NITROANILINE	100-01-6		
BENZENE		71-43-2		
BENZENE, 1,1'-(2,2,2-TRICHLOROETHYLIDENE) BIS[4-METHOXY-	METHOZYCHLOR	72-43-5		
BENZENE, 1,2,4,5-TETRACHLORO-	1,2,4,5-TETRACHLOROBENZENE	95-94-3		
BENZENE, 1,2-DICHLORO-	1,2-DICHLOROBENZENE	95-50-1		
BENZENE, 1,3,5-TRINITRO	1,3,5-TRINITROBENZENE	99-35-4		
BENZENE, 1,3-DICHLORO	1,3-DICHLOROBENZENE	541-73-1		
BENZENE, 1,4-DICHLORO	P-DICHLOROBENZENE	106-46-7		
BENZENE, 1-BROMO-4-PHE XY-	4-BROMOPHENYL PHENYL ETHER	101-55-3		
BENZENE, 1-METHYL-2,4-DINITRO-	2,4-DINITROTOLUENE	121-14-2		
BENZENE, 1-METHYL-2,6-DINITRO-	2,6-DINITROTOLUENE	606-20-2		
BENZENE, 1-METHYLETHYL-	CUMENE	98-82-8		
BENZENE, 2,4-DIISOCYANATOMETHYL-	TOLUENE DIISOCYANATE	26471-62-5		
BENZENE, CHLORO-	CHLOROBENZENE	108-90-7		
BENZENE, CHLOROMETHYL-	BENZYL CHLORIDE	100-44-7		
BENZENE, DIMETHYL-	XYLENE	1330-20-7		
BENZENE, HEXACHLORO-	HEXACHLOROBENZENE	118-74-1		
BENZENE, HEXAHYDRO-	CYCLOHEXANE	110-82-7		
BENZENE, HYDROXY-	PHENOL	108-95-2		
BENZENE, METHYL	TOLUENE	108-88-3		YES
BENZENE, NITRO	NITROBENZENE	98-95-3		
BENZENE, PENTACHLORO-	PENTACHLOROBENZENE	608-93-5		
BENZENE, PENTACHLORONITRO-	PENTACHLORONITROBENZENE	82-68-8		
BENZENE, TRICHLOROMETHYL-	BENZOTHRICHLORIDE	98-07-7		
BENZENESULFONIC ACID CHLORIDE	BENZENESULFONYL CHLOFIDE	98-09-9		

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
BENZENETHIOL	THIOPHENOL	108-98-5		
BENZIDINE	(1,1-BIPHENYL)-4,4DIAMINE	92-87-5		
BENZO [GHI] PERYLENE		191-24-2		
BENZO(B)FLUORANTHENE		205-99-2		
BENZO(K)FLUORANTHENE		207-08-9		
BENZO[J,K]FLUORENE	FLUORANTHENE	206-44-0		
BENZOIC ACID		65-85-0		
BENZONITRILE		100-47-0		
BENZOYL CHLORIDE		98-88-4		
BERYLLIUM '	BERYLLIUM DUST	7440-41-7		
BERYLLIUM			P015	
BERYLLIUM CHLORIDE		7787-47-5		
BERYLLIUM FLUORIDE		7787-49-7		
BERYLLIUM NITRATE		13597-99-4		
BETA-BHC		319-85-7		
BETA-ENDOSULFAN		33213-65-9		
BIS (2-CHLOROETHYL) ETHER	DICHLOROETHYL ETHER	111-44-4		
BIS(2-CHLOROETHOXY) METHANE	DICHLOROMETHOXY ETHANE	111-91-1		
BROMINE			D002	
BROMOACETONE	2-PROPANONE, 1-BROMO-	598-31-2		
BROMOFORM	METHANE, TRIBROMO-	75-25-2		
BRUCINE	STRYCHNIDIN-10-ONE,2,3-DIMETHOXY-	357-57-3		
BUTYL ACETATE		123-86-4		
BUTYL BENZYL PHTHALATE		85-68-7		
BUTYLAMINE		109-73-9		
BUTYRIC ACID		107-92-6		
CADMIUM		7440-43-9		
CADMIUM			D006	
CADMIUM ACETATE		543-90-8		
CADMIUM BROMIDE		7789-42-6		
CADMIUM CHLORIDE		10108-64-2		
CALCIUM ARSENATE		7778-44-1		

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Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1000 Kg**
CALCIUM ARSENITE		52740-16-6		
CALCIUM CARBIDE		75-20-7		
CALCIUM CARBIDE			D001, D003	
CALCIUM CHROMATE	CHROMIC ACID, CALCIUM SALT	13765-19-0		YES
CALCIUM CHROMATE			D007, U032	YES
CALCIUM CHROMATE BATTERIES			D007, U032,	YES
CALCIUM CYANIDE		592-01-8		
CALCIUM DODECYLBENZENE SULFONATE		26264-06-2		
CALCIUM HYPOCHLORITE		7778-54-3		
CAPTAN		133-06-2		
CARBAMIC ACID, ETHYL ESTER	ETHYL CARBAMATE	51-79-6		
CARBAMIC ACID, METHYLNITROSO-, ETHYL ESTER	N-NITROSO-N-METHYLURETHANE	615-53-2		
CARBAMIC CHLORIDE, DIMETHYL-	DIMETHYLCARBAMOYL CHLORIDE	79-44-7		
CARBARYL		63-25-2		
CARBOFURAN		1563-66-2		
CARBON DISULFIDE		75-15-0		
CARBON OXYFLUORIDE	CARBONIC DIFLUORIDE	353-50-4		
CARBON TETRACHLORIDE	METHANE, TETRACHLORO-	56-23-5		
CARBONIC ACID, DITHALLIUM (I) SALT	THALLIUM CARBONATE	6533-73-9		
CARBONIC DICHLORIDE	PHOSGENE	75-44-5		
CARBONOCHLORIDIC ACID, METHYL ESTER	METHYL CHLOROCARBONATE	79-22-1		
CHLORAL	ACETALDEHYDE, TRICHLORO	75-87-6		
CHLORAMBUCIL	BENZENEBUTANOIC ACID	305-03-3		
CHLORDANE		57-74-9		
CHLORINE		7782-50-5		
CHLORINE CYANIDE		506-77-4		
CHLORNAPHAZINE	NAPHTHYLAMINE,	494-03-1		
CHLOROBENZILATE	BENZENEACETIC	510-15-6		
CHLORODIBROMOMETHANE		124-48-1		
CHLOROETHANE		75-00-3		
CHLOROFORM	METHANE, TRICHLORO-	67-66-3		
CHLOROFORM, COPPER			D022	

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Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1000 Kg**
CHLOROMETHYL METHYL ETHER	METHANE, CHLOROMETHOXY	107-30-2		
CHLOROSULFONIC ACID		7790-94-5		
CHLORPYRIFOS		2921-88-2		
CHROMIC ACETATE		1066-30-4		
CHROMIC ACID		11115-74-5		
CHROMIC ACID			D001, D002, D004, D005, D007	YES
CHROMIC SULFATE		10101-53-8		
CHROMIUM		7440-47-3		
CHROMIUM POWDER			D001, D003, D007	
CHROMOUS CHLORIDE		10049-05-5		
CHRYSENE	1,2-BENZPHENANTHRENE	218-01-9		
COBALTOUS BROMIDE		7789-43-7		
COBALTOUS FORMATE		544-18-3		
COBALTOUS SULFAMATE		14017-41-5		
COMPRESSED GAS			D001	
COPPER		7440-50-8		
COPPER CHLORIDE			D002	YES
COPPER CYANIDE		544-92-3		
CORROSIVE LIQUIDS			D001, D002, D003, D004, D005, D006, D007, D009, D038, F002, F009, U080, U122, U134, U188	YES
CORROSIVE SOLIDS			D002, D003, D008	YES
COUMAPHOS		56-72-4		
CREOSOTE		8001-58-9		
CRESOL	CRESYLIC ACID	1319-77-3		
CRESOL-O		95-48-7		
CROTONALDEHYDE	2-BUTENAL	4170-30-3		
CUPRIC ACETATE		142-71-2		
CUPRIC ACETOARSENITE	PARIS GREEN	12002-03-8		
CUPRIC CHLORIDE		7447-39-4		
CUPRIC NITRATE		[illegible]		

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Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
CUPRIC SULFATE		7758-98-7		
CUPRIC SULFATE AMMONIATED		10380-29-7		
CUPRIC TATRATE		815-82-7		
CYANIDE COMPOUNDS		57-12-5		
CYANIDE SOLUTION			D003, D038, F005, F007, P030, P098	YES
CYANOGEN	ETHANEDINITRILE	460-19-5		
CYANOGEN BROMIDE		506-68-3		
CYCLOHEXANE	BENZENE, HEXAHYDRO	110-82-7		
CYCLOHEXANONE		108-94-1		
CYCLOPHOSPHAMIDE	2H-1,3,2-OXAZATHOSPHORIN-2-AMINE	50-18-0		
DAUNOMYCIN	5,12-NAPHTHACENEDIONE(8S-CIS)-8-ACETYL-10-[3-AMI -2,3,6-TRIDEOXY-ALPHA-L-LYXO-HEXO-PYRA SYL)OXY]-7,8,9,10- TETRAHYDRO-6,8,11 -TRIHYDROXY-1-METHOXY-, (8S-CIS)-	20830-81-3		
DDD	BENZENE, 1,1'-(2,2DICHLOROETHYLIDENE)BIS[4-CHLORO-	72-54-8		
DDE	4,4'-DDE	72-55-9		
DDT	BENZENE, 1,1'-(2,2,2-TRICHLOROETHYLIDINE)BIS[4-CHLORO-	50-29-3		
DELTA-BHC		319-86-8		
DI-N-PROPYLNITROSAMINE	N-NITROSODI-N-PROPYLAMINE	621-64-7		
DIALLATE	CARBAMATHIOIC ACID	2303-16-4		
DIAZINON		333-41-5		
DIBENZ(A,I)PYRENE	BENZO[RST] PENTAPHENE	189-55-9		
DIBENZO[A,H]ANTHRACENE	1,2:5,6-DIBENZANTHRACENE	53-70-3		
DIBUTYL PHTHALATE	N-BUTYL PHTHALATE	84-74-2		
DICAMBA		1918-00-9		
DICHLOBENIL		1194-65-6		
DICHLONE		117-80-6		
DICHLOROBENZENE (MIXED ISOMERS)		25321-22-6		
DICHLOROBROMOMETHANE		75-27-4		
DICHLORODIFLUOROMETHANE	METHANE, DICHLORODIFLUORO-	75-71-8		YES
DICHLOROISOPROPYL ETHER	PROPANE	108-60-1		
DICHLOROMETHANE	METHYLENE CHLORIDE		D018, D022, D027, D028, D029, D030, D043, F001, F002, F005, F018	YES

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
DICHLOROMETHYL ETHER	METHANE	542-88-1		
DICHLOROPHENYLARSINE	ARSONOUS DICHLORIDE, PHENYL-	696-28-6		
DICHLOROPROPANE		26638-19-7		
DICHLOROPROPANE-DICHLOROPROPENE (MIXTURE)		8003-19-8		
DICHLOROPROPENE		26952-23-8		
DICOTOL		115-32-2		
DIELDRIN	2,7:3,6-DINETHA NAPHTH(2,3-B)OXIRE, 3,4,5,6,9,9-HEXADHLORO-1A,2,2A,3,6,6A,7,7A-OCTAHYDRO-,(1AALPHA,2BETA,2AALPHA,3BETA,6AALPHA,7BETA,7AALPHA)-	60-57-1		
DIETHYL PHTHALATE	1,2-BENZENEDICARBOXYLIC ACID, DIETHYL ESTER	84-66-2		
DIETHYL-P-NITROPHENYL PHOSPHATE	PHOSPHORIC ACID, DIETHYL 4-NITROPHENYL ESTER	311-45-5		
DIETHYLAMINE		109-89-7		
DIETHYLENE			D002	
DIETHYLSTIBESTROL	PHENOL, 4,4'-(1,2-DIETHYL-1,2-ETHENEDY)BIS-,(E)	56-53-1		
DIHYDROSAFROLE	1,3-BENZODIOXOLE, 5-PROPYL-	94-58-6		
DIISOPROPYL FLUOROPHOSPHATE	PHOSPHOROFLUORIDIC ACID	55-91-4		
DIMETHOATE	PHOSPHORODITHIOIC ACID, 0,0-DIMETHYL S-[2-(METHYLAMI)-2-OXOETHYL]ESTER	60-51-5		
DIMETHYL PHTHALATE	1,2-BENZENEDICARBOXYLIC ACID DIMETHYL ESTER	131-11-3		
DIMETHYL SULFATE	SULFURIC ACID, DIMETHYL ESTER	77-78-1		
DIMETHYLAMINE	METHANAMINE, N-METHYL-	124-40-3		
DINITROBENZENE (MIXED)		25154-54-5		
DINITROPHENOL		25550-58-7		
DINITROPHENOL SOLUTION			PO48	
DINITROTOLUENE		25321-14-6		
DINOSEB	PHENOL, 2-(1-METHYLPROPYL)-4,6-DINITRO	88-85-7		
DIPHOSPHORAMIDE, OCTAMETHYL-	OCTAMETHYLPYROPHOSPHORAMIDE	152-16-9		
DIPHOSPHORIC ACID, TETRAETHYL ESTER	TETRAETHYL PYROPHOSPHATE	107-49-3		
DIPROPYLAMINE	1-PROPANAMINE, N-PROPYL	142-84-7		
DIQUAT		85-00-7		
DISULFOTON	0,0-DIETHYL S-[2-(ETHYLTHIO)ETHYL]ESTER	298-04-4		
DITHIOBIURET	THIOIMIDODICARBONIC DIAMIDE	541-53-7		
DIURON		330-54-1		

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Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
DODECYLBENZENESULFONIC ACID		27176-87-0		
ENDOSULFAN	6,9-METHA -2,4,3-BENZODIOXATHEPIN, 6,7,8,9,10,10-HEXOCHLORO-1,5,5A,6,9,9A,-HEXAHYRO-, 3-OXIDE,	115-29-7		
ENDOSULFAN SULFATE		1031-07-8		
ENDOTHALL	7-OXABICYCLO [2,2,1] HEPTANE-2,3-DICARBOXYLIC ACID	145-73-3		
ENDRIN	ENDRIN, & METABOLITES	72-20-8		
ENDRIN ALDEHYDE		7421-93-4		
EPICHLOROHYDRIN	OXIRANE, (CHLOROMETHYL)-	106-89-8		
EPINEPHRINE	1,2-BENZ:NEDIOL, 4-[1-HYDROXY-2-(METHYLAMI)ETHYL]-	51-43-4		
ETHANAMINE, N-ETHYL-N-NITROSO-	N-NITROSO:IETHYLAMINE	55-18-5		
ETHANE, 1,1'-OXYBIS-	ETHYL ETHER, ETHYL ESTER	60-29-7		
ETHANE, 1,1,1,2-TETRACHLORO-	1,1,1,2-TETRACHLOROETHANE	630-20-6		
ETHANE, 1,1,1-TRICHLORO-	METHYL CHLOROFORM	71-55-6		YES
ETHANE, 1,1,2,2-TETRACHLORO-	1,1,2,2-TETRACHLOROETHANE	79-34-5		
ETHANE, 1,1,2-TRICHLORO-	1,1,2-TRICHLOROETHANE	79-00-5		
ETHANE, 1,2-DICHLORO	1,2-DICHLOROETHANE	107-06-2		
ETHANE, HEXACHLORO-	HEXACHLOROETHANE	67-72-1		
ETHANE, PENTACHLORO-	PENTACHLOROETHANE	76-01-7		
ETHANETHIOAMIDE	THIOACETAMIDE	62-55-5		
ETHANOL			D001, F003, F005	
ETHANOL, 2,2'-(NITROSOIMI)BIS-	N-NITROSODIETHANOLAMINE	1116-54-7		
ETHENE, TETRACHLORO-	PERCHLOROETHYLENE	127-18-4		
ETHENE, 1,2-DICHLORO- (E)	1,2-DICHLOROETHYLENE	156-60-5		
ETHENE, CHLORO-	VINYL CHLORIDE	75-01-4		
ETHION		563-12-2		
ETHYL ACETATE	ACETIC ACID	141-78-6		
ETHYL ACRYLATE	2-PROPENOIC ACID	140-88-5		
ETHYL BENZENE		100-41-4		
ETHYL CYANIDE	PROPIONITRILE	107-12-0		
ETHYL METHACRYLATE	2-PROPENOIC-ACID, 2-METHYL-	97-63-2		
ETHYL METHANESULFONATE	METHANESULFONIC ACID, ETHYL ESTER	62-50-0		
ETHYLENE DIBROMIDE	ETHANE, 1,2-DIBROMO-	106-93-4		

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
ETHYLENE GLYCOL MONOETHYL ETHER	ETHANOL, 2-ETHOXY-	110-80-5		
ETHYLENE OXIDE	OXIRANE	75-21-8		
ETHYLENE THIOUREA	2-IMIDAZOLIDINETHIONE	96-45-7		
ETHYLENEBISDITHIOCARBAMIC ACID, SALTS & ESTERS	CARBAMODITHIOIC ACID	111-54-6		
ETHYLENEDIAMINE		107-15-3		
ETHYLENEDIAMINE TETRAACETIC ACID		60-00-4		
FAMPHUR	PHOSPHOROTHIOIC ACID	52-85-7		
FERRIC AMMONIUM CITRATE		1185-57-5		
FERRIC AMMONIUM OXALATE		55488-87-4		
FERRIC CHLORIDE		7705-08-0		
FERRIC FLUORIDE		7783-50-8		
FERRIC SULFATE		10028-22-5		
FERROUS AMMONIUM SULFATE		10045-89-3		
FERROUS CHLORIDE		7758-94-3		
FERROUS SULFATE		7782-63-0		
FLAMMABLE LIQUIDS			D001. D002, D003, D005, D006, D008, D011, D018, D09, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D038, D039, D040, D041, D042, F001, F003, F005, F007, U223, U227, U239	YES
FLAMMABLE SOLIDS			D001, D003, D005, D007, D008	YES
FLUOBORIC ACID			D002	
FLUORENE		86-73-7		
FLUORIDE			D002	
FLUORINE		7782-41-4		
FLUOROACETAMIDE	ACETAMIDE, 2-FLUORO-	640-19-7		YES
FORMALDEHYDE		50-00-0		
FORMALDEHYDE			U122	
FORMIC ACID		64-18-6		
FREON			F001	YES

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
FULMINIC ACID, MERCURY (II) SALT	MERCURY FULMINATE	628-86-4		
FUMARIC ACID		110-17-8		
FURAN	FURFURAN	110-00-9		
FURAN, TETRAHYDRO-	TETRAHYDROFURAN	109-99-9		
GAMMA-BHC	CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-,(1ALPHA, 2ALPHA, 3BETA, 4ALPHA, 5ALPHA, 6BETA)- HEXACHLOROCYCLOHEXANE (GAMMA ISOMER) LINDANE	58-89-9		
GASOLINE MIXTURE			DOO1	YES
GLYCIDYLALDEHYDE	OXIRANECARBOXYALDEHYDE	765-34-4		
GUANIDINE, N-METHYL-N'NITRO-N-NITROSO-	MNNG	70-25-7		
GUTHION	AZINPHOSMETHYL	86-50-0		
HALOGENATED HYDROCARBONS			D018, D022, D023, D024, D025, D026, D027, D028, D029, D030, D036, D041, D042, D043, F001, F002, F003, F005	YES
HAZARDOUS WASTE LIQUIDS			D004, D006, D007, D008, D009, D010, D018, D019, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D035, D036, D037, D038, D039, D040, D041, D042, D043, F001, F002, F003, F005, F006, P107, U080, U081, U222, U226, U228	YES
HAZARDOUS WASTE SOLIDS			D003, D004, D005, D006, D007, D008, D009, D011, D018, D035, D039, D040, F001, F002, F003, F005, F039, U032	YES
HEPTACHLOR	4,7-METHA -1H-INDENE,1,4,5,6,7,8,8-HEPTACHLORO-3A,4,7,7A-TETRAHYDRO-	76-44-8		
HEPTACHLOR EPOXIDE		1024-57-3		
HEXACHLOROBUTADIENE	1,3-BUTADIENE- 1,1,2,3,4,4-HEXACHLORO-	87-68-3		
HEXACHLOROCYCLOHEXANE		608-73-1		
HEXACHLOROCYCLOPENTADIENE	1,3-CYCLOPENTADIENE, 1,2,3,4,5,5-HEXACHLORO-	77-47-4		
HEXACHLOROPHENE	2,2'-METHYLENEBIS[3,4,6-TRICHLORO-	70-30-4		
HEXACHLOROPROPENE	1-PROPENE, 1,1,2,3,3,3-HEXACHLORO-	1888-71-7		

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Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
HEXAETHYL TETRAPHOSPHATE	TETRAPHOSPHORIC ACID, HEXAETHYL ESTER	757-58-4		
HYDRAZINE		302-01-2		
HYDRAZINE, 1,2-DIMETHYL	1,2-DIMETHYLHYDRAZINE	540-73-8		
HYDRAZINE, 1,2-DIPHENYL-	1,2-DIPHENYLHYDRAZINE	122-66-7		
HYDRAZINE, METHYL-	METHYL HYDRAZINE	60-34-4		
HYDRAZINECARBOTHIOAMIDE	THIOSEMICARBAZIDE	79-19-6		
HYDROCHLORIC ACID	HYDROGEN CHLORIDE	764-70-10		YES
HYDROCHLORIC ACID			D002	
HYDROFLUORIC ACID			D002, U134	YES
HYDROGEN CHLORIDE	HYDROGEN CHLORIDE (GAS ONLY)	7647-01-0		
HYDROGEN CYANIDE	HYDROCYANIC ACID	74-90-8		
HYDROGEN FLUORIDE	HYDROFLUORIC ACID	7664-39-3		
HYDROGEN SULFIDE		7783-06-4		
HYDROPEROXIDE, 1-METHYL-1-PHENYLETHYL-	ALPHA, ALPHA-DIMETHYLBENZYLHYDROPEROXIDE	80-15-9		
INDE (1,2,3-CD) PYRENE		193-39-5		
IRON DISULFIDE			D001, D003, U032	YES
ISOAMYL ACETATE		123-92-2		YES
ISOBUTYL ACETATE		110-19-0		
ISOBUTYLAMINE		78-81-9		
ISOBUTYRIC ACID		79-31-2		
ISOCYANATE SOLUTION			D003, U233	
ISOCYANATES			D001	
ISODRIN	1,4,5,8-DIMETHA NAPHTHALENE	465-73-6		
ISOPHORONE		78-59-1		
ISOPRENE		78-79-5		
ISOPROPANOLAMINE DODECYLBENZENSULFONATE		42504-46-1		
ISOSAFROLE	1,3-BENZODIOXIE, 5-)1-PROPENYL)-	120-58-1		
KEPONE	1,3,4-METHENO-2H-CYCLOBUTA[C,D]PENTALEN-2-ONE, 1,1A,3,3A,4,5,5,5A,5B,6-DECACHLOROCTAHYDRO--	143-50-0		
LAB LIQUID WASTE			D001, D004	YES
LAB PLATING SOLUTIONS			D001, D007	YES
LASIOCARPINE	2-BUTENOIC ACID, 2-METHYL-, 7[[2,3-DIHYROXY-2-(1-METHOXYETHYL)-3-METHYL-1-OXOBUTOXY]METHYL]-2,3,5,7A-TETRAHYRO-1H-PYRROLIZIN-1-YL ESTER, [1S-[1ALPHA(Z), 7(2S*,3R*), 7AALPHA]]	303-34-4		

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Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1000 Kg**
LEAD		7439-92-1		
LEAD ACETATE	ACETIC ACID, LEAD (2+)SALT	301-04-2		
LEAD ARSENATE		7784-40-9		
LEAD CHLORIDE		7758-95-4		
LEAD FLUOBORATE		13814-96-5		
LEAD FLUOBORATE			D008	
LEAD FLUORIDE		7783-46-2		
LEAD IODIDE		10101-63-0		
LEAD NITRATE		10099-74-8		
LEAD PHOSPHATE	PHOSPHORIC ACID, LEAD (2+)SALT (2:3)	7446-27-7		
LEAD STEARATE		1072-35-1		
LEAD SUBACETATE	LEAD, BIS(ACETATO-O)TETRAHYROXYTRI-	1335-32-6		
LEAD SULFATE		7446-14-2		
LEAD SULFIDE		1314-87-0		
LEAD THIOCYANATE		592-87-0		
LITHIUM			D001, D003	YES
LITHIUM CHROMATE		14307-35-8		
LITHIUM SILICON BATTERIES			D001, D003, D007	YES
M-BENZENE, DIMETHYL-	M-XYLENE	108-38-3		
M-CRESOL	M-CRESYLIC ACID	108-39-4		
M-DINITROBENZENE		99-65-0		
M-NITROPHENOL (MIXED)		554-84-7		
M-NITROTOLUENE		99-08-1		
MALATHION		121-75-5		
MALEIC ACID		110-16-7		
MALEIC HYDREZIDE	3,6-PYRIDAZINEDIONE, 1,2-DIHYDRO	123-33-1		
MALONONITRILE	PROPANEDINITRILE	109-77-3		
MELPHALAN	L-PHENYLALANINE, 4-[BIS(2-CHLOROETHYL)AMINO]	148-82-3		
MERCAPTODIMETHUR		2032-65-7		
MERCURIC CYANIDE		592-04-1		
MERCURIC NITRATE		10045-94-0		
MERCURIC SULFATE		7783-35-9		

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Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
MERCURIC THIOCYANATE		592-85-8		
MERCUROUS NITRATE		7782-86-7		
MERCURY		7439-97-6		
MERCURY			D009	YES
MERCURY, (ACETATO-O)PHENYL-	PHENYLMERCURY ACETATE	62-38-4		
METHACRYLONITRILE	2-PROPENENITRILE, 2-METHYL-	126-98-7		
METHANAMINE, N-METHYL N-NITROSO-	N-NITROSODIMETHYLAMINE	62-75-9		
METHANE CHLORO-	METHYL CHLORIDE	74-87-3		
METHANE, BROMO-	METHYL BROMIDE	74-83-9		
METHANE, TETRANITRO-	TETRANITROMETHANE	509-14-8		
METHANE, TRICHLOROFLUORO-	TRICHLOROMONOFLUOROMETHANE	75-69-4		YES
METHANESULFENYL CHLORIDE, TRICHLORO-	TRIOCHLOROMETHANESULFENYL CHLORIDE	594-42-3		
METHANETHIOL	THIOMETHANOL	74-93-1		
METHANOL	METHYL ALCOHOL	67-56-1		YES
METHAPYRILENE	1,2-ETHANEDIAMINE, N, N-DIMETHYL-N'-2-PYRIDINYL-N'-(2-THIENYLMETHYL)-	91-80-5		
METHOMYL	ETHANIMIDOTHIOIC	16752-77-5		
METHYL CHLOROFORM	1,1,1-TRICHLOROETHANE	71-55-6		YES
METHYL ETHYL KETONE	MEK	78-93-3		
METHYL ETHYL KETONE PEROXIDE	2-BUTANONE PEROXIDE	1338-23-4		
METHYL IODIDE	METHANE, IODO-	74-88-4		
METHYL ISOBUTYL KETONE	4-4-METHYL-2-PENTANONE	108-10-1		
METHYL ISOCYANATE		624-83-9		
METHYL METHACRYLATE	2-PROPENOIC ACID, 2-METHYL-, METHYL ESTER	80-62-6		
METHYL PARATHION	0,0-DIMETHYL O-(4-NITROPHENYL) ESTER	298-00-0		
METHYLENE BROMIDE	METHANE, DIBROMO-	74-95-3		
METHYLENE CHLORIDE		75-09-2		YES
METHYLENE CHLORIDE	DICHLOROMETHANE		FOO1, F002, F005	YES
METHYLTHIOURACIL	4(1H)-PYRIMIDINONE, 2,3-DIHYDRO-6-METHYL-2-THIOXO-	56-04-2		
MEVINPHOS		7786-34-7		
MEXACARBATE		315-18-4		
MITOMYCIN C	AZIRI [2',3':3,4]PYRROLO[1,2-A]INDOLE-4,7-DIONE,6-AMINO-8-[[(AMINOCARBONYL)OXY]	50-07-7		

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Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
MONOETHYLAMINE		75-04-7		
MONOMETHYLAMINE	METHYLAMINE	74-89-5		
MUSCIMOL	3(2H)-ISOXAZOLONE, 5-(AMINOMETHYL)- 5-(AMINOMETHYL)-3-ISOXAZOLOL	2763-96-4		
N,N'-DIETHYLHYDRAZINE	HYDRAZINE, 1,2-DIETHYL-	1615-80-1		
N-BUTYL ALCOHOL	1-BUTANOL	71-36-3		
N-NITROSO-N-ETHYLUREA	UREA	759-73-9		
N-NITROSO-N-METHYLUREA	UREA	684-93-5		
N-NITROSODI-N-BUTYLAMINE	1-BUTANAMINE- N-BUTYL-N-NITROSO-	924-16-3		
N-NITROSODIPHENYLAMINE		86-30-6		
N-NITROSOMETHYLVINYLAMINE	VINYLAMINE, N-METHYL-N-NITROSO-	4549-40-0		
N-NITROSOPIPERIDINE	PIPERIDINE, 1-NITROSO-	100-75-4		
N-NITROSOPYRROLIDINE	PYRROLEDINE 1-NITROSO	930-55-2		
NALED		300-76-5		
NAPHTHALENE		91-20-3		
NAPHTHENIC ACID		1338-24-5		
NICKEL		7440-02-0		
NICKEL AMMONIUM SULFATE		15699-18-0		
NICKEL CARBONYL		13463-39-3		
NICKEL CHLORIDE		37211-05-5		
NICKEL CYANIDE		557-19-7		
NICKEL HYDROXIDE		12054-48-7		
NICKEL NITRATE		14216-75-2		
NICKEL SULFATE		7786-81-4		
NICOTINE AND SALTS	PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-, (S)-	54-11-5		
NICOTINE AND SALTS	PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-, (S)-	54-11-5		
NITRIC ACID		7697-37-2		YES
NITRIC ACID			D002	
NITRIC OXIDE		10102-43-9		
NITROCELLULOSE			D001	
NITROGEN DIOXIDE		10102-44-0		
NITROGLYCERINE	1,2,3-PROPANETRIOL, TRINITRATE	55-63-0		

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Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1000 Kg**
NITROPHENOL (MIXED)		25154-55-6		
NITROTOLUENE		1321-12-6		
O-BENZENE, DIMETHYL	O-XYLENE	95-47-6		
O-CHLOROPHENOL	2-CHLOROPHENOL	95-57-8		
O-DINITROBENZENE		528-29-0		
O-NITROTOLUENE		88-72-2		
O-TOLUIDINE	BENZENAMINE, 2-METHYL	95-53-4		
OIL			F001, D006, D008	YES
ORGANIC PEROXIDE			D001	
OSMIUM OXIDE	OSMIUM TETROXIDE	20816-12-0		
OSMIUM TETROXIDE			P087	
OXIDIZERS			D001, D002, D005, D006, D007, D008, D011, D021, U032	YES
P-BENZENE, DIMETHYL-	P-XYLENE	106-42-3		
P-BENZOQUINONE	2,5-CYCLOHEXADIENE -1,4-DIONE	106-51-4		
P-CRESOL	P-CRESYLIC ACID	106-44-5		
P-DINITROBENZENE		100-25-4		
P-NITROTOLUENE		99-99-0		
P-TOLUIDINE	BENZENEAMINE, 4-METHYL -	106-49-0		
PAINT			D001, F003, F005	YES
PARAFORMALDEHYDE		30525-89-4		
PARALDEHYDE	1,3,5-TRIOXANE,2,4,6-TRIMETHYL-	123-63-7		
PARATHION	PHOSPHOROTHIOIC ACID, O,O-DIETHYL O-(4-NITROPHENYL) ESTER	56-38-2		
PENTACHLOROPHENOL (PCP)	PHENOL, PENTACHLORO-	87-86-5		
PERCHLORIC ACID			D001, D002	
PHENACETIN	ACETAMIDE, N-(4-ETHOXYPHENYL)-	62-44-2		
PHENANTHRENE		85-01-8		
PHENOL	BENZENE, HYROXY-	108-95-2		
PHENOL, 2,3,4,6-TETRACHLORO-	2,3,4,6-TETRACHLOROPHENOL	58-90-2		
PHENOL, 2,4,5-TRICHLORO-	2,4,5-TRICHLOROPHENOL	95-95-4		
PHENOL, 2,4,6-TRICHLORO-	2,4,6-TRICHLOROPHENOL	88-06-2		
PHENOL, 2,4-DICHLORO-	2,4-DICHLOROPHENOL	120-83-2		

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1000 Kg**
PHENOL, 2,4-DIMETHYL	2,4-DIMETHYL PHENOL	105-67-9		
PHENOL, 2-CYCLOHEXYL-4,6-DINITRO-	2-CYCLOHEXYL-4,6-DINITROPHENOL	131-89-5		
PHENYLTHIOUREA	THIOUREA, PHENYL-	103-85-5		
PHORATE	PHOSPHORODITHIOIC ACID, O,O-DIETHYL S-(ETHYLTHIO), METHYL ESTER	298-02-2		
PHOSPHINE	HYDROGEN PHOSPHIDE	7803-51-2		
PHOSPHORIC ACID		7664-38-2		
PHOSPHORIC ACID			D002	
PHOSPHORODITHIOIC ACID, O,O-DIETHYL S-METHYLESTER	O,O-DIETHYL S-METHYL DITHIOPHOSPHATE	3288-58-2		
PHOSPHOROUS AMORPHOUS			D001, D003	
PHOSPHORUS		7723-14-0		
PHOSPHORUS OXYCHLORIDE		10025-87-3		
PHOSPHORUS PENTASULFIDE	PHOSPHORUS SULFIDE	1314-80-3		
PHOSPHORUS TRICHLORIDE		7719-12-2		
PHTHALIC ANHYDRIDE	1,3-ISOBENZOFURANDIONE	85-44-9		
PLUMBANE, TETRAETHYL-	TETRAETHYL LEAD	78-00-2		
POISON LIQUIDS			D003, D004, D008, D009, D038, F002, F007, U044, U048, U052, U080, U081, U082, U188, U211, U223, U226, P030, P087, P098, P106	YES
POISON SOLIDS			D003, D002, D004, D005, D006, D007, D008, D009, D011, F002, F007, P015, P030, P087, P106, P120, U052, U080, U134, U170, U188, U223	YES
POLYALKYLAMINES			D001, D002	
POLYCHLORINATED BIPHENYLS	PCB's	1336-36-3		
POTASSIUM			D003, D008, P098	
POTASSIUM ARSENATE		7784-41-0		
POTASSIUM ARSENITE		10124-50-2		
POTASSIUM BICHROMATE		7778-50-9		
POTASSIUM CHROMATE		7789-00-6		
POTASSIUM CYANIDE		151-50-8		
POTASSIUM CYANIDE			D003, F007, P030	

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1000 Kg**
POTASSIUM HYDROXIDE		1310-58-3		
POTASSIUM HYDROXIDE			D002	
POTASSIUM PERCHLORATE			D001, D007	
POTASSIUM PERMANGANATE		7722-64-7		
POTASSIUM SILVER CYANIDE	ARGENTATE (1-), BIS(CYANO-C)-, POTASSIUM	506-61-6		
PRONAMIDE	BENZAMIDE	23950-58-5		
PROPANENITRILE, 3-CHLORO-	3-CHLOROPROPIONITRILE	542-76-7		
PROPARGITE		2312-35-8		
PROPARGYL ALCOHOL	2-PROPYN-1-OL	107-19-7		
PROPIONIC ACID		79-09-4		
PROPIONIC ACID, 2-(2,4,5-TRICHLOROPHENOXY)-	SILVEX	93-72-1		
PROPIONIC ANHYDRIDE		123-62-6		
PROPYLENE DICHLORIDE	1,2-DICHLOROPROPANE	78-87-5		
PROPYLENE OXIDE		75-56-9		
PYRENE		129-00-0		
PYRETHRINS		121-21-1		
PYRIDINE		110-86-1		
PYRROLIDINE			D001	YES
QUINOLINE		91-22-5		
RESERPINE	YOHIMBAN-16-CARBOXYLIC ACID,11,17-DIMETHOXY-18-[(3,4,5-TRIMETHOXY	50-55-5		
RESIN SOLUTIONS			D001	
RESORCNOL	1,3-BENEZENEDIOL	108-46-3		
SACCHARIN AND SALTS	1,2-BENZISOTHIAZOLIN-3-ONE,1,1-DIOXIDE-	81-07-2		
SAFROLE	1,3-BENZODIOXOLE, 5-(2-PROPENYL)-	94-59-7		
SEC-AMYL ACETATE		626-38-0		
SEC-BUTYL ACETATE		105-46-4		
SEC-BUTYLAMINE		513-49-5		
SELENIOUS ACID		7783-00-8		
SELENIUM DIOXIDE	SELENIUM OXIDE	7446-08-4		
SELENIUM SULFIDE		7488-56-4		
SELENOUREA		630-10-4		

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1000 Kg
SILVER		7440-22-4		
SILVER CYANIDE		506-64-9		
SILVER NITRATE		7761-88-8		
SODIUM		7440-23-5		
SODIUM ARSENATE		7631-89-2		
SODIUM ARSENITE		7784-46-5		
SODIUM AZIDE		26628-22-8		
SODIUM AZIDE			P105	
SODIUM BICHROMATE		10588-01-9		
SODIUM BIFLUORIDE		1333-83-1		
SODIUM BISULFITE		7631-90-5		
SODIUM CHROMATE		7775-11-3		
SODIUM CYANIDE		143-33-9		
SODIUM DODECYBENZENE SULFONATE		25155-30-0		
SODIUM FLUORIDE		7681-49-4		YES
SODIUM HYDROSULFIDE		16721-80-5		
SODIUM HYDROXIDE	CAUSTIC SODA	1310-73-2		YES
SODIUM HYDROXIDE			D002	YES
SODIUM HYPOCHLORITE		7681-52-9		
SODIUM METHYLATE		124-41-4		
SODIUM METHYLATE			D003	
SODIUM NITRITE		7632-00-0		
SODIUM PHOSPHATE, DIBASIC		7558-79-4		
SODIUM SELENITE		10102-18-8		
SODIUM SULFIDE			D001, D003	
STREPTOZOTOCIN	D-GLUCOSE	18883-66-4		
STRONTIUM CHROMATE		7789-06-2		
STRYCHNINE	STRYCHNIDIN-10-ONE	57-24-9		
STYRENE		100-42-5		
SULFUR DIOXIDE BATTERIES			D001, D003	YES
SULFUR MONOCHLORIDE		12771-08-3		
SULFURIC ACID		7664-93-9		YES

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1000 Kg**
SULFURIC ACID			D002	YES
SULFURIC ACID SLUDGE			D002	YES
SULFURIC ACID, DITHALLIUM (1+) SALT	THALLIUM (I) SULFATE	7446-18-6		
SULFURIC ACID, FUMING		8014-95-7		
SULFURYL CHLORIDE			D002, D003	
TERT-AMYL ACETATE		625-16-1		
TERT-BUTYL ACETATE		540-88-5		
TERT-BUTYLAMINE		75-64-9		
TETRACHLORODIBENZO-P-DIOXIN	TCDD	1746-01-6		
TETRACHLOROETHENE			D039, D040, F001	YES
TETRACHLOROETHYLENE	ETHENE, TETRACHLORO	127-18-4		
TETRAETHYLDITHIOPYROPHOSPHATE	THIODIPHOSPHORIC ACID, TETRAETHYL ESTER	3689-24-5		
TETRAHYDROFURAN	FURAN TETRAHYDRO	109-99-9		
THALLIC OXIDE		1314-32-5		
THALLIUM		7440-28-0		
THALLIUM (I) ACETATE	THALLIUM ACETATE	563-68-8		
THALLIUM (I) NITRATE	NITRIC ACID, THALIUM (1+) SALT	10102-45-1		
THALLIUM (I) SELENIDE	SELENIOUS ACID, DITHALLIUM(1+)- SALT	12039-52-0		
THIOFANOX	2-BUTANONE	39196-18-4		
THIONYL CHLORIDE			D001, D002, D003	
THIOPEROXYDICARBONIC DIAMIDE	THIRAM	137-26-8		
THIOUREA		62-56-6		
THIOUREA, (2-CHLOROPHENYL)-	1-(O-CHLOROPHENYL)THIOUREA	5344-82-1		
TITANIUM POWDER			D001, D003, D007	
TOLUENE			D001, D018, F002, F003, F005	
TOLUENE DIISOCYANATE	BENZENE, 1,3-DIISOCYANATOMETHYL-	584-84-9		
TOLUENE DIISOCYANATE			D003, U223	YES
TOLUENEDIAMINE	BENZENEDIAMINE	496-72-0		
TOLUENEDIAMINE	BENZENEDIAMINE, ar-methyl-	95-80-7		
TOXAPHENE	CAMPHENE, OCTACHLORO-	8001-35-2		
TRIAMINE			D002	

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Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1000 Kg**
TRICHLORFON	TRICHLORPHON	52-68-6		
TRICHLOROETHENE	ETHENE, TRICHLORO	79-01-6		YES
TRICHLOROETHENE	TRICHLOROETHYLENE, TCE		D039, D040	YES
TRICHLOROMONOFLUOROMETHANE	METHANE, TRICHLOROFLUORO	75-69-4		
TRICHLOROPHENOL		25167-82-2		
TRIETHANOLAMINE DODECYLBENZENESULFONATE		27323-41-7		
TRIETHYLAMINE		121-44-8		
TRIMETHYLAMINE		75-50-3		
TYPAN BLUE	2,7-NAPTHALENEDISULFONIC ACID	72-57-1		
URACIL MUSTARD	5-[BIS(2-CHLOROETHYL)AMINO]-	66-75-1		
URANYL ACETATE		541-09-3		
URANYL NITRATE		36478-76-9		
VANADIUM OXIDE	VANADIUM PENTOXIDE	1314-62-1		
VANADYL SULFATE		27774-13-6		
VINYL ACETATE	VINYL ACETATE MONOMER	108-05-4		
WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS > 0.3%	2H-1-BENZOPYRAN-2-ONE	81-81-2		
WASTE WATER SLUDGE			F006	YES
XYLENE	XYLENE (MIXED)	133-02-07		
XYLENE			D001, D018, F002, F003, F005	
XYLENOL		1300-71-6		
ZINC		7440-66-6		
ZINC ACETATE		557-34-6		
ZINC AMMONIUM CHLORIDE		52628-25-8		
ZINC BORATE		1332-07-6		
ZINC BROMIDE		7699-45-8		
ZINC CARBONATE		3486-35-9		
ZINC CHLORIDE		7646-85-7		
ZINC FLUORIDE		7783-49-5		
ZINC HYDROSULFITE		7779-86-4		
ZINC NITRATE		7779-88-6		
ZINC PHENOSULFONATE		127-82-2		

Hazardous Substances as defined in 40 CFR, (Table 302.4) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1000 Kg**
ZINC SILICOFLUORIDE		16871-71-9		
ZINC SULFATE		7733-02-0		
ZIRCONIUM SULFATE		14644-61-2		
ZIRCONIUM TETRACHLORIDE		10026-11-6		

Extremely Hazardous Substances as defined in 40 CFR, (355, Appendix A) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1 Kg
1,1-DIMETHYL HYDRAZINE		57-14-7		
1,2-PROPYLENEIMINE	AZRIDINE 2-METHYL	75-55-8		
1,2:3,4-DIEPOXYBUTANE		1464-53-5		
4,6-DINITRO-O-CRESOL AND SALTS	PHENOL, 2-METHYL-4,6-DINITRO-	534-52-1		
4-AMINO PYRIDINE	4-PYRIDINAMINE	504-24-5		
ACETONE CYANOHYDRIN	PROPANENITRILE	75-86-5		
ACETONE THIOSEMICARBAZIDE		1752-30-3		
ACROLEIN	2-PROPENAL	107-02-8		
ACRYLAMIDE	2-PROPENAMIDE	79-06-1		
ACRYLONITRILE	2-PROPENENITRILE	107-13-1		
ACRYLYL CHLORIDE		814-68-6		
ADIPONITRILE		111-69-3		
ALDICARB	PROPANAL	116-06-3		
ALDRIN	1,2,3,4,10-10-HEXACHLORO-1,4,4A,5,8,8A-HEXAHYDRO-	309-00-2		
ALLYL ALCOHOL	2-PROPEN-1-OL	107-18-6		
ALLYLAMINE		107-11-9		
ALUMINUM PHOSPHIDE		20859-73-8		
AMINOPTERIN		54-62-6		
AMITON		78-53-5		
AMITON OXALATE		3734-97-2		
AMMONIA		7664-41-7		YES
ANILINE	BENZENAMINE	62-53-3		
ANILINE, 2,4,6,TRIMETHYL-		88-05-1		
ANTIMONY PENTAFLUORIDE		7783-70-2		
ANTIMYCIN A		1397-94-0		
ANTU	ALPHA-NAPHTHYLTHIOUREA	86-88-4		
ARSENIC PENTOXIDE	ARSENIC OXIDE	1303-28-2		
ARSENOUS OXIDE		1327-53-3		
ARSENOUS TRICHLORIDE		7784-34-1		
ARSINE		7784-42-1		
AZINPHOS-ETHYL		2642-71-9		
AZINPHOS-METHYL		86-50-0		

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1 Kg
Extremely Hazardous Substances as defined in 40 CFR, (355, Appendix A) as of 07/01/94				
BENZAL CHLORIDE	BENZENE, DICHLOROMETHYL-	98-87-3		
BENZENAMINE 3-(TRIFLUOROMETHYL)-		98-16-8		
BENZENE, 1-(CHLOROMETHYL)-4-NITRO-		100-14-1		
BENZENE, CHLOROMETHYL-	BENZYL CHLORIDE	100-44-7		
BENZENE, NITRO	NITROBENZENE	98-95-3		
BENZENEARSONIC ACID		98-05-5		
BENZIMIDAZOLE, 4,5-DICHLORO-2-(TRIFLUOROMETHYL)-		3615-21-2		
BENZOTRICHLORIDE		98-07-7		
BENZYL CYANIDE		140-29-4		
BICYCLO [2.2.1] HEPTANE- 2-CARBONITRILE- 5-CHLORO- 6- (((METHYLAMINO)CARBONY		15271-41-7		
BIS(CHLOROMETHYL) KETONE		534-07-6		
BITOSCANATE		4044-65-9		
BORON TRICHLORIDE		10294-34-5		
BORON TRIFLUORIDE		7637-07-2		
BORON TRIFLUORIDE COMPOUND WITH METHYL ETHER (1:1)		353-42-4		
BROMADIOLONE		28772-56-7		
BROMINE		7726-95-6		
CADMIUM OXIDE		1306-19-0		
CADMIUM STEARATE		2223-93-0		
CALCIUM ARSENATE		7778-44-1		
CAMPHECHLOR		8001-35-2		
CANTHARIDIN		56-25-7		
CARBACHOL CHLORIDE		51-83-2		
CARBAMIC ACID, METHYL-0-(((2,4-DIMETHYL-1,3-DITHIOLAN-2-YL)METHYLENE)AMINO)		26419-73-8		
CARBOFURAN		1563-66-2		
CARBON DISULFIDE		75-15-0		
CARBOPHENOTHION		786-19-6		
CHLORDANE		57-74-9		
CHLORFENVINFOS		470-90-6		
CHLORINE		7782-50-5		
CHLORMEPHOS		24934-91-6		

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Extremely Hazardous Substances as defined in 40 CFR, (355, Appendix A) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1 Kg
CHLORMEQUAT CHLORIDE		999-81-5		
CHLOROACETIC ACID		79-11-8		
CHLOROETHANOL		107-07-3		
CHLOROETHYL CHLOROFORMATE		627-11-2		
CHLOROFORM		67-66-3		
CHLOROMETHYL METHYL ETHER		107-30-2		
CHLOROPHACINONE		3691-35-8		
CHLOROTHIOPHOS		21923-23-9		
CHLOROXURON		1982-47-4		
CHROMIC CHLORIDE		10025-73-7		
COBALT CARBONYL		10210-68-1		
COBALT, ((2,2'- (1,2-ETHANEDIYLBIS (NITRILOMETHYLIDYNE)) BIS-(6-FLURO-PHENOLATO))(2-)-N-N',O,O')-		62207-76-5		
COLCHICINE		64-86-8		
COUMAPHOS		56-72-4		
COUMATETRALYL		5836-29-3		
CRIMIDINE		535-89-7		
CROTONALDEHYDE	2-BUTENAL	4170-30-3		
CYANOGEN BROMIDE		506-68-3		
CYANOGEN IODIDE		506-78-5		
CYANOPHOS		2636-26-2		
CYANURIC FLUORIDE		675-14-9		
CYCLOHEXIMIDE		66-81-9		
CYCLOHEXYLAMINE		108-91-8		
DECABORANE (14)		17702-41-9		
DEMETON		8065-48-3		
DEMETON-S-METHYL		919-86-8		
DIALIFOR		10311-84-9		
DIBORANE		19287-45-7		
DICHLOROETHYL ETHER		111-44-4		
DICHLOROMETHYL ETHER		542-88-1		
DICHLOROMETHYLPHENYLSILANE		149-74-6		

Extremely Hazardous Substances as defined in 40 CFR, (355, Appendix A) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1 Kg**
DICROTOPHOS		141-66-2		
DIETHYL CHLOROPHOSPHATE		814-49-3		
DIETHYLCARBAMAZINE CITRATE		1642-54-2		
DIGITOXIN		71-63-6		
DIGLYCIDYL ETHER		2238-07-5		
DIGOXIN		20830-75-5		
DIMEFOX		115-26-4		
DIMETHOATE	PHOSPHORODITHIOIC ACID, 0,0-DIMETHYL S-[2-(METHYLAMINO)-2-OXOETHYL]ESTER	60-51-5		
DIMETHYL PHOSPHOROCHLORIDOTHIOATE		2524-03-0		
DIMETHYL SULFATE		77-78-1		
DIMETHYL-p-PHENYLENEDIAMINE		99-98-9		
DIMETHYLDICHLOROSILANE		75-78-5		
DIMETILAN		644-64-4		
DINOSEB		88-85-7		
DINOTERB		1420-07-1		
DIOXATHION		78-34-2		
DIPHACINONE		82-66-6		
DIPHOSPHORAMIDE, OCTAMETHYL-		152-16-9		
DISULFOTON		298-04-4		
DITHIAZANINE IODIDE		514-73-8		
DITHIOBIURET		541-53-7		
EMETINE, DIHYDROCHLORIDE		316-42-7		
ENDOSULFAN		115-29-7		
ENDOTHION		2778-04-3		
ENDRIN	ENDRIN, & METABOLITES	72-20-8		
EPICHLOROHYDRIN		106-89-8		
ERGOCALCIFEROL		50-14-6		
ERGOTAMINE TARTRATE		379-79-3		
ETHANESULFONYL CHLORIDE, 2-CHLORO-		1622-32-8		
ETHANOL, 1,2-DICHLORO-, ACETATE		10140-87-1		
ETHION		563-12-2		

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Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1 Kg
ETHOPROPHOS		13194-48-4		
ETHYLENE FLUOROHYDRIN		371-62-0		
ETHYLENE OXIDE	OXIRANE	75-21-8		
ETHYLENEDIAMINE		107-15-3		
ETHYLENEIMINE		151-56-4		
ETHYLTHIOCYANATE		542-90-5		
FENITROTHION		122-14-5		
FENSULFOTHION		115-90-2		
FLUENETIL		4301-50-2		
FLUORINE		7782-41-4		
FLUOROACETAMIDE	ACETAMIDE, 2-FLUORO-	640-19-7		
FLUOROACETIC ACID		144-49-0		
FLUOROACETYL CHLORIDE		359-06-8		
FLUOROURACIL		51-21-8		
FONOFOS		944-22-9		
FORMALDEHYDE		50-00-0		YES
FORMALDEHYDE CYANOHYDRIN		107-16-4		
FORMETANATE HYDROCHLORIDE		23422-53-9		
FORMOTHION		2540-82-1		
FORMPARANATE		17702-57-7		
FOSTHIETAN		21548-32-3		
FUBERIDAZOLE		3878-19-1		
FURAN	FURFURAN	110-00-9		
GALLIUM TRICHLORIDE		13450-90-3		
HEXACHLOROCYCLOPENTADIENE	1,3-CYCLOPENTADIENE, 1,2,3,4,5,5-HEXACHLORO-	77-47-4		
HEXAMETHYLENEDIAMINE, N,N'-DIBUTYL-		4835-11-4		
HYDRAZINE		302-01-2		
HYDROCYANIC ACID	HYDROGEN CYANIDE	74-90-8		
HYDROGEN CHLORIDE (GAS ONLY)		7647-01-0		YES
HYDROGEN FLUORIDE	HYDROFLUORIC ACID	7664-39-3		YES
HYDROGEN SELENIDE		7783-07-5		

Extremely Hazardous Substances as defined in 40 CFR, (355, Appendix A) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1 Kg**
HYDROGEN SULFIDE		7783-06-4		
HYDROQUINONE		123-31-9		YES
IRON, PENTACARBONYL-		13463-40-6		
ISOBENZAN		297-78-9		
ISOBUTYRONITRILE		78-82-0		
ISOCYANIC ACID, 3,4-DICHLOROPHENYL ESTER		102-36-3		
ISODRIN		465-73-6		
ISOFLUORPHATE		55-91-4		
ISOPHORONE DIISOCYANATE		4098-71-9		
ISOPROPYL CHLOROFORMATE		108-23-6		
ISOPROPYLMETHYLPYRAZOLYL DIMETHYLCARBAMATE		119-38-0		
LACTONITRILE		78-97-7		
LEPTOPHOS		21609-90-5		
LEWISITE		541-25-3		
LINDANE	GAMMA-BHC	58-89-9		
LITHIUM HYDRIDE		7580-67-8		
MALONONITRILE	PROPANEDINITRILE	109-77-3		
MANGANESE, TRICARBONYL METHYLCYCLOPENTADIENYL		12108-13-3		
MECHLORETHAMINE	NITROGEN MUSTARD	51-75-2		
MEPHOSFOLAN		950-10-7		
MERCURIC ACETATE		1600-27-7		
MERCURIC CHLORIDE		7487-94-7		
MERCURIC OXIDE		21908-53-2		
METHACROLEIN DIACETATE		10476-95-6		
METHACRYLIC ANHYDRIDE		760-93-0		
METHACRYLONITRILE		126-98-7		
METHACRYLOYL CHLORIDE		920-46-7		
METHACRYLOYLOXYETHYL ISOCYANATE		30674-80-7		
METHAMIDOPHOS		10265-92-6		
METHANESULFONYL FLUORIDE		558-25-8		
METHIDATHION		950-37-8		
METHIOCARB		2032-65-7		

Extremely Hazardous Substances as defined in 40 CFR, (355, Appendix A) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1 Kg
METHOMYL		16752-77-5		
METHOXYETHYLMERCURIC ACETATE		151-38-2		
METHYL 2-CHLOROACRYLATE		80-63-7		
METHYL BROMIDE		74-83-9		
METHYL CHLOROFORMATE		79-22-1		
METHYL HYDRAZINE	HYDRAZINE, METHYL-	60-34-4		
METHYL ISOCYANATE		624-83-9		
METHYL ISOTHIOCYANATE		556-61-6		
METHYL PHENKAPTON		3735-23-7		
METHYL PHOSPHONIC DICHLORIDE		676-97-1		
METHYL THIOCYANATE		556-64-9		
METHYL VINYL KETONE		78-94-4		
METHYLMERCAPTAN		74-93-1		
METHYLMERCURIC DICYANAMIDE		502-39-6		
METHYLTRICHLOROSILANE		75-79-6		
METOLCARB		1129-41-5		
MEVINPHOS		7786-34-7		
MEXACARBATE		315-18-4		
MITOMYCIN C	AZIRINO[2',3':3,4]PYRROLO[1,2-A]INDOLE-4,7-DIONE,6-AMINO-8-[[(AMINOCARBONYL)OXY]	50-07-7		
MONOCROTOPHOS		6923-22-4		
MUSCIMOL		2763-96-4		
N-NITROSODIMETHYLAMINE		62-75-9		
NICKEL CARBONYL		13463-39-3		
NICOTINE		54-11-5		
NICOTINE SULFATE		65-30-5		
NITRIC ACID		7697-37-2		YES
NITRIC OXIDE		10102-43-9		
NITROCYCLOHEXANE		1122-60-7		
NITROGEN DIOXIDE		10102-44-0		
NORBORMIDE		991-42-4		
O-CRESOL		95-48-7		

Extremely Hazardous Substances as defined in 40 CFR, (355, Appendix A) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1 Kg
OXAMYL		23135-22-0		
OXETANE, 3,3-BIS(CHLOROMETHYL)-		78-71-7		
OXYDISULFOTON		2497-07-6		
OZONE		10028-15-6		
PARAQUAT		1910-42-5		
PARAQUAT METHOSULFATE		2074-50-2		
PARATHION		56-38-2		
PARATHION METHYL		298-00-0		
PARIS GREEN	COPPER ACETOARSENITE	12002-03-8		
PENTABORANE		19624-22-7		
PENTADECYLAMINE		2570-26-5		
PERACETIC ACID		79-21-0		
PERCHLOROMETHYLMERCAPTAN	METHANESULFENYL CHLORIDE, TRICHLORO-	594-42-3		
PHENOL		108-95-2		
PHENOL, 2,2-THIOBIS(4-CHLORO-6-METHYL-		4418-66-0		
PHENOL, 3-(1-METHYLETHYL)-, METHYLCARBAMATE		64-00-6		
PHENOXARSINE, 10, 10'-OXYDI-		58-36-6		
PHENYL DICHLOROARSINE		696-28-6		
PHENYLHYDRAZINE HYDROCHLORIDE		59-88-1		
PHENYLMERCURY ACETATE		62-38-4		
PHENYLSIATRANE		2097-19-0		
PHENYLTHIOURMA		103-85-5		
PHORATE		298-02-2		
PHOSACETIM		4104-14-7		
PHOSFOLAN		947-02-4		
PHOSGENE		75-44-5		
PHOSMET		732-11-6		
PHOSPHAMIDON		13171-21-6		
PHOSPHINE		7803-51-2		
PHOSPHONOTHIOIC ACID, METHYL-, O-(4-NITROPHENYL) O-PHENYL ESTER		2665-30-7		

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Extremely Hazardous Substances as defined in 40 CFR, (355, Appendix A) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1 Kg
PHOSPHONOTIOIC ACID, METHYL-, S- (2-(BIS (1-METHYLETHYL) AMINO)ETHYL O-ETHYL ESTER		50782-69-9		
PHOSPHORIC ACID, DIMETHYL 4-(METHYLTHIO)PHENYL ESTER		3254-63-5		
PHOSPHOROTHIOIC ACID,O,O-DIMETHYL-S-(2-METHYLTHIO)ETHYL ESTER		2587-90-8		
PHOSPHORUS		7723-14-0		YES
PHOSPHORUS OXYCHLORIDE		10025-87-3		
PHOSPHORUS PENTACHLORIDE		10026-13-8		
PHOSPHORUS PENTOXIDE		1314-56-3		
PHOSPHORUS TRICHLORIDE		7719-12-2		
PHYSOSTIGMINE		57-47-6		
PHYSOSTIGMINE, SALICYLATE (1:1)		57-64-7		
PICROTOXIN		124-87-8		
PIPERIDINE		110-89-4		
PIRIMIFOS-ETHYL		23505-41-1		
POTASSIUM ARSENITE		10124-50-2		
POTASSIUM CYANIDE		151-50-8		
POTASSIUM SILVER CYANIDE		506-61-6		
PROMECARB		2631-37-0		
PROPARGYL BROMIDE		106-96-7		
PROPIOLACTONE, BETA		57-57-8		
PROPIONITRILE		107-12-0		
PROPIONITRILE, 3-CHLORO-		542-76-7		
PROPIOPHENONE, 4'-AMINO		70-69-9		
PROPYL CHLOROFORMATE		109-61-5		
PROPYLENE OXIDE		75-56-9		
PROTHOATE		2275-18-5		
PYRENE		129-00-0		
PYRIDINE, 2-METHYL-5-VINYL-		140-76-1		
PYRIDINE, 4-NITRO, 1-OXIDE		1124-33-0		
PYRIMINIL		53558-25-1		
QUABAIN		630-60-4		
SARIN		107-44-8		

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Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1 Kg
SELENIOUS ACID		7783-00-8		
SELENIUM OXYCHLORIDE		7791-23-3		
SEMICARBAZIDE HYDROCHLORIDE		563-41-7		
SILANE, (4-AMINOBUTYL)DIETHOXYMETHYL-		3037-72-7		
SALCOMINE		14167-18-1		
SODIUM ARSENATE		7631-89-2		
SODIUM ARSENITE		7784-46-5		
SODIUM AZIDE (Na(N3))		26628-22-8		
SODIUM CACODYLATE		124-65-2		
SODIUM CYANIDE (Na(CN))		143-33-9		
SODIUM FLUOROACETATE		62-74-8		
SODIUM SELENATE		13410-01-0		
SODIUM SELENITE		10102-18-8		
SODIUM TELLURITE		10102-20-2		
STANNANE, ACETOXYTRIPHENYL-		900-95-8		
STRYCHNINE		57-24-9		
STRYCHNINE, SULFATE		60-41-3		
SULFOTEP		3689-24-5		
SULFOXIDE, 3-CHLOROPROPYL OCTYL		3569-57-1		
SULFUR DIOXIDE		7446-09-5		
SULFUR TETRAFLUORIDE		7783-60-0		
SULFUR TRIOXIDE		7446-11-9		
SULFURIC ACID		7664-93-9		YES
TABUN		77-81-6		
TELLURIUM		13494-80-9		
TELLURIUM HEXAFLUORIDE		7783-80-4		
TEPP		107-49-3		
TERBUFOS		13071-79-9		
TETRAETHYL LEAD		78-00-2		
TETRAETHYL TIN		597-64-8		
TETRAMETHYL LEAD		75-74-1		
TETRANITROMETHANE		509-14-8		

Extremely Hazardous Substances as defined in 40 CFR, (355, Appendix A) as of 07/01/94

Chemical Name	Synonym	CAS #	RCRA HAZARDOUS WASTE #	> 1 Kg
THALLOUS CARBONATE		6533-73-9		
THALLOUS CHLORIDE		7791-12-0		
THALLOUS MALONATE		2757-18-8		
THALLOUS SULFATE		7446-18-6		
THIANAZIN		297-97-2		
THIOCARBAZIDE		2231-57-4		
THIOFANOX	2-BUTANONE	39196-18-4		
THIOPHENOL		108-98-5		
THIOSEMICARBAZIDE	HYDRAZINECARBOTHIOAMIDE	79-19-6		
THIOUREA, (2-CHLOROPHENYL)-	1-(O-CHLOROPHENYL)THIOUREA	5344-82-1		
THIOUREA, (2-METHYLPHENYL)-		614-78-8		
TITANIUM TETRACHLORIDE		7550-45-0		
TOLUENE 2,4-DIISOCYANATE		584-84-9		YES
TRANS-1,4 DICHLOROBUTENE		110-57-6		
TRIAMIPHOS		1031-47-6		
TRIAZOFOS		24017-47-8		
TRICHLORO(CHLOROMETHYL)SILANE		1558-25-4		
TRICHLORO(DICHLOROPHENYL)SILANE		27137-85-5		
TRICHLOROACETYL CHLORIDE		76-02-8		
TRICHLOROETHYLSILANE		115-21-9		
TRICHLORONATE		327-98-0		
TRICHLOROPHENYLSILANE		98-13-5		
TRIETHOXYSILANE		998-30-1		
TRIMETHYLCHLOROSILANE		75-77-4		
TRIMETHYLOLPROPANE PHOSPHITE		824-11-3		
TRIMETHYLTIN CHLORIDE		1066-45-1		
TRIPHENYLTIN CHLORIDE		639-58-7		
TRIS(2-CHLOROETHYL)AMINE		555-77-1		
VALINOMYCIN		2001-95-8		
VANADIUM PENTOXIDE		1314-62-1		
VINYL ACETATE MONOMER	VINYL ACETATE	108-05-4		
WARFARIN	2H-1-BENZOPYRAN-2-ONE	81-81-2		

Extremely Hazardous Substances as defined in 40 CFR, (355, Appendix A) as of 07/01/94				
Chemical Name	**Synonym**	**CAS #**	**RCRA HAZARDOUS WASTE #**	**> 1 Kg**
WARFARIN SODIUM		129-06-6		
XYLYLENE DICHLORIDE		28347-13-9		
ZINC, DICHLORO(4,4-DIMETHYL-5-(((METHYLAMINO)CARBONYL)OXY)IMINO)PENTANENITRILE)-, (T-4)-		58270-08-9		

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APPENDIX L

Generic Area Cleanup Activities

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Generic Area Cleanup Activities:

Prior to Area Characterization Walkthrough:

Remove:

- non-applicable signage
- residues left from removed signs
- light-weight groundwires
- unsupported:
  - conduit
  - piping
  - ducting
  - wiring
  - stanchions

Repair/Replace:

- holes in walls and floors
- damaged carpeting
- damaged floor tiles
- damaged ceiling tiles
- baseboard molding
- ceiling lights
- electrical box covers

Label per plant procedures:

- All floor drains
- All piping
- Any chem exhaust ducting left in the area including the overhead

Tagout all breakers where wall panel boxes are turned off.

Flush and cap all chem drains/piping

Keep:

- working wall clocks
- good shape wall shelving
- Liquid Nitrogen piping
- door alarms
- motion detectors
- card readers
- All active utilities

Following the Characterization Walkthrough:

Damp mop floors and brush or wash walls to remove loose materials

Industrial Hygiene will perform air and surface sampling as required

Clear all planned application of surface coatings, such as paint, varnish, and floor stripper/wax, with Industrial Hygiene prior to work

Paint individual walls as needed to cover patches/damage

RAB 1/22/96

APPENDIX M

General Operating Procedure
G.7.45, Area Closeout

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LOCKHEED MARTIN Specialty Components, Inc. GENERAL OPERATING PROCEDURE Pinellas Plant	SUBJECT AREA CLOSEOUT	
	TAB FACILITIES AND SECURITY	PROCEDURE G.7.45

PURPOSE

This policy defines the terms of an agreement between Lockheed Martin Specialty Components, Inc., (Specialty Components) and the Pinellas Area Office (PAO) on the protocol for deactivation and characterization of Pinellas Plant. Specialty Components is responsible to ensure this policy fulfills the requirements of the Deactivation and Compliance Statement of Work, and to ensure implementing procedures for these activities comply with the provisions of this policy. Specialty Components must obtain PAO concurrence before implementing any proposed changes to this policy.

REFERENCES

Facility Sale and Lease Agreements between the Department of Energy (DOE) and the Pinellas County Industry Council (PCIC)

Pinellas Plant Radiological Area Disposition Program Plan (July 24, 1995)

GOP K.2.09, Change Management Program

SOP K.7.45-1, Area Closeout Procedure

Survey Plan for Determining Final Radiological Status of the Pinellas Plant

DEFINITIONS

Final Acceptance - The determination by the DOE that the deactivation and characterization of an area is complete for purposes of fulfilling all of the contractor's responsibilities.

Provisional Acceptance - The interim determination by DOE that the deactivation and characterization of an area is complete to the extent noted below for the purpose of permitting the payment of incentive fees under the delivery schedule. This may occur only after DOE receives a Characterization Report and an Interim Certificate of Conformance.

POLICY

- To support the Facility Sale and Lease Agreement and close out their responsibilities at the Pinellas Plant, Specialty Components will:
- Maintain a detailed area closeout procedure for deactivation and characterization activities, and provide PAO with copies of any changes to this procedure at the time the changes are issued.

Schedule, plan, and control work and resources to integrate DOE objectives and complete facility closeout and turnover in time to allow waste disposal by September 30, 1997.

- Maintain a Transition Master Schedule for the characterization, cleanup, and closeout of all interior areas of the facility.

- Submit an update of the Transition Master Schedule, or a statement that the current schedule is still valid, to PAO during the first two weeks of each calendar quarter.

- Maintain detailed project schedules for completion of all required tasks in each area.

- PAO shall provide future use preferences/plans of PCIC to Specialty Components Facility Transition Planning. Specialty Components shall be responsible for maintaining a liaison with the PCIC to keep them informed concerning the deadlines and to facilitate their providing input to the deactivation plan for areas. Specialty Components shall provide dates to PAO when the information must be provided for each set of areas on the Master Schedule. If PAO fails to provide this data, then the areas shall be cleaned to the standard and all excess property in the areas shall be left in place. Changes to the plan after the date specified shall be considered additional work scope.

  NOTE: PAO will provide signature documents from the PCIC if the PCIC accepts hazardous materials being left in place in an area. If no such documents are provided by the dates when the PCIC plans for an area must be communicated to Specialty Components, then the hazardous materials shall be removed by Specialty Components. Specialty Components shall be responsible for maintaining a liaison with the PCIC to help them understand where hazardous materials might need to be retained for economic development.

- Remediate all known sources of hazardous or radioactive material contamination not identified for retention by the PCIC to the criteria defined in the Deactivation and Compliance Statement of Work.

- Perform housekeeping activities, as needed, to prepare the area for inspection and sampling, such as removing floor and ceiling tiles, cleaning floors and walls, and disposing of debris or unneeded materials.

- Maintain a general sampling plan outlining the objectives Specialty Components intends to accomplish when sampling each area.

- Develop area-specific sampling plans adequate to demonstrate compliance with the hazardous material and radiological cleanup standards.

- Complete the tests defined in the sampling plan and complete any additional decontamination efforts needed to ensure compliance with the hazardous material and radiological cleanup standards.

- Prepare areas for turnover to DOE, ensuring that material condition of area is consistent with good industrial practice by replacing floor and ceiling tiles, painting, patching walls, etc., as described in the Area Restoration Standard (Attachment A). All waste will be removed and the area will be left in broom-clean condition.

- Provide PAO a Health Physics release for each area, including historical information, sampling and test results, and a description of decontamination completed. The Health Physics release will include a certification that the area is being left in compliance with the requirements of DOE 5400.5 or documentation of any radioactive materials remaining in the area.

- Provide an Area Characterization Report containing the following information:
  - the Health Physics release;
  - an inventory of any hazardous materials that remain in the area;
  - a cross reference of all materials left in the area to the functional capabilities or specific equipment identified by the PCIC for retention;
  - a description of the decontamination efforts completed;
  - the test results showing Specialty Components completed all sampling plan requirements and showing the area meets the hazardous material clean up criteria; and
  - any other information Specialty Components deems appropriate for the report.

- Deliver the Area Characterization Report and a signed Certificate of Conformance or an Interim Certificate of Conformance to the PAO front desk for date stamp.

- Control areas accepted by DOE until DOE transfers the area to the PCIC to preclude subsequent contamination by Specialty Components or other tenants.

PAO ACCEPTANCE OF WORK

Specialty Components will schedule a walkthrough of the area with PAO and the PCIC to explain the Area Characterization Report. If PAO does not attend the walkthrough within ten working days after PAO date stamps the Area Characterization Report, PAO will waive the walkthrough for that area.

PAO will issue the Final Acceptance Form, or notify Specialty Components of the *pending rejection* of the Certificate of Conformance, within fifteen working days after the PAO date stamp on the Certificate of Conformance. The notification by PAO of a pending rejection of a Certificate of Conformance will be in writing and will state reasons for the potential rejection. Such reasons might include contamination being detected in the area(s) in question, incomplete documentation provided with the Certificate or Characterization Report, etc. Specialty Components will have ten working days from the receipt of the notification to rectify the problem. If the problem is rectified in ten days, then PAO will issue the Final Acceptance Form within three working days after Specialty Components demonstrates they have fixed the problem. If the problem is *not* rectified in ten working days from the receipt of the notification, the Certificate of Conformance is rejected, and Specialty Components must submit a new one after completing work to rectify the problem.

One reason for rejection may be the discovery of unanticipated contamination which may not reasonably be expected to have been discovered by the sampling done by Specialty Components. It is the responsibility of Specialty Components to indicate for PAO the basis for this contention. Should PAO accept this assertion by Specialty Components, the only further action required by Specialty Components shall be the actual remediation associated with the work. The characterization report shall not be redone. The Certification of Conformance will not be considered to have been submitted improperly and may be withdrawn by Specialty Components.

If PAO does not provide the Final Acceptance Form in fifteen days after the receipt of the Area Characterization Report, any additional work required in the area will be considered additional work scope, unless the work is needed to rectify a problem which PAO concludes was caused by Specialty Components malfeasance, negligence or failure to clean to the standards.

All issues relating to compliance with local codes, ordinances, engineering principles, or other regulations are responded to in the sale agreement between the PCIC and the DOE. Plantwide systems (e.g., drains) will be addressed as separate closeout items rather than piecemeal (area by area).

PAO PROVISIONAL ACCEPTANCE OF AREAS

DOE may agree to provisionally accept administrative areas that will continue to be used by Specialty Components. These areas will be provisionally accepted only if: (a) Specialty Components delivers an Area Characterization Report and an Interim Certificate of Conformance to DOE; (b) Specialty Components delivers a Health Physics release in the Area Characterization Report for the areas; (c) the Area Characterization Report notes that the Certificate of Conformance will be issued following the delivery of hazardous contamination sampling data that shows the area is ready for alternate uses. DOE will note on its acceptance form that acceptance is provisional; final acceptance will be made on a second DOE Acceptance Form.

Final Acceptance of an administrative area by DOE can occur after the area has been vacated by Specialty Components and hazardous contamination sample data are delivered for the areas with a Certificate of Conformance to DOE.

RESPONSIBILITIES

AREA CHARACTERIZATION GROUP LEADER

Coordinate generation of Area Characterization Reports.

Serve as a liaison between Specialty Components and the DOE to ensure they are involved in the cleanup decision making and concur with the initial decontamination efforts prior to issue of Area Characterization Report.

SUPPORT ORGANIZATIONS

Environmental, Safety and Health (ES&H) organizations (Industrial Hygiene, Waste Management, and Environmental Restoration and Permitting) will participate in the walkthroughs, submit written inputs to the Area Characterization Group Leader, and will conduct sampling activities, as required.

FACILITY TRANSITION PLANNING ORGANIZATIONS

Provide information to the Area Characterization Group Leader to schedule areas, define the scope of the walkthrough, the sites to be covered, and personal property issues, etc.

ENVIRONMENTAL MANAGEMENT TRANSITION PROGRAM MANAGER

Report the status of characterization and closeout actions to the DOE and the PCIC.

Ensure the integration of the PCIC and environmental management objectives.

Maintain the official record copy of the Final Closeout Report. This information will be used to update the plant's database concerning the status of areas during transition.

Attachment A

Area Restoration Standard

Area Restoration following the decontamination of an area shall be governed by the following standard effective April 1, 1996. Any additions in the work scope to restore the areas shall be separately directed and funded by PAO.

I. Restoration of Flooring

A. Tile Flooring

1. Floor tile removed as a result of decontamination shall be replaced.

2. Tile flooring will be left in a broom-clean condition; this will include sweeping, mopping, stripping, waxing, and buffing the tile.

3. With the exception of No. 1 above, tile will be replaced only if it is broken or loose. Color match with remaining tile is desirable, but not required.

B. Carpet

1. Carpet shall be vacuumed and cleaned.

2. Torn carpet shall be patched; color match with remaining carpet is desirable, but not required.

C. Baseboard

1. Baseboard shall not be repaired or replaced.

II. Restoration of Walls

A. Holes

1. Patch all holes.

2. Paint all patched holes.

B. Painting

1. When painting patches on walls, color match is desirable, but not required.

2. The entire wall shall be painted only if the patched area is greater than or equal to 10 percent of the entire wall area.

C. Other

1. No work will be done to correct existing code deficiencies; however, deficiencies which arise due to deactivation activities will be corrected.

2. Removal of walls that are not radiologically contaminated shall be considered additional work scope.

3. Reconstruction of walls removed for any reason shall be considered additional work scope.

III. Restoration of Ceilings

A. Ceiling Tile Replacement

1. Ceiling tiles removed due to decontamination shall be replaced.

2. Damaged ceiling tiles (e.g., broken holes) and missing ceiling tiles shall be replaced. Color match with remaining tiles is desirable, but not required.

3. Discolored ceiling tiles shall not be replaced.

4. All ceilings shall be vacuumed and dusted.

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APPENDIX N

Standard Operating Procedure G.7.45-1, Area Closeout Procedure

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1.0 PURPOSE

The purpose of the area closeout procedure is to meet the intent of the Facility Sale and Lease Agreement with respect to transfer of the facility from the Department of Energy (DOE) to the new owner, the Pinellas County Industry Council (PCIC). Specifically, the agreement requires DOE to clean the facility of hazardous and radiological contamination consistent with its planned future industrial uses by the end of the lease period on September 30, 1997.

2.0 SCOPE

The area closeout procedure addresses the identification and cleanup of chemical contamination, definition of more extensive cleanup options (if any), and the deliverables for closing out Lockheed Martin Specialty Components, Inc., (Specialty Components) responsibilities at the Pinellas Plant.

Exceptions

Radiological cleanup requirements are addressed by other plant procedures, but this procedure applies to all other aspects of area closeout. In order to make the final closeout a single process, the radiological survey and release information will be integrated with the chemical contamination cleanup data in the final report.

Issues related to compliance with local codes, ordinances, or other regulations, and removal of friable asbestos, were dealt with separately in the sale agreement between the PCIC and the DOE; therefore, they are excluded from this process. Removal of friable asbestos is separate from decontamination and/or area closeout.

Plantwide systems (e.g., drains) will be addressed as separate closeout items rather than piecemeal (area by area). Generally, the Area Characterization and Final Closeout Report will cover evaluation and decontamination of walls, floors, ceilings, and exhaust ducting. Equipment cleaning is addressed in other procedures.

3.0 REFERENCES

DOE 5400.5, Radiological Protection of the Public and the Environment

DOE 5820.2A, Radioactive Waste Management

Facility Sale and Lease Agreements between the DOE and the Pinellas County Industry Council (PCIC).

DOE/EM-0142P, DOE Decommissioning Handbook - March 1994

DOE/EP-0100, Guide for Radiological Characterization and Measurements for Decommissioning of U.S. DOE Surplus Facilities - August 1983

GOP K.2.09, Change Management Program

GOP K.7.45, Area Closeout

Survey Plan for Determining Final Radiological Status of the Pinellas Plant

WM 5.07, Environmental Management Area Assessments

WM 5.14, Area Surveys During Safe Shutdown

WM 5.17, Safe Shutdown Procedure

WM 5.18, Characterization of Equipment and Areas

IH Instruction 28

29 CFR 1910.1000 Table Z, Permissible Exposure Levels for Air Contaminants

ACGIH Threshold Limit Values for Chemical Substances

4.0 DEFINITIONS

Characterization: The gathering of descriptive information pertaining to the type and quantity of contamination in a system, structure, area, etc.

Area Closeout: The process of formally transmitting historical and current information concerning chemical usage, residual contamination, and hazardous material inventory to the DOE.

Decontamination: The removal of contamination from facilities or equipment by washing, heating, chemical action, mechanical cleaning, or other techniques. Decontamination also includes dismantlement or segmenting of walls, ducting, etc. The two basic goals of Specialty Components decontamination efforts are:

A. The removal of contaminants potentially present at levels which could result in measurable exposures:

1. For those hazardous materials for which a Permissible Exposure Level (PEL) has been established by the Occupational Safety and Health Administration (OSHA), a Threshold Limit Value (TLV) has been published by the American Conference of Governmental Industrial Hygienists (ACGIH), a Workplace Environmental Exposure Level (WEEL), or an Emergency Response Planning Guideline (ERPG) has been published by the American Industrial Hygiene Association (AIHA), The goal of cleanup activities shall be to ensure that exposure levels will be at or below ten percent (10%) of the most restrictive established or published value.

2. For those hazardous materials for which no recommended exposure restriction has been established by OSHA, ACGIH, or AIHA, the Material Safety Data Sheet (MSDS) recommended exposure level will

be used to establish the acceptable exposure level goal at 10 percent of the recommended level.

B. Low cost/impact remedial/housekeeping activities such as mopping, scrubbing, floor stripping, duct removal, floor/ceiling tile replacement, etc., in accordance with as low as reasonably achievable (ALARA) principles. These activities will result in the "as decontaminated" designation in the Area Characterization Report.

5.0 RESPONSIBILITIES

Facility Transition Planning Manager

- Lead the closeout process.
- Create and maintain a master schedule for timely completion of characterization and closeout activities.
- Maintain and update schedules for actual work required in the areas for progress tracking reports to DOE.
- Ensure timely transfers of area ownership and maintenance of area controls for areas accepted by DOE.

Support Organizations

Environmental, Safety and Health (ES&H) organizations (Industrial Hygiene, Waste Management, and Environmental Restoration and Permitting)

- Participate in walkthroughs.
- Submit written inputs to the Area Characterization Group Leader.
- Conduct sampling activities, as required, to establish the extent of chemical contamination and friable asbestos (if any) in the area.
- Provide support to decontamination/remediation efforts as appropriate to ensure safety worker and cleanup effectiveness.

Facility Transition Planning Group Leader

- Lead the Area Characterization Team in the conduct of preliminary closeout walkthroughs in each area, per steps 6.2 below.
- Verify completion of all required cleanup activities, coordinate timely submittal of all required inputs, and prepare area characterization and final closeout reports for General Manager signoff and submittal to DOE.
- Conduct final acceptance walkthroughs with DOE and PCIC for each area.

- Distribute final acceptance documentation to the Facility Transition Program Manager and the Facility Information System Coordinator.
- Maintain the official record copy of the signed Final Closeout Report. This information will be used to update the plant's database concerning the status of areas during transition.

Facility Transition Program Manager

- Report the status of characterization and closeout actions to the DOE and the PCIC.
- Coordinate PAO involvement in cleanup decision-making.
- Serve as owner of this procedure to ensure the integration of the PCIC and DOE objectives.

Facility Transition Operations Manager

- Conduct decontamination activities as identified by the Area Characterization Team, under the direction of Industrial Hygiene.

6.0 PROCEDURE

6.1 AREA SELECTION AND PREPARATION

6.1.1 Information on intended use plans will be obtained from the DOE. Any equipment and/or ducting to remain in the area will be identified and marked as such.

6.1.2 All areas to be characterized and closed out should have previously undergone the safe shutdown process, including:

a) Removal of any stored hazardous materials.

b) Disposition of all related personal plant property and records.

c) Transfer to facilities ownership, as appropriate.

6.1.3 Facility Transition Planners will schedule areas by priority for characterization and closeout.

6.1.4 Personal property transfer issues will be resolved prior to closeout; all DOE-owned property and any other property not scheduled for continued use in the area will have been removed.

6.1.5 Preparations for area characterization will include the following, as appropriate, to intended future use:

a) Disconnection of utilities and equipment.

b) Evaluation, cleaning, and removal of equipment.

c) Remediation of any known hazardous chemical or radioactive residues.

6.2 AREA CHARACTERIZATION

6.2.1 Upon notification that an area is ready for closeout, the Area Characterization Group will review available historical records. All relevant Facilities configuration information will be obtained and reviewed, including drawings indicating the past extent of all exhaust ducting, and the scope and extent of cleaning activities performed during and since safe shutdown of the area.

6.2.2 Prior to the walkthrough, Health Physics will perform final closeout surveys of walls, floors, and ceilings per their standard procedure. Results will be documented and summarized in the Area Characterization and Final Closeout Report.

6.2.3 Facilities will support characterization walkthrough by removing some or all of the ceiling tiles as needed to view conditions in the overhead. Facilities will also stage items needed for evaluation of overhead areas such as lifts, lighting, and ladders for use during the walkthrough.

6.2.4 An area walkthrough will be conducted with representatives from Waste Management, Industrial Hygiene, Facilities Transition Operations, PAO, and the PCIC, at their option.

The purpose of the walkthrough is to document the location of visible residues and areas of concern relative to previous use. This information will be used to direct decontamination/housekeeping activities and subsequent verification sampling.

6.2.5 Basic decontamination will be performed by Facilities Transition Operations, under Industrial Hygiene direction. This cleaning may include washing walls, stripping wax, scrubbing floors, and limited floor or ceiling tile replacement. Preparations for turnover of the area to DOE, i.e., patching/painting walls and waxing floors, will also be performed at this time.

6.2.6 An Industrial Hygiene subject matter expert will direct sampling activities in accordance with the sampling plan, as applicable, and document results for reporting.

6.2.7 Waste Management will report any visual or historical evidence of contamination covered under Resource Conservation and Recovery Act (RCRA) requirements in the event the facility, system, structure, or item were scrapped, demolished, etc. This information will be summarized in the final report.

NOTE ON CLEANING:

The PCIC may request that hazardous or radioactive materials be left in place. In this event, Specialty Components will document the presence of the materials in the final report.

6.3 AREA CHARACTERIZATION AND CLOSEOUT REPORT

A report summarizing the results of the characterization and cleanup will be prepared by the Facility Transition Planning Group Leader for submittal to PAO.

The report will:

- Be based upon inputs from the various support organizations;
- Contain a narrative section that describes the available history of the area(s) and the current state of the area(s) with respect to hazardous contamination;
- Describe the extent of chemical contamination and cleanup activities conducted to date in the area(s) (see Attachment A);
- Include a Certification of Conformance signed by the General Manager Specialty Components, or a designee;
- Document the final as-left condition of the area;
- Include Specialty Components radiological survey and release data with a summary statement of release from Health Physics;
- Include results of third-party verifications of radiological status only if available within 10 days of Specialty Components Health Physics release;
- Clearly state that all personal property remaining in the area has been properly prepared for transfer of ownership;
- Include a request to conduct a final closeout review.

6.4 DOE/PCIC RESPONSE

1. PAO and the PCIC will determine acceptability of the Area Characterization and Final Closeout Report and provide a written response to Specialty Components within 15 working days of receipt of the report.
2. The Area Characterization Group Leader will conduct a closeout review with PAO and the PCIC and obtain formal DOE concurrence that cleanup of the area has been completed and no further action is required by Specialty Components. The area will then be either released to the PCIC or put into surveillance and maintenance mode until such time the PCIC is ready to use it.

6.5 RECORDS

1. The Facility Transition Planning Department will maintain files of all data used to generate the Area Characterization and Final Closeout Reports.
2. PAO's written response are sent to the Facility Transition Program Manager to update the plant's database concerning the status of areas during transition.
3. A copy of the final acceptance letter will be sent to the Facilities Information Systems Coordinator to update that records system.

ATTACHMENT A - AREA 183 CLOSEOUT SUMMARY

Surface	Status
Floor	Cleaned. 100 sq. ft. asbestos tile remain. **Risk:** Minimum while in place. Disturbance during construction/maintenance may present health hazard.
Walls	Probable lead paint present either on surface or under top coat. Low-level metal contamination present. **Risk:** None to office/industrial use while on place. **Functional Capability**: Prevents use of area by activity with young children present.
Ceiling	Probable metal dust contamination on top of ceiling tiles. **Risk:** Low risk to tenants except during construction/maintenance. **Functional Capability:** No restrictions
Exhaust ducts above ceiling	Removed. One exhaust fan remains active on the roof and is available for future use.