DAEC

SAFETY PARAMETER DISPLAY SYSTEM

SAFETY ANALYSIS REPORT

IOWA ELECTRIC LIGHT & POWER COMPANY

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1.0 INTRODUCTION

1.1 Purpose and Scope

This report describes the basis on which the plant safety parameters and associated variables selected for monitoring on the Duane Arnold Energy Center (DAEC) Safety Parameter Display System (SPDS) have been determined to be sufficient to assess the overall safety status of the plant. This safety analysis has been prepared in response to Section 4 of Supplement 1 to NUREG-0737 and demonstrates that the DAEC SPDS adequately assesses plant safety in terms of the five critical safety functions identified in ANSI/ANS 4.5-1980. The analysis encompasses a wide range of events including the symptoms of severe accidents and all modes of reactor operation.

The principal basis for determining adequacy of the SPDS parameter/variable set is compatibility with the DAEC function-oriented Emergency Operating Procedures (EOPs). Because the DAEC EOPs were incomplete prior to the formulation of this safety analysis, direct determination of the compatibility of the EOPs and the SPDS was not possible. The DAEC EOPs are being written to conform to the DAEC Procedure Generation Package (PGP) (Reference 1). The PGP is used to translate the BWR Owners Group Emergency Procedure Guidelines (EPGs) (Reference 2) into DAEC-specific EOPs. Thus, all EOP compatibility considerations in this analysis are based on the EPGs referenced in the PGP.

Further discussion of SPDS/EOP compatibility and definitions of SPDS terminology used in this report are given in Sections 1.2 and 1.3. An overview of the DAEC SPDS design and installation is presented in Section 2.0. Selection and evaluation of SPDS input variables and safety parameters are discussed in Section 3.0. A preliminary 10 CFR 50.59 safety evaluation is presented in Section 4.0. Overall summary and conclusions are presented in Section 5.0, and references are listed in section 6.0.

1.2 Terminology

This section defines key SPDS terminology used in this report.

1.2.1 Critical Safety Functions

Critical safety functions are those safety functions that are essential to prevent a direct and immediate threat to the health and safety of the public. These functions are:

- Reactivity control,
- Reactor core cooling,
- Reactor coolant system integrity,
- Primary reactor containment integrity, and
- Radioactive effluent control.

1.2.2 Safety Parameters

Safety parameters are the quantitative and qualitative measures displayed by the SPDS to indicate the accomplishment or maintenance of each critical safety function. Information needed to assess the status of the plant safety parameters is obtained by the measurement of key plant variables. The safety parameters utilized by the SPDS to assess the maintenance or accomplishment of the critical safety functions as required by NUREG-0737, Supplement 1, are:

- Reactivity control,
- Reactor core cooling and heat removal from the primary system,
- Reactor coolant system integrity,
- Containment conditions, and
- Radiation control.

In the remainder of this analysis, safety parameters and critical safety functions are considered analogous. Also, subsequent references to the function of reactor core cooling and heat removal from the primary system will be shortened to "reactor core cooling".

1.2.3 Variables

Variables are those measures of system or safety parameter status or performance which are obtained directly from or derived or calculated from plant signals. Plant signals are obtained from monitoring and control sensors installed in the plant systems. Each variable is measured by one or more sensors, each of which produces a signal corresponding to the value of the variable being measured.

1.2.4 Plant Signals

Plant signals are the electronic or electrical outputs of the monitoring and control sensing devices installed in the plant systems. These devices are calibrated so that the signals produced correspond to actual values of the variables being measured.

1.2.5 Basis for Safety Functions

The five safety parameters are analogous to the safety functions used in ANSI/ANS 4.5-1980 and Section 4 of Supplement 1 to NUREG-0737. The above definitions of safety parameters and corresponding SPDS plant variables are based on the activities required to assess the integrity of and the potential for breach of the radioactive material barriers. The assessment of the reactor core cooling and reactivity control functions provides the information required to assess the potential for breach of fuel cladding integrity. The assessment of the coolant system integrity function provides the information required to assess the integrity of the nuclear system process barrier. The assessment of containment conditions provides the information required to assess the integrity and the potential for breach of the primary containment barrier. The assessment of the radiation control function provides the information required to assess radioactive releases to the environment resulting from breaches of one or more of the radioactive material barriers.

1.3 EOP/SPDS Compatibility

The BWROG Emergency Procedure Guidelines referenced in the DAEC Procedure Generation Package (PGP) provide specific direction regarding the maintenance or accomplishment of plant safety functions. There are four function-oriented Emergency Procedure Guidelines (EPGs):

- RPV control guideline
- Primary containment control guideline
- Secondary containment control guideline
- Radioactivity release control guideline

The RPV control guideline addresses the maintenance or accomplishment of the reactor core cooling, reactivity control and coolant system integrity functions. The primary containment control guideline addresses the maintenance or accomplishment of the primary containment integrity and radiation control functions. The secondary containment control and radioactivity release control guidelines further address the maintenance or accomplishment of the radiation control function.

As previously stated, the principal basis for determining adequacy of the SPDS parameter/variable set is compatibility with the EPGs. The EPGs referenced by the DAEC PGP were developed by the BWR Owners Group (BWROG) based on transient and accident reanalyses made in response to NUREG 0737 Item I.C.1 (Reference 3). The EPGs are designed to cover all emergency situations, and thus, the selection of an SPDS parameter and variable set which is compatible with the EPGs will provide coverage of a wide range of events, including severe accidents.

Details of the selection and evaluation process for the DAEC SPDS variables, including additional bases, are provided in Section 3.0.

2.0 SPDS DESIGN AND OPERATION

2.1 System Description

The SPDS will provide a concise display of critical plant information to the control room operators to aid them in rapidly and reliably determining the safety status of the plant. This information will consist of the status of safety parameters and the associated plant variables. The variables are derived from plant instrumentation systems.

The SPDS consists of three subsystems, each performing a major function:

- A data acquisition subsystem - data acquisition
- A host processor subsystem - data processing
- A colorgraphic user terminal - data display and user communication.

2.1.1 Data Acquisition Subsystem (DAS)

The DAS encompasses signal acquisition, analog-to-digital conversion (ADC), digital input/output (I/O), and communication with the host processing subsystem. The DAS will interface with safety-related and nonsafety-related signals and will provide the required Class 1E electrical isolation and physical separation.

Three cabinets (division I, division II, and nondivisional) mounted at remote and separate locations will be configured to handle field input signals. The division I and division II portions of the DAS will be Class 1E-qualified hardware. The nondivisional cabinet will be made up of commercial grade equipment which is compatible with the 1E-qualified product line. The DAS will transmit data obtained from existing plant sensors and instrumentation to the host processor subsystem.

2.1.2 Host Processor Subsystem

The host processor subsystem will encompass program load facilities, a host processor, sufficient resident memory to support the processing needs of the SPDS, input/output device controllers, data storage facilities, and a programmer's console. Communication controllers and fiber optic modems required for communication and data transmission to and from the host processor subsystem will be provided. Adequate communication protocol and error-checking software will be provided. In addition, this subsystem will encompass the operating system, user and programmer software development capability, report generation capability, and task scheduling.

The host processor subsystem will be a commercially available computer, not qualified to any nuclear regulatory requirements. The processor will consist of Digital Equipment Corporation VAX family architecture, and will be software-compatible with all other VAX systems. The SPDS software package will provide services for data acquisition, calculation, alarms, historical data retention, user interaction, and display.

2.1.3 Colorgraphic User Terminal (CUT)

The CUT will encompass the hardware and software necessary for accepting, formatting, and generating displays. The design of the CUT will incorporate man-machine interface criteria and human factors engineering principles.

The system will provide function buttons and software to facilitate user interaction. Function buttons for display requests, alarm acknowledgements, and setpoint changes will be supported. A separate programmer's console will be provided for display generation and/or modification, updating software, and display formatting.

The high-resolution display of the CUT will contain its own microprocessor and user memory to store operational background displays. This CUT will be a commercially available intelligent display unit, not qualified to any nuclear regulatory requirements.

2.2 Levels of Display

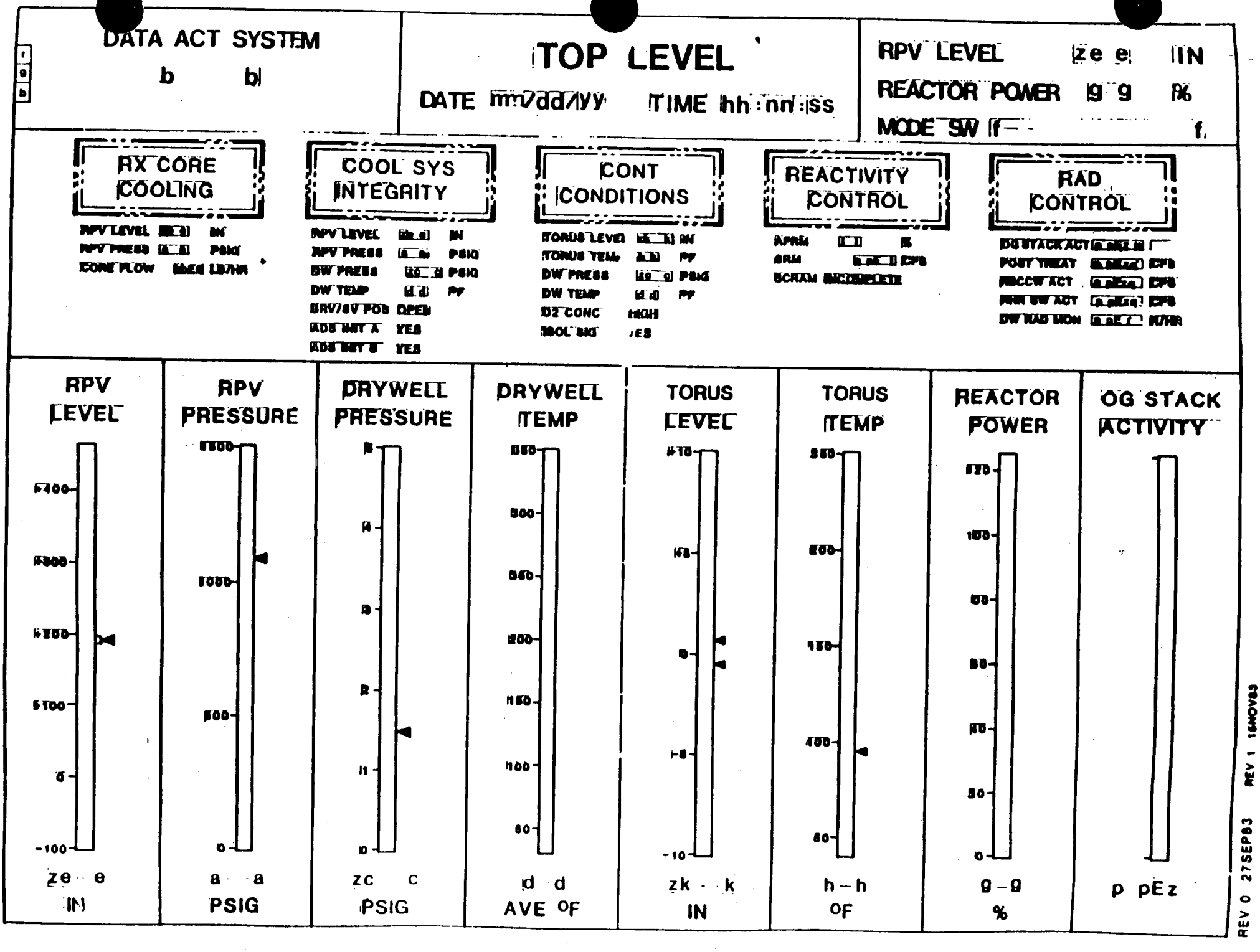
The display set will consist of three levels of display. A single top level (level 1) display will provide an overview of plant safety status and contain five (5) safety parameter blocks along with analog (vertical bar graph) and digital values for critical variables (see figure 2-1 for a typical top level display). The five safety parameter blocks will also be included on each of the level 2 displays.

There will be five level 2 displays, one for each of the five safety parameters, which provide detailed information regarding the status of each parameter. These displays will contain thirty-minute trend information for selected variables and status information (real-time digital values) for all variables associated with each safety parameter. The current values of trended variables will also be displayed as vertical bar graphs along with digital values.

The level 3 displays will be X-Y plots of two variables, for example: 1) RPV SATURATION LIMIT (Reactor Coolant Temperature vs RPV Pressure), 2) TORUS LOAD LIMIT (Torus Level vs RPV Pressure), and 3) HEAT CAPACITY TEMPERATURE LIMIT (Torus Temperature vs RPV Pressure).

The analysis of the variable selection and evaluation process presented in Section 3.0 addresses all variables which contribute to the assessment of the status of each safety parameter using the level 1 and 2 displays. The level 3 displays present additional combinations of the individual level 1 and 2 display variables. The level 3 displays provide supplemental information for supporting the emergency operating procedures and are not considered essential for assessing safety parameter status. Therefore, the level 3 displays are not discussed further in this analysis.

FIGURE 2-1 TYPICAL TOP LEVEL DISPLAY



2.3 Human Factors Design Considerations

This section describes the human factors design considerations followed to provide an effective user-oriented SPDS for DAEC. An interdisciplinary team of operations, control and instrumentation, and human factors engineers are involved in defining, creating, and reviewing the display devices and formats to provide a set of user-oriented displays consistent with the requirements of Supplement 1 to NUREG-0737 and the general guidance of NUREG-0696 and NUREG-0700.

2.3.1 Features

The display formats will be designed to have low information densities and to include that information required to support the task activities of the user. Further, the color saturation of certain colors will be modulated to reduce the visual dominance of the static background information. Extensive use of demarcation lines will be employed to separate classes of data or parameters. Four different colors will be used on the trend graphs for differentiation of information.

Simple display formats will be provided to reinforce user recognition of plant status. Vertical bar indicators are easy to associate with parameter values or magnitudes of a parameter since most control room boards contain vertical meters. A red (off-normal)/green (normal) outline will be used around the safety parameter blocks to continuously inform the operator of plant safety status. Additionally, a red (off-normal)/green (normal) color will be used to fill each of the vertical bars on the top level display.

Arrangement consistency will be maintained on the SPDS displays to the maximum extent practical. Certain groups of data common to more than one display (display titles, date/time, data acquisition system alerts, key variables, etc.) will appear in the same area on the displays. Additionally, the data in "system status" areas of the safety parameter displays will be ordered by importance. The areas will be ordered in a top-to-bottom ranking, with the most important data at the top.

The user will also be continuously informed of the validity of the data being displayed. Should the validity of the data be in doubt, a yellow "V" will be displayed following the numeric value.

If all sensors providing data fail or are taken out of scan, the numeric value for the variable will be replaced by asterisks (*). In no case will a display be void; an indication will always be presented to the user as an indication of system operation.

2.3.2 Graphic Coding

Pattern and color coding techniques will be used extensively to portray safety status in a graphic form for rapid recognition.

2.3.3 Pattern Coding

As previously mentioned, vertical bar graphs have been selected as the means of presenting primary variable status indication. SPDS setpoint limits will be highlighted by prominent arrows on the bars of the top level display. This technique will allow for a range-of-value indication in a form easily comprehended by the user.

Colored outlines will be used to provide instantaneous plant function and key variable status indication. To aid green/red-color impaired users, the line width for red outlines will be greater than for green outlines, thus providing a redundant coding technique.

Trend graphs will be provided on level 2 displays for historical information over the previous 30-minute period. These magnitude-versus-time trend graphs allow for comparison of functionally related sets of variables. Up to four (4) variables will be presented on a single graph. Each variable on a graph will be assigned a specific line width and a related color. This too is to aid color-impaired users and to provide a redundant coding dimension.

2.3.4 Display Access

The top-level and the five safety parameter displays will be accessed or called up by dedicated pushbuttons. These buttons (bezel keys) will be located on a touch panel located directly below the CRT. Additionally, by using the keyboard function keys, the entire set can be accessed in forward or reverse order with the page plus or minus (PGP/M) buttons.

2.3.5 Control Room Location

The SPDS Colorgraphic User Terminal (CUT) will be readily accessible and visible to the control room personnel at their emergency work stations. The CUT will not interfere with the normal movement of the control room operations crew, and will not interfere with full visual access to other control room operating systems and displays. The SPDS terminal in the DAEC control room will be located at the emergency workstation of the shift supervisor.

2.4 Verification and Validation Program

The Verification and Validation (V&V) program for the Safety Parameter Display System (SPDS) for the Duane Arnold Energy Center (DAEC) is in accordance with the guidance of NSAC 39. In addition, verification of the safety-related aspects of the SPDS design will satisfy the requirements of ANSI N45.2.11-1974.

All V&V activities will be performed by individuals who are independent from the design effort and have sufficient experience and expertise to properly evaluate the various activities which affect the final design and installation of the SPDS.

Specific areas which will be covered by V&V activities are:

- Design requirements verification,
- Safety analysis report verification,
- Design and procurement specification verification,

- Hardware and software specification verification,
- Software development verification,
- System validation testing, and
- Post-installation field verification testing.

For each of the above V&V activities, qualified personnel will be assigned to perform the activities required to assure that all applicable design basis requirements are factored into the design and that the design is complete, correct, and unambiguous. An interim report will be issued at each phase of the V&V process wherein all discrepancies will be identified and resolved. A final V&V report will summarize the results of each activity, and document the completion of any corrective actions which may have been required.

3.0 SELECTION AND EVALUATION OF SPDS INPUT VARIABLES AND PARAMETERS

Selection and evaluation of the variable set for the DAEC SPDS began with a compilation of a preliminary variable set based on a detailed review of the function-oriented emergency procedure guidelines (EPGs) (Reference 2). Other SPDS designs were also examined to provide a second source of preliminary input to the DAEC variable selection process. Direct interviews of DAEC supervisory operations personnel were then conducted to provide valuable input from the future users' perspective coupled with DAEC-specific operations experience. The preliminary variable set was then further evaluated for adequacy in order to yield a variable set specifically addressing the DAEC plant design and the needs of DAEC operations personnel. Selection methods and evaluation criteria are discussed in the following subsection.

3.1 Selection Methods and Evaluation Criteria

The objective of this safety analysis report is to describe the basis upon which the set of input variables and parameters to be monitored by the DAEC SPDS has been determined to be sufficient to assess the safety status of each of the five critical safety functions over the spectrum of normal, abnormal, and accident or emergency plant conditions.

In order to provide an adequate assessment of safety status, both the type and number of variables monitored and the range monitored for each displayed variable must be sufficient to determine the maintenance or accomplishment status of each critical safety function for a wide range of events, including severe accidents and all modes of reactor operation.

3.1.1 Basis for Determining Adequacy

The principal basis for determining adequacy of the SPDS parameter/variable set is compatibility with the Emergency Procedure Guidelines (EPGs) (Reference 2). The EPGs are based on the reanalysis of transients and accidents required by NUREG 0737, Item I.C.1 (Reference 3) and are designed to cover all emergency situations including small-break LOCA, large-break

LOCA, transients with multiple failures or no failures, inadequate core cooling and reactivity events. The EPGs address operator errors by checking the effects of directed operator actions and providing guidance when operator actions are unsuccessful. The EPGs are organized to provide guidance for operator response to transients and accidents for the entire range of available systems (Reference 5). The DAEC Updated Final Safety Analysis Report (UFSAR) (Reference 6), the Technical Specifications (Reference 7), and the results of the BWR Graphic Display System Dynamic Screening Program (Reference 4), were also used to establish adequacy of the SPDS parameter/variable set.

The principal basis for determining adequacy of the ranges of the monitored variables is compatibility with the ranges and alarm setpoints provided by existing control room instrumentation for all modes of reactor operation.

The process of variable selection and evaluation, including additional bases for assessment of adequacy, are discussed in the balance of this section.

3.1.2 Selection and Evaluation Process

3.1.2.1 Review of EPGs

A preliminary set of SPDS variables was selected through a review of the current revision of the BWR Owners Group Emergency Procedure Guidelines (EPGs) (Reference 2) from which the DAEC EOPs are being prepared (Reference 1). The objective of the review was to determine those variables which the operators should monitor in order to assess the maintenance and accomplishment of the safety functions, and the effectiveness of contingency actions taken to restore or maintain the functions.

The variables selected from this review included those which define the EPG entry conditions associated with critical safety function assessment and all other variables from the EPGs directly related to safety function assessment. This preliminary variable set was then reviewed for consistency with DAEC UFSAR and Technical Specifications.

3.1.2.2 Review of DAEC UFSAR and Technical Specifications

The DAEC UFSAR and Technical Specifications were reviewed for information regarding the maintenance and accomplishment of each safety function during all modes of reactor operation. This review included the following, as applicable:

- system design bases and performance characteristics,
- transient and accident analyses,
- characteristics of various modes of operations,
- alarm limits, and
- Technical Specification bases.

The results of this review were factored into the preliminary variable set.

3.1.2.3 Comparison with BWROG Variable Set

The resulting variable set was then compared with the SPDS variable set developed by an ad-hoc working group of the BWR Owners Group (BWROG) Committee on Control Room Improvements as part of the Dynamic Screening Program (Reference 4). The BWROG variable set was initially selected based on Revision 1 of the EPGs. The initial BWROG variable set and corresponding displays were then tested for response to a wide range of transient malfunctions on a BWR simulator. Based on an evaluation of the results of the simulator transient tests, the initial variable set and displays were refined to produce a final recommended set of variables and displays.

The DAEC variable set included all of the BWROG variables except for the intermediate range power monitors (IRMs). The IRMs were considered for inclusion in the DAEC variable set; however, it was concluded that reactor power could be adequately monitored using the source range and the average power range monitors.

The results of the comparison of the DAEC variable set with the BWROG variable set helped to confirm the adequacy of the DAEC set.

3.1.2.4 Final Review and Verification

The variable list determined by the above process was then reviewed by DAEC supervisory operations personnel and verified for adequacy by an independent review team in accordance with the SPDS V&V plan.

3.1.2.5 Presentation of Results

The DAEC variables selected for monitoring each of the five critical safety functions are listed in Attachment 1. Section 3.2 provides a discussion of these variables by critical safety function. Each variable set is discussed in terms of:

- The variables which provide primary status indication for safety function;
- The plant systems which may be used to restore or maintain the safety parameters within safe limits, and the variables associated with monitoring the capability of these systems to perform their safety function; and
- The variables associated with monitoring the status or result of operator emergency actions to restore the safety parameters to within safe limits.

The analog ranges of displayed variables are listed in Attachment 2. Section 3.3 provides a discussion of the ranges monitored and displayed on the DAEC SPDS. Variable ranges are discussed in terms of compatibility with existing control room instrumentation and adequacy for monitoring and responding to a wide range of events, including symptoms of severe accidents and all modes of reactor operation.

3.2. Type and Number of Variables Required to Assess Each Safety Parameter

3.2.1 Reactivity Control

Reactor power provides the primary and the most directly interpretable measure of core reactivity. Therefore, in order to adequately assess the

reactivity control function, the operators must be cognizant of reactor power level, the status of preferred manual and automatic actions taken to reduce reactor power level when required, and the status of contingency actions to reduce reactor power level in the event the preferred methods are unsuccessful.

The neutron monitoring system (NMS), reactor protection system (RPS), control rod drive system (CRDS), and standby liquid control system (SLCS) are used to accomplish or monitor reactivity control. The SPDS provides neutron flux information via the source range monitors (SRMs) and the average power range monitors (APRMs). The SPDS also monitors SRM position to indicate whether the SRM probes are fully retracted or are fully inserted in the core. Scram signal initiation is monitored to indicate that a need exists to scram the reactor. The RPS scram signal for the SPDS is provided using RPS trip logic A1, A2, B1, and B2. The SPDS monitors control rod full-in position and displays an all-rods-in signal to indicate that the CRDS has accomplished the scram. The SPDS monitors standby liquid control tank (SLCT) level to confirm that an adequate supply of borated water is available in the event the SLCS is called upon. Indication of boron injection is provided by monitoring the SLCS pressure at the discharge header and confirming decreasing tank level.

Additional variables are monitored by the SPDS to reflect the result of operator action during a reactivity event. Following a reactivity event in which reactor isolation and boron injection are required, primary coolant may be discharged through the safety relief valves (SRVs) to the suppression pool at a rate that would depend upon the reactor power level. Depending upon the discharge rate, the operator may need to reduce reactor power to control suppression pool heat up during the boron injection. Tripping the recirculation pumps would reduce power to natural circulation levels, and the operator may further decrease power by lowering the RPV water level to reduce the natural circulation driving head. Boron injection could then continue until reactor power is reduced to shutdown levels. In addition to reactor power, SLCS pump operation and SLCT level, the following are displayed for monitoring operator actions in response to a reactivity event:

RPV water level, SRV position, RPV pressure, total core flow, and torus water temperature.

The type and number of variables monitored by the SPDS for reactivity control enable the operators to monitor reactivity level, monitor the success of preferred manual and automatic actions to reduce reactivity level, and monitor the status of contingency actions to reduce reactivity level. These variables, therefore, provide for adequate assessment of the maintenance and accomplishment of the reactivity control function. A listing of the variables discussed above is provided in Attachment 1. The adequacy of the SPDS ranges of these variables for monitoring all normal, abnormal, and emergency plant conditions including the symptoms of severe accidents is discussed in Section 3.3.

3.2.2 Reactor Core Cooling

In order to adequately assess the reactor core cooling function, the operator must be cognizant of the reactor pressure vessel (RPV) water level and of the status of manual and automatic actions to increase or maintain RPV water level in a safe range.

Adequacy of core cooling is monitored by reactor pressure vessel water level indication. For events in which a scram occurs at reactor power above 3%, either automatically or manually, the operator must verify scram and proceed to control RPV water level and pressure with one or more of the following coolant injection systems: Feedwater (FW), Reactor Core Isolation Cooling (RCIC), High Pressure Coolant Injection, (HPCI), Core Spray (CS), Low Pressure Coolant Injection (LPCI) and Control Rod Drive (CRD)[1]. Reactor power indication is obtained from the APRMs and is monitored to indicate successful scram initiation. Total core flow provides additional indication of core cooling. Performance of the feedwater system is indicated by monitoring total feedwater flow. Performance of the RCIC and HPCI systems

[1]Reference 2, Level Control Guideline

is indicated by monitoring respective system flows in conjunction with injection valve open indication to ensure that the indicated flow is actually going to the core. Core spray and LPCI performance is indicated for each loop separately by monitoring each loop flow in conjunction with the respective injection valve open indication.

For small breaks in the primary coolant system, when the high pressure systems are not available, the automatic depressurization system (ADS) may be required to depressurize the reactor vessel so that the LPCI and core spray can operate to protect the fuel barrier[1]. Performance of this system is indicated by monitoring ADS timer initiation and time to activation, safety relief valve (SRV) position, and reactor vessel pressure.

Adequacy of the water supply for the RCIC, HPCI, core spray and LPCI systems is indicated by monitoring torus and condensate storage tank levels.

The type and number of variables monitored by the SPDS for reactor core cooling enable the operators to monitor RPV level and monitor the status of manual and automatic actions to increase or maintain coolant level above the top of active fuel. These variables therefore, provide for adequate assessment of the core cooling function. A listing of the monitored variables discussed above is provided in Attachment 1. The adequacy of the SPDS ranges of these variables for monitoring all normal, abnormal, and emergency plant conditions, including the symptoms of severe accidents, is discussed in Section 3.3.

3.2.3 Reactor Coolant System Integrity

In order to assess the reactor coolant system integrity function, the operator must be cognizant of the potential for breach of integrity, indication that a breach may have occurred and status of actions taken to mitigate the potential for breach of integrity.

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[1] Reference 7, Bases, Section 3.5(F)

Variables for monitoring potential or actual breach of reactor coolant system (RCS) integrity are reactor pressure, reactor pressure vessel level, drywell temperature, drywell pressure, and leakage flows to the drywell floor drain and/or equipment drain sumps. Reactor pressure provides indication of the potential breach of RCS integrity due to overpressurization. RCS depressurization may indicate that a breach of RCS integrity has occurred. Falling vessel level may also provide an indication that coolant system integrity breach has occurred. Increasing drywell temperature and pressure, and increasing leakage flow to the sumps all provide indication that integrity breach may have occurred and also provide information as to the magnitude of the breach. The SPDS monitors the leakage to the drywell floor sump and the equipment drain sump for determining both the unidentified leakage flow rate (drywell floor drain) and the total integrated leakage flow rate (drywell floor drain plus equipment drain sump)[1]. Main steam isolation, safety relief and safety valves, when shut, are essential to maintain reactor coolant system integrity and are major paths for potential integrity loss. Main steam isolation, safety relief, and safety valves are monitored to indicate integrity breach through these paths. Automatic depressurization system timer initiation and time elapsed are also monitored to indicate the potential for SRV opening.

The type and number of variables monitored by the SPDS for reactor coolant system integrity enable the operators to monitor the potential for and magnitude of breach of integrity. These variables, therefore, provide for adequate assessment of integrity or isolation conditions in determining the status of this safety function. A listing of the monitored variables discussed above is provided in Attachment 1. The adequacy of the SPDS ranges of these variables for monitoring all normal, abnormal, and emergency plant conditions, including the symptoms of severe accidents involving reactor coolant system integrity breach, is discussed in Section 3.3.

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[1] As defined in UFSAR Section 5.2.5

3.2.4 Containment Conditions

In order to assess the status of containment integrity, the operators must be cognizant of the potential for breach of integrity, the status of integrity, and the status of actions taken to mitigate the potential for breach of integrity.

Systems required to maintain primary containment integrity are the primary containment isolation system, containment atmosphere dilution (CAD) system and the suppression pool cooling mode of the RHR system. Variables required to monitor the potential for breach of the primary containment are drywell pressure, drywell temperature, torus water level, torus water temperature, and containment isolation valve status. The main steam isolation valves (MSIVs) close on containment isolation (Group 1) actuation and are monitored by valve position status. The status of containment isolation valves other than the MSIVs is monitored by indication of which valve groups, by number, have been called upon to isolate. The display identifies if isolation has been initiated and which valve groups are required to close. Actual valve position indication for verification purposes is adequately displayed in the control room by the containment isolation valve mimic and is not included in the SPDS. The CAD System prevents an H_2 - O_2 concentration buildup to a combustible level which, if ignited, could cause the loss of containment integrity. The SPDS monitors containment atmosphere status via inputs from the torus and drywell H_2 and O_2 concentration monitors. Torus water temperature provides adequate indication of suppression pool cooling. Safety valves, if open, will discharge into the drywell. Safety valves are monitored by the SPDS for indication of this discharge. SRVs are monitored for indication of failure to close.

The type and number of variables monitored by the SPDS for containment conditions enable the operators to monitor the potential for breach of containment integrity, the status of integrity, and the status of actions to mitigate the potential for breach of integrity. These variables, therefore, provide for adequate assessment of containment conditions in determining the status of this safety function. A listing of the monitored variables discussed above is provided in Attachment 1. The adequacy of the SPDS

ranges of these variables for monitoring all normal, abnormal, and emergency plant conditions, including the symptoms of severe accidents is discussed in Section 3.3.

3.2.5 Radioactivity Control

In order to assess the status of the radioactivity control function, the operators must be able to monitor all identified release points.

The principal radioactive release point during normal, abnormal, and emergency plant conditions is the offgas stack. The SPDS monitors offgas stack radioactivity level. Containment radiation level is also monitored by the SPDS to enable the operators to assess the potential for releases resulting from accidents.

As discussed in Section 11.5 of the UFSAR, radiation monitors are provided on process liquid and gas lines to monitor potential discharge routes for radioactive material. These monitors include the post-treatment offgas, pre-treatment offgas, reactor building closed cooling water, general service water, RHR heat exchanger service water outlet, reactor building exhaust ventilation, and turbine building exhaust ventilation monitors. All of these variables are monitored by the SPDS.

The type and number of variables monitored by the SPDS for radioactivity control enables the operators to monitor all identified release points and to monitor the potential for releases as a result of accidents. These variables, therefore, are adequate to assess the status of the radioactivity control function. A listing of the monitored variables discussed above is provided in Attachment 1. The adequacy of the SPDS ranges of these variables for monitoring all normal, abnormal, and emergency plant conditions, including the symptoms of severe accidents, is discussed in Section 3.3.

3.3 Variable Ranges

The results of the variable range evaluation are presented in Attachment 2. Analog signals which provide input to the SPDS are identified with their corresponding ranges and applicable reference documents which identify the basis for the range. In general, the ranges monitored by the SPDS are identical to those ranges monitored by existing control room instrumentation. As stated in the UFSAR Section 7.5.1.1, an analysis of abnormal operational transients and postulated accidents presented in Chapter 15 of the UFSAR shows that the existing instrumentation provides appropriate wide-range information for conditions within the primary containment resulting from these transients and accidents. Extended range instrumentation, such as the drywell temperature and radiation monitors, was installed at DAEC in response to NUREG-0737. Where applicable, these extended ranges are displayed on the SPDS. All ranges displayed by the SPDS are adequate to cover the plant responses analyzed in Chaper 15 of the UFSAR and the reanalysis of transients performed in accordance with item I.C.1 of NUREG-0737.

Neutron flux information is provided in the range of 2×10^{-7}% to 125% of reactor power. The SRMs are utilized to monitor reactor power to an equivalent of 3% power, which sufficiently overlaps the lower end of the APRM range. Reactor scram is signaled by the APRMs at 120% power.

Existing DAEC safety-related instrumentation and their ranges are identified in Section 7.5.1.2 of the UFSAR. These include reactor water level from -100 to 218 inches referenced to the top of active fuel, reactor pressure from 0 to 1500 psig, drywell pressure from -5 psig to 3 times design pressure, drywell temperature from 0 to 350°F, drywell and torus oxygen concentration from 0 to 25%, drywell and torus hydrogen concentration from 0 to 10%, torus temperature from 40 to 2F, and torus water level over a range of 30 feet, referenced to the bottom of the torus. In all cases, except for oxygen concentration, the variable range monitored and indicated on the SPDS either meets or exceeds the required range as specified above. For drywell and torus oxygen concentration the monitored range is from 0 to 20% which is adequate for monitoring containment oxygen concentrations.

Since the threshold for flammability is at 5% oxygen concentration, no useful information would be obtained by monitoring above 20%.

Injection system flow rates are monitored for RCIC from 0 to 500 gpm, HPCI from 0 to 3,500 gpm, LPCI (each loop) from 0 to 15,000 gpm, and core spray from 0 to 5,000 gpm. In each case, the flow rate range monitored by the SPDS exceeds the design flow rate as identified in the UFSAR.

The feedwater system flow rate range monitored is 0 to 8 x 10^6 lbm/hr. Steam flow at design power is approximately 7.1 x 10^6 lbm/hr, as shown in UFSAR Table 10.2-1 and the maximum capability of the feedwater pumps is 115% of design rated flow. The monitored flow range encompasses the maximum feedwater flow rate.

Total core flow is monitored and indicated from 0 to 60 x 10^6 lbm/hr which exceeds rated total core flow of 49x10^6 lbm/hr, as specified in Section 2.1.a.1 of the Technical Specifications. Standby liquid control system pressure is indicated and monitored from 0 to 1800 psig which exceeds the system design pressure of 1400 psig as identified in Section 9.3.4.2 of the UFSAR.

The condensate storage and standby liquid control tanks are monitored from 0 to 100% capacity. The standby liquid control tank level is displayed from 0 to 100% full, and the condensate storage tank (CST) level is displayed fro 0 to 24 ft. The range monitored for the CST covers the full 200,000-gallon capacity of each of the two condensate storage tanks, as identified in UFSAR Section 9.2.6.2.

The SPDS monitors leakage to both the drywell floor and equipment drain sumps over a range of 0 to 120 gpm. This range is sufficient to monitor the maximum allowable unidentified and total integrated leakage rates which are 5 gpm and 25 gpm, respectively, as specified in the Technical Specifications, Section 3.6.

The Automatic Depressurization System (ADS) valves are automatically opened two minutes after the receipt of an ADS initiation signal. The two-minute delay allows the operator to cancel the ADS initiation signal if conditions do not warrant ADS valve actuation. The SPDS monitors the time to safety/relief valve opening after receipt of an ADS initiation signal.

Containment radiation level is monitored from 1 to 10^7 rads/hr. This range is adequate for monitoring an accident environment as discussed in Section 12.3.3.3.4 of the UFSAR.

Ranges for the various radiation monitors are presented in Attachment 2. As discussed in Section 11.5 of the UFSAR, these ranges are adequate to monitor all values for normal system operations. Systems designed for post-accident use have extended ranges which envelope the values identified from the UFSAR Chapter 15 accident analysis.

3.4 Selection of SPDS Alarm Limits

Alarm limits for SPDS variables will be determined by reviewing the Technical Specifications and emergency procedure documentation for limiting safety system settings and other limiting values of the variables, as appropriate. The setpoint for each SPDS variable will be selected to provide indications consistent with existing plant alarm limits.

3.5 Reactor Mode Switch Indication

The SPDS will be designed to operate during all reactor operating modes, i.e. (1) startup/hot standby, (2) run, (3) shutdown, and (4) refuel. Reactor mode switch position is indicated on all SPDS displays.

3.6 Provisions for Validation of SPDS Data

The displayed value of each SPDS variable is determined by processing one or more plant signals. Valid/invalid indications are provided for all SPDS variables and are determined through systematic consideration of the type and number of signals available for each variable, the number of channels

available for each signal and system performance characteristics. As a minimum, all analog signals are checked for reasonableness against a validation table containing high and low limits for each signal. A signal that falls outside the validation range is flagged as invalid input data which prevents it from being used to determine the value of the displayed variable. A displayed variable which consists of a single analog input signal is generally determined to be valid or invalid based only upon the validation table comparison. However, in some cases, an analog signal from a single sensor is validated in conjunction with a digital signal from a different sensor depending upon system performance characteristics. For instance, a signal corresponding to an injection system flow rate may be determined to be valid only if the digital signal corresponding to the injection valve being in the open position is present.

Displayed variables which are determined from two or more analog input signals are checked for validity against each other in addition to the validation table. With three or more signals, each signal is further compared against the average of valid signals. If input signals agree within a predetermined bandwidth, a variable will be displayed in its appropriate data field. Signals that do not agree flag a "unvalidated" condition. Thus, a displayed variable which consists of two or more input signals may be "valid", "unvalidated", or "invalid".

A "valid" variable is displayed in its appropriate data field. A "unvalidated" variable is also displayed in its appropriate data field, but is followed by a yellow "V" indicating that the variable is unvalidated and needs to be verified by the operator using information displayed elsewhere in the control room. An "invalid" variable is displayed as a series of asterisks in the appropriate data field.

4.0 PRELIMINARY 10 CFR 50.59 SAFETY EVALUATION

This evaluation analyzes the proposed function, design, installation, and operation of the Safety Parameter Display System (SPDS) to ensure that SPDS implementation does not involve an unreviewed safety question. The objective of the evaluation is to justify that: 1) the probability of occurrence or the magnitude of the consequences of an accident or malfunction as previously evaluated in the UFSAR will not be increased, 2) the possibility of an accident or malfunction of a different type than those previously evaluated in the UFSAR has not been created, and 3) the margin of safety as defined in the bases of any technical specification will not be decreased by the addition of the SPDS.

4.1 Function and Design of SPDS

The SPDS will provide a concise display of critical plant variables to the control room personnel to aid them in rapidly and reliably determining the safety status of the plant. The SPDS will be operated during normal operations, as well as during abnormal conditions. The principal purpose and function of the SPDS is to aid the control room personnel during abnormal and emergency conditions in determining the safety status of the plant. The SPDS will continuously display real-time information in the control room from which the plant safety status can be readily and reliably assessed by control room personnel.

The SPDS, however, is not a safety system and it will perform no active safety function. The existing control room instrumentation, as required by General Design Criteria 13 and 19 of Appendix A to 10 CFR 50, provides the operators with the information necessary for safe reactor operation under normal, transient, and accident conditions. The SPDS will be used in addition to the existing instrumentation and will serve to aid and augment it. For these reasons, Supplement 1 to NUREG-0737 directs that the requirements applicable to control room instrumentation are not needed for this augmentation (e.g., GDC 2, 3, and 4 in Appendix A; 10 CFR 100; single-failure requirements). The SPDS need not meet requirements of the single-failure criteria and it need not be qualified to meet Class 1E requirements.

The SPDS need not be seismically qualified, and additional seismically qualified indication is not required for the sole purpose of being a backup for the SPDS.

The operation of the SPDS will require plant signals to be input from existing instrumentation and control circuitry; therefore, the SPDS is required to be suitably isolated from electrical or electronic interference with equipment and sensors that are in use for safety systems. The electrical isolation and seismic and environmental qualification provisions in the SPDS design will ensure that neither the normal operation (including testing and calibration) nor the periodic failure of any SPDS components will prevent existing instrumentation and control equipment from performing its safety-related function.

The graphic design of the displays and the location of the SPDS terminal in the control room will be human-factor engineered in accordance with the criteria of NUREG 0696 and NUREG 0700. Validation provisions will be designed into the SPDS software for each input signal. The human factors and signal validation provisions in the SPDS design will ensure that the monitoring and presentation of plant safety status information will not be misleading to the operators. Display conventions such as ranges, units, and color coding will be consistent with existing DAEC instrumentation. Indications of unvalidated or invalid data will be provided.

The SPDS implementation is subject to an extensive verification and validation (V&V) program which follows the guidance of NSAC 39. The verification portion of the V&V program will provide an independent review to verify that:

- All interfaces with existing safety-related and non-safety related equipment have been properly identified,
- The proper design standards have been invoked,
- The applicable design requirements have been properly implemented in the design, functional, and procurement specifications, and

- The requirements of ANSI N45.2.11-1974 are followed for design verification of the safety-related interfaces of the SPDS.

4.2 SPDS Installation

The SPDS installation process does not involve an unreviewed safety question for the following reasons:

- The installation will be accomplished during a scheduled outage with the reactor in a cold shutdown condition, and strict administrative controls will be in force to ensure that none of the safety systems required to maintain the plant in a cold shutdown condition will be compromised.

- All work interfacing with existing safety-related equipment will be performed and documented in accordance with approved IELP installation procedures and quality control procedures for DAEC.

- SPDS calibration and thru-channel checks will be designed such that they cannot degrade Class 1E systems.

- Prior to startup, the operators will be trained on the modified Class 1E systems, existing system documentation will be updated, and "Post-installation/modification testing" will be performed to ensure that the SPDS will not affect any safety-related functions. The acceptance tests will include all safety-related systems interfacing with the SPDS to show that their performance is not degraded.

4.3 SPDS Operation

The validation and field verification portions of the V&V program provide for comprehensive testing and documentation of test results to ensure the proper functioning of the SPDS in accordance with the design, functional and procurement specifications.

The SPDS will be designed and tested to comply with DAEC Class 1E isolation and separation criteria to assure that the performance of safety system functions will not be adversely affected. No technical specification changes are expected to be required for the operation of the SPDS.

The operation of the SPDS will not degrade operators' performance because, in addition to the human factors considerations included in the design, the operators will be trained in procedures which describe the timely and correct safety status assessment when the SPDS is and is not available. Operating procedures will be written to preclude the operator from taking actions based solely on SPDS display information. The operating procedures will require that all operator actions affecting the safety of the plant be based on information which has been confirmed using the existing control room indicators. The operators will also be trained to respond to accident conditions both with and without the SPDS available. Therefore, no transient or accident analytical results in the UFSAR will be affected by either the operation or the failure of the SPDS, nor will the potential be increased for a malfunction or accident of a different type than those previously described in the UFSAR.

4.4 Conclusion

The probability of occurrence or the magnitude of the consequences of an accident or malfunction as previously evaluated in the UFSAR will not be increased. The possibility of an accident or malfunction of a different type than those previously evaluated in the UFSAR has not been created. The margin of safety as defined in the basis of any technical specification will not be decreased by the implementation of the SPDS. The following is provided as justification for the above:

- The SPDS will perform no active safety function, and the provisions described in this section will be in force to ensure that the installation, operation, or failure of the SPDS will not degrade the performance of existing safety systems.

- The potential for operator error will not be increased because the presentation of SPDS data will be consistent with existing control room indication, thorough training will be provided with and without the SPDS available, and no emergency action can be taken based on SPDS data alone.

Based on the above evaluation of the function, design, installation, and operation of the Safety Parameter Display System (SPDS), it is concluded that no unreviewed safety question is involved with the SPDS implementation.

5.0 SUMMARY AND CONCLUSION

This safety analysis report was prepared in response to Section 4 of Supplement 1 to NUREG 0737. This SAR describes the methodology and basis on which the plant safety parameters and associated variables selected for monitoring on the DAEC SPDS have been determined to be sufficient to assess the overall safety status of the plant in terms of the following five critical safety functions:

- Reactivity control,
- Reactor core cooling,
- Reactor coolant system integrity,
- Containment conditions, and
- Radioactivity control.

A preliminary variable set was first determined based on a review of the Emergency Procedure Guidelines (EPGs), consideration of SPDS designs for other BWR plants, and direct input from DAEC supervisory operations and engineering personnel. The preliminary variable set was then evaluated against the DAEC UFSAR, Technical Specifications, and ad-hoc BWR Owners Group (BWROG) simulator-tested variable set for sufficiency in terms of the type and number of variables monitored to assess each safety function, and the range of plant conditions covered by the variables. The final variable set covers all EPG entry conditions associated with critical safety function assessments, and includes essentially all variables recommended by the ad-hoc BWROG to monitor each critical safety function. The final DAEC variable set was then verified for adequacy by an independent review team in accordance with the SPDS V&V plan. On the basis of this selection and evaluation process, the DAEC safety parameters and associated variables are considered to be compatible with the DAEC EOPs and sufficient to assess plant safety over a wide range of conditions including the symptoms of severe accidents and all modes of reactor operation. The function, design, installation, and operation of the DAEC SPDS were also analyzed in accordance with the provisions of 10 CFR 50.59, and it was concluded that no unreviewed safety question is involved with the SPDS implementation at DAEC.

6.0 REFERENCES

1. Iowa Electric Light and Power Company, "Procedures Generation Package for Duane Arnold Energy Center," NG-83-3565, October, 1983.

2. Letter from T. J. Dente, BWR Owners' Group, to D. G. Eisenhut, NRC, subject: BWR Emergency Procedure Guidelines, Revision 3, December 22, 1982.

3. General Electric Company, "Additional Information Required for NRC Staff Generic Report on Boiling Water Reactors, Volume 1, " NEDO-24708A, Revision 1, December 1980.

4. D. W. Buckley, et al., "BWR Graphics Display System Dynamic Screening Program," Vol. 1, Science Applications, Incorporated , February 1982.

5. Letter from D. G. Eisenhut, NRC, to Boiling Water Reactor Licensees of Operating Reactors, Applicants for an Operating License and Holders of Construction Permits, Subject: Safety Evaluation of "Emergency Procedure Guidelines, Revision 2", February, 1983.

6. Iowa Electric Light and Power Company, " Updated Final Safety Analysis Report for Duane Arnold Energy Center," Docket no. 50-331, June, 1983.

7. Appendix A to Operating License DPR-49, "Technical Specifications and Bases for Duane Arnold Energy Center," Docket no. 50-331, February, 1974.

ATTACHMENT 1

SPDS SAFETY PARAMETERS AND ASSOCIATED MONITORED VARIABLES

SAFETY PARAMETER	VARIABLES
Reactivity Control	SRM Power
	APRM Power
	SRM position
	Scram Signal
	All-Rods-In Indication
	Standby Liquid Control Tank Level
	Standby Liquid Control System Discharge Header Pressure
	ADS Train A Timer Initiation
	ADS Train A Time to Activation
	ADS Train B Timer Initiation
	ADS Train B Time to Activation
	SRV Position
	Reactor Vessel Water Level
	Reactor Vessel Pressure
	Total Core Flow
	Torus Water Temperature
Reactor Core Cooling	Reactor Vessel Water Level

SAFETY PARAMETER	VARIABLES
	APRM Power
	Total Core Flow
	SRV Position
	RCIC Flow
	RCIC Injection Valve Position
	HPCI Flow
	HPCI Injection Valve Position
	Core Spray Loop A Flow
	Core Spray Loop B Flow
	Core Spray Loop A Injection Valve Position
	Core Spray Loop B Injection Valve Position
	LPCI Loop A Flow
	LPCI Loop B Flow
	LPCI Loop A Injection Valve Position
	LPCI Loop B Injection Valve Position
	Feedwater Flow
	Reactor Vessel Pressure
	Condensate Storage Tanks Level
	Torus Water Level

SAFETY PARAMETER	VARIABLES
Reactor Coolant System Integrity	Drywell Pressure
	Drywell Temperature
	Reactor Vessel Pressure
	Reactor Vessel Water Level
	Main Steam Isolation Valves Position
	SRV and SV Valves Position
	ADS Train A Timer Initiated
	ADS Train A Time to Activation
	ADS Train B Timer Initiated
	ADS Train B Time to Activation
	Leakage Rate to Drywell Floor Sump
	Leakage Rate to Equipment Drain Sump
Containment Conditions	Drywell Pressure
	Drywell Temperature
	Torus Water Level
	Torus Water Temperature
	Main Steam Isolation Valves Position

SAFETY PARAMETER	VARIABLES
	SRV Position
	SV Position
	Drywell O_2 Concentration
	Torus O_2 Concentration
	Drywell H_2 Concentration
	Torus H_2 Concentration
	Isolation Valve Group Initation and Isolation Valve Group Number
Radioactivity Control	Offgas Stack Activity
	Reactor Building Exhaust Ventilation Activity
	Turbine Building Exhaust Ventilation Activity
	Containment High-Range Radiation Level
	Reactor Building Closed Cooling Water Activity
	RHR Heat Exchanger Service Water Outlet Activity
	General Service Water Activity
	Post-Treatment Offgas Activity
	Pre-Treatment Offgas Activity

ATTACHMENT 2

VARIABLE RANGES

DISPLAYED VARIABLE	DISPLAYED RANGE	BASIS FOR RANGE (1)
Reactor Power (APRMs)	0% to 125%	UFSAR sections 7.6.1.4, 7.6.1.7.6, and 7.6.2.7.2.1
Reactor Power (SRMs)	0 to 10^6 CPS (counts per second)	Figure; 7.6-6 Technical Specifications, Limiting Condition of Operations section 3.9.B.2
Reactor Vessel Water Level(2)	-100" to 218"	UFSAR, section 7.5.1.2.1
Reactor Vessel Pressure	0 to 1500 psig	UFSAR, section 7.5.1.2.2
Drywell Pressure	-5 to 250 psig	UFSAR, section 7.5.1.2.3
Drywell Temperature	0 to 350°F	UFSAR, Section 7.5.1.3
Drywell O_2 Concentration	0 to 20%	UFSAR, Section 7.5.1.4.2 and Figure 6.2.-64
Drywell H_2 Concentration	0 to 10%	UFSAR, Section 7.5.1.4.3
Torus O_2 Concentration	0 to 20%	UFSAR, Section 7.5.1.4.2 and Figure 6.2-64
Torus H_2 Concentration	0 to 10%	UFSAR, Section 7.5.1.4.3

DISPLAYED VARIABLE	DISPLAYED RANGE	BASIS FOR RANGE (1)
Torus Water Temperature	40 to 250°F	UFSAR, Section 7.5.1.5
Torus Water Level(3)	-15'to +15'	UFSAR Section 7.5.1.6
RCIC Flow	0 to 500 gpm	UFSAR Table 5.4-4
HPCI Flow	0 to 3500 gpm	UFSAR Table 6.3-1
RHR Flow (LPCI)	0 to 15,000 gpm	UFSAR Table 6.3-1
Core Spray Flow (loops A and B)	0 to 5,000 gpm (for each loop)	UFSAR Table 6.3-1
Feedwater Flow (Loops A and B)	0 to $4x10^6$ lbm/hr (for each loop)	UFSAR, Table 10.2-1 and Sections 15.1.1. and 10.4.7.1
Total Core Flow	0 to 60 x 10^6 lbm/hr	Technical Specifications, Section 2.1.a.1
Condensate Storage Tanks Level	0 to 24 ft.	UFSAR, Section 9.2.6.2
Standby Liquid Control Tank Level	0 to 100% (82.5")	Technical Specifications, Section 3.4
Standby Liquid Control System Pressure	0 to 1800 psig	USFAR Section 9.3.4.2 Technical Specifications, Surveillance Requirements, Section 4.4.A

DISPLAYED VARIABLE	DISPLAYED RANGE	BASIS FOR RANGE (1)
Leakage Rate to Drywell Floor Sump	0 to 120 gpm	UFSAR, Section 5.2.5.2.2 Technical Specifications, Sections 3.6.C and 4.6.C, Bases; Reference 4
Leakage Rate to Equipment Drain Sump	0 to 120 gpm	UFSAR Section 5.2.5.2.2 Technical Specifications, Sections 3.6.C and 4.6.C Bases; Reference 4
ADS Train A Time	0 to 120 sec.	UFSAR, Sections 6.3.2.2.2 and 7.5.2
ADS Train B Time	0 to 120 sec.	UFSAR, Sections 6.3.2.2.2 and 7.5.2
Containment Radiation Monitor	1 to 10^7 Rads/hr	UFSAR, Section 12.3.3.3.4
Reactor Building Exhaust Ventilation Activity	10^{-7} to 10^5u Ci/cc	UFSAR, Section 11.5.5.2, 11.5.5.4, and 11.3.3
Station Offgas Stack Activity	10^{-7} to 10^5u Ci/cc	UFSAR, Section 11.5.3
Reactor Building Closed Cooling Water Activity	.1 to 10^6 cps(4)	UFSAR, Section 11.5.4
RHR Heat Exchanger Service Water Outlet Activity	.1 to 10^6 cps	UFSAR, Section 11.5.4

DISPLAYED VARIABLE	DISPLAYED RANGE	BASIS FOR RANGE (1)
Turbine Building Exhaust Ventilation Activity	10^{-7} to 10^{5} uCi/cc	UFSAR, Section 11.3.3
Offgas System Pre-Treatment Activity	.1 to 10^{6} mr/hr	UFSAR, Section 11.5.3
Offgas System Post-Treatment Activity	.1 to 10^{6} cps	UFSAR, Section 11.5.3
General Service Water Activity	.1 to 10^{6} cps	UFSAR, Section 11.5.4

TABLE FOOTNOTES:

(1) Basis for range includes referenced documents presented and section 3.3 discussion.

(2) Zero is referenced to top of active level.

(3) Zero is referenced to center of torus.

(4) CPS represents counts per second.

Generic Letter Item 1.1: Post-Trip Review (Program Description and Procedure)

NRC Position

"Licensees and applicants shall describe their program for ensuring that unscheduled reactor shutdowns are analyzed and that a determination is made that the plant can be restarted safely. A report describing the program for review and analysis of such unscheduled reactor shutdowns should include, as a minimum:"

Sub-Item 1: "The criteria for determining the acceptability of restart."

Iowa Electric Response

The following criteria are intended to show that there is a sound rationale, based on technical judgement, for the decision on the part of senior experienced operating plant personnel to exercise and justify a restart of the plant predicated upon: (1) operator knowledge of the plant; (2) control room indicators; and (3) existing plant procedures. This technical judgement shall ensure the following restart criteria are met:

a. The plant is shown to be in a safe condition.

b. The cause of the event is either understood or, after a detailed investigation, is considered to have been a spurious trip with a reasonably low potential for recurrence.

c. The need for corrective action has been determined and appropriately implemented.

d. The expected on-off automatic operation of plant safety-related systems has been observed.

e. The approval of responsible plant management has been obtained.

Criterion (a)

The determination of the safe condition of the plant is assumed for the purpose of this discussion. Therefore, for the remainder of this discussion, it will be assumed that the safety limits have not been violated or exceeded and the issue at hand is one of justifying restart from a normal shutdown condition. If safety limits have not been violated and the plant is in a stable and safe mode, then the plant personnel may begin evaluation of the advisability of restart

Criterion (b)

The plant staff has many sources of information available to them which can be used both as a diagnostic tool in evaluating the cause of an unanticipated scram and in the identification of other than expected

performance of plant systems and equipment. The readout of both safety related and non-safety related indicators (including, as applicable, such sources as the process computer, alarm typer, strip chart recorders, and control room panel indicators) provide a basis upon which a technically defensible action can be initiated to determine the cause of the event, and assure that the cause of the scram no longer exists. (See 1.1.4 and 1.2). While no decision should be left solely to the information provided by a non-safety related device, actions can be taken or decisions made based on the status of such indicators, as long as agreement is demonstrated from the status of safety related indicators.

It is important to understand the cause of an unscheduled trip so that a recurrence can be avoided after restart. However, it is not realistic to ignore the possibility for spurious trips whose cause cannot be identified. In the event that the cause of the unscheduled reactor shutdown cannot be determined, and the safety systems have indicated a proper response, the Plant Superintendent-Nuclear, or his designee, may concur or approve a restart decision based on the following conditions:

a. Any further reasonable actions to determine cause is considered.

b. No physical damage was done by the event and a determination was made that the plant had not operated beyond the boundaries established by approved plant safety and transient analyses.

c. Any reasonable action to gain additional information has been considered.

The discussion of the qualifications and responsibilities of the personnel making the restart recommendation is included in sections 1.1.2, 1.1.3, and 1.1.6.

Criterion (c)

Once the preliminary cause of the event is determined, using control room supplied information, the plant personnel then needs to determine what, if any, corrective action(s) needs to be implemented. Such a decision can fall into these categories: (a) no corrective action is required; (b) corrective action is required but does not need to be performed before restart (i.e., Technical Specifications does not require action as a condition of restart); and (c) corrective action is required before restart.

Criterion (d)

If the operator determined that a particular system should have been initiated for a particular event, we need only establish that the system did indeed initiate and in the proper sequence. A detailed analysis of the actual performance of that system following an unscheduled shutdown is not a criterion for restart. Such a detailed analysis is accomplished through the normal surveillance testing

procedure done at regular intervals. Confidence in the accuracy of control room readout is provided by the routine maintenance and surveillance activities associated with engineered safety features, and normally scheduled and performed calibration activities associated with such devices. Adherence to these efforts mitigates against the need to enter into a complete recalibration (i.e pressure, flow, operating times, etc.) or performance reevaluation of the adequacy of system operation.

Criterion (e)

The final approval for restart is the responsibility of the Plant Superintendent-Nuclear or his designee. His decision is based upon the recommendations of the various plant departments such as Operations, Maintenance Plant Performance, Health Physics etc.

Sub-Item 2: "The responsibilities and authorities of personnel who will perform the review and analysis of these events "

Iowa Electric Response

The Operations Shift Supervisor has the responsibility and authority to complete and file the scram report, which includes a preliminary determination of the cause of the event, as well as approve any necessary Maintenance Action Requests (MAR) prior to commencement of the repair activities. The Maintenance Superintendent (or designee) has the responsibility to insure that all necessary maintenance activities required for restart have been satisfactorily performed in accordance with the applicable maintenance practices and procedures The Plant Performance Supervisor (or designee) has the responsibility to evaluate the performance of the Reactor Protection Neutron Monitoring and Control Rod Drive Systems. The Shift Technical Advisor (STA) has the responsibility to provide technical assistance to the operating staff and to evaluate plant conditions during and following plant transients or accidents. The STA also files a report which describes the event and makes a preliminary determination of the root cause. The Operations Supervisor and Operations Shift Supervisor have the responsibility to assure that the cause of the reactor scram has been satisfactorily determined and that all the maintenance items required for restart have been completed. The Technical Support Supervisor has the responsibility to review the reports of the various departments for completeness and consistency and prepares a summary report for the Plant Superintendent. The Plant Superintendent-Nuclear or his designee, the Assistant Plant Superintendent-Operations, has the responsibility to grant approval for plant restart based upon the recommendations in the Technical Support Supervisor's summary report

Sub-Item 3: "The necessary qualifications and training for the responsible personnel."

Iowa Electric Response

DAEC Technical Specification 6.3.1 requires that the qualification of individual members on the plant staff meet or exceed the qualifications referenced in ANSI N.18.1-1971 for comparable positions. These are described in detail in Section 13.1.3 of the DAEC UFSAR, except for the Maintenance Superintendent, who meets the qualifications of the Maintenance Manager described in ANSI N.18.1-1971. The STA shall have a bachelor degree or equivalent in a scientific or engineering discipline, with specific training in plant design and system response and analysis of plant transients and accidents, as required by Section 6.3.3 of the Technical Specifications. These requirements are based upon the NUREG-0737, Item I.A.1 guidelines.

Sub-Item 4: "The sources of plant information necessary to conduct the review and analysis. The sources of information should include the measures and equipment that provide the necessary detail and type of information to reconstruct the event accurately and in sufficient detail for proper understanding. (See Action 1.2)"

Iowa Electric Response

The following sources of information are available to aid in reconstructing the event and conducting the post-trip review:

- Panel Instruments: are used to verify status of various systems
  - meters: indicate system parameters such as pump speeds, system flow rates, system pressures, etc.
  - valve position lights: indicate isolation of systems or establishment of system flow path.
  - annunciators: indicate receipt of various system trip and alarm signals.

- Strip Chart Recorders: record the time history of various NSSS and BOP process variables, such as Reactor Pressure, Neutron Flux, Feedwater Temperature, etc.

- Process Computer Sequence-of-Events Recorder: indicates time signature at which various system trip setpoints were reached, such as, Reactor High Pressure, HPCI/RCIC Initiation, Turbine Stop Valve Closure, etc.

- Process Computer Post-Data Recall: provides a time history of selected NSSS analog variables for the time window beginning 5 minutes before until 5 minutes after the reactor trip and for 7 minutes before until 7 minutes after the trip for selected BOP variables.

- Operator Recall: provides verification of the above information particularly for the panel instrumentation.

The above sources of information are sufficient for isolating the system which initiated the transient, identifying the primary trip signal which caused the reactor scram, determining the on/off indication of engineered safety systems, and giving time history of various NSSS and BOP system process variables. All of these are used to help reconstruct the event and help to indicate the root cause. The final determination of the root cause requires inspection and testing of systems and/or components identified by the above information sources.

Sub-Item 5: "The methods and criteria for comparing the event information with known or expected plant behavior (e g that safety-related equipment operates as required by the Technical Specifications or other performance specifications related to the safety function)."

Iowa Electric Response

The DAEC operators are trained to recognize and respond to operating transients and accidents. Their training includes transient and accident analysis, as well as computer simulator training on transient and accident mitigation. Procedures are written to direct operator action in these situations and form the bases for the above training The training and experience of plant operators and their proven ability to recognize and deal with abnormal events serves as the primary method by which actual plant behavior is compared to expected plant behavior.

The Technical Support Group, in preparing their report of the event, as necessary, compares plant response to the limiting transients described in Chapter 15 of the UFSAR, DAEC Reload Analysis, and GE Standard Application for Reload Fuel (GESTAR-NEDE 24011-P) to determine that plant behaviour was bounded by these events and that no Technical Specification Safety Limits were exceeded In the course of this review, they verify that safety-related equipment performed as expected, i.e., that systems and equipment tripped or initiated upon reaching the required instrument setpoints and that the reactor responded as expected. Actual system performance is inferred from the regularly scheduled surveillance testing, i.e., that systems performed as required by Technical Specifications (flowrates, discharge pressure response times, etc).

Sub-Item 6: "The criteria for determining the need for independent assessment of an event (e.g a case in which the cause of the event cannot be positively identified, a competent group such as the Plant Operations Review Committee will be consulted prior to authorizing restart) and guidelines on the preservation of physical evidence (both hardware and software) to support independent analysis of the event."

Iowa Electric Response

If the cause of the reactor trip cannot be satisfactorily determined by the plant personnel, then additional Nuclear Generation Division support is requested. For complex equipment problems which cannot be successfully diagnosed or repaired by the plant maintenance staff, the equipment manufacturer's service organization is contacted If a Technical Specification Safety Limit is determined to be exceeded during the event then the Plant Operations Committee and the Iowa Electric Safety Committee will perform independent assessments of the event prior to plant restart. In such cases, the NRC must authorize restart as required by Technical Specification Section 6.7.

Pertinent documentation, such as the scram report, NSSS and BOP Logs, Strip Chart Recorder records, MARs. etc. are maintained by Plant Support Services in accordance with Administrative Control Procedure (ACP) 1402.1, "Records Management," and can be retrieved at a later date. The Technical Support group in addition to preparing a summary report for plant management describing the event its determined cause. and restart recommendation, must also prepare a Licensee Event Report (LER), as required by 10 CFR 50.73, for submission to the NRC Both of these documents are maintained and can be used to reconstruct the event at a later date. The STA also prepares a report after the event which can be used to reconstruct the event later. This report includes such information as the initial plant conditions, a description of the event, a preliminary cause of the event, the operator actions taken. maintenance recommendations and recommendations for future actions

Sub-Item 7: "Items 1 through 6 above are considered to be the basis for the establishment of a systematic method to assess unscheduled reactor shutdowns. The systematic safety assessment procedures compiled from the above items which are to be used in conducting the evaluation, should be in the report."

Iowa Electric Response

The process used at Iowa Electric for analyzing unscheduled reactor shutdowns is described in DAEC procedure 1410.8. "Post-Scram Review " (see Appendix I). The following is a brief summary of the procedure.

This procedure outlines the review program to analyze unscheduled reactor shutdowns and determine if the plant can be restarted safely Use of this procedure applies to automatic and manually initiated scrams that result in control rod movement.

The Operations Shift Supervisor. Shift Technical Advisor, Plant Performance Supervisor, Maintenance Superintendent and Radiation Protection Supervisor, or designees in their absence, will evaluate the scram relative to their areas of expertise and make recommendations for action and restart to the Technical Support Supervisor. The

Technical Support Supervisor will review the event and the information provided to him by the aforementioned plant sections The Technical Support Supervisor will summarize the conclusions, open items and recommendations for restart to the Plant Superintendent, or his designee in his absence. The Plant Superintendent is then responsible for reviewing the summarized information initiating action to resolve open items, and authorizing the Operations Department to begin restart activities.

The format of each department's evaluation or report is determined by the individual department The general content of each evaluation or report is as follows. The Scram Report prepared by the Operations Shift Supervisor includes a description of the pre-event conditions and the event itself, the plant response, plant data, the preliminary determination of the cause, any observed anomalies or problems, and recommendations for action. The Shift Technical Advisor Incident Report describes the event, the plant response a preliminary determination of the cause, any observed anomalies or problems. and recommendations for action The Plant Performance Supervisor makes an evaluation of the key reactor parameters in relation to the scram identifies any observed anomalies or problems. and makes recommendations for restart. The Maintenance Superintendent describes the equipment failures and repair activities for the equipment relevant to the scram, evaluates the potential for similar future failures. identifies any observed anomalies or problems and makes recommendations for restart.

The Technical Support Supervisor reviews the provided information for consistency, compatability, and completeness He ensures a satisfactory resolution is obtained for any discrepancies noted among the various plant sections. His primary focus is to ensure equipment and systems important to safety performed as designed, to ensure adequate consideration has been given to determine the root cause, to minimize the potential for future recurrence, to address generic implications and to determine the effect on safe operation of the plant.

Generic Letter Item 1.2: Post-Trip Review - Data and Information Capability

NRC Position

"Licensees and applicants shall have or have planned a capability to record, recall and display data and information to permit diagnosing the causes of unscheduled reactor shutdowns prior to restart and for ascertaining the proper functioning of safety-related equipment.

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A report shall be prepared which describes and justifies the adequacy of equipment for diagnosing an unscheduled reactor shutdown."

Iowa Electric Response

The information display and recording instrumentation systems installed at the DAEC are described in Chapter 7 of the Updated FSAR. These instrumentation systems were designed for the licensing requirements that existed at the time the original operating license was granted for the DAEC. This instrumentation has been expanded since the original licensing reviews as needed to meet the necessary licensing requirements, for example, NUREG-0737.

As the information requested in the NRC position is beyond the original licensing requirements, Iowa Electric has initiated a review to specifically identify information capability that assists in assessing the causes of unscheduled reactor shutdowns and the proper functioning of safety-related equipment. The result of this review is that current data and information capability is adequate for performing these tasks.

The following discussion describes the data and information capability for diagnosing unscheduled reactor shutdowns and verifying the proper functioning of safety-related equipment.

An unscheduled reactor shutdown is a shutdown that is automatically initiated by the Reactor Protection System, or manually by the operators in response to an abnormal event. The parameters that initiate an automatic scram are specified in Table 3.1-1 of the DAEC Technical Specifications.

In reconstruction of the event, the first step is to identify the parameter or circuitry that initiated the scram. This is determined from three primary sources of information:

i) Control Room Annunciators and Operator Observation
ii) Process and Alarm Computer Outputs and Strip Chart Recorder Records
iii) Circuitry Status Review (such as identifying de-energized relays in the Reactor Protection System)

These do not, however, provide the final identification of the root cause of the scram, as there are many scenarios by which each of the primary RPS trips given in Appendix A can be initiated. Review of mechanical and electrical drawings and system logic, coupled with component inspection and testing will continue to be the primary means by which the root cause of a scram is diagnosed. However, installed instrumentation will usually provide a preliminary indication of the root cause by isolating the system or component which initiated the event.

In addition to determining the root cause of the event, one must also verify that engineered safety systems performed as required prior to any restart activity. This involves determining that systems tripped or activated as required upon reaching the proper setpoints and that such actions were carried through to their logical conclusion, i.e., that systems isolated or flow paths were established by the proper functioning of valves, that pumps started, etc.

These are verified by the following sources of information:

a) Establishment of Initiation/Trip setpoint is verified by control room annunciator alarms and process computer alarm printer output.

b) Proper functioning of valves is verified by panel valve position indicating lights and process computer alarm printer output.

c) Proper functioning of pumps, turbines, heat exchangers, etc., are verified by panel indicating meters and strip chart recorders.

Expected system performance, such as flow rates, discharge pressures, start-up times, etc., is not directly demonstrated and must be inferred from the regularly scheduled surveillance testing of the equipment as required by Technical Specifications.

The following is an item by item response to the requests for information in Generic Letter Item 1.2.

Sub-Item 1.2.1: "Capability for assessing sequence of events (on-off indication)"

Iowa Electric Response

1) Brief Description of Equipment (e.g., plant computer, dedicated computer, strip chart)

Plant Strip Chart Recorders and the Process Computer support reconstructing the sequence of events. The Process Computer has approximately 1100 analog and digital inputs that are time sequenced on the alarm output printer. The alarm printer provides time signatures for these data points to the nearest second or cycle (1/60 of a sec.), depending on the alarm point priority, sequencing and computer scan class. Low priority computer inputs are stored in the computer during

periods of maximum printer demand and are subsequently printed out at a later time. A special routine on the Process Computer, known as the NSSS Post-Trip Log, provided digital values for several key parameters for the time window beginning 5 minutes before the reactor scram until 5 minutes after the scram. These parameters include Core Thermal Power, Total Core Flow, Reactor Water Level, Reactor Pressure, etc. The scan rate for each of these digital inputs is once every 5 seconds. A similar post-trip log of BOP variables is also provided by the computer, for the time window beginning 7 minutes before to 7 minutes after the scram at a scan rate of every 30 seconds. The selected variables include Turbine/Generator parameters, Feedwater System parameters and Condenser parameters. The Strip Chart Recorders provide such information as Neutron Flux, Recirculation Pump Flow, ECCS parameters, Feedwater and Condensate System parameters, Containment parameters, Radiation Monitoring, Ventilation System parameters and Turbine-Generator variables.

1.2.1.2 Parameters Monitored

A complete listing of computer points is given in Appendix A. The key NSSS and BOP parameters which receive the highest priority on the Alarm Printer are designated in the Appendix A list by scan addresses D500 and D600 respectively and by Scan Class (SC) of "S". The NSSS Post-Trip log variables are given in Appendix B. The BOP Post-Trip log variable list can also be found in Appendix B. The parameters monitored by the plant strip chart recorders are identified in Appendix C. The control room annunciators are depicted in Appendix D, by individual panel array.

1.2.1.3 Time Discrimination Between Events

The plant computer sequences events and identifies the time signatures of NSSS & BOP parameters, designated by the D500 or D600 series scan address in Appendix A, to the nearest cycle (1/60 of a second). The remaining computer parameters are displayed with time signatures to the nearest second. The discrimination of events on strip chart records is dependent on recorder speed (see Appendix C) and the time duration of the individual transient. The scan rate for the NSSS Post-Trip Log is once every 5 seconds, while the BOP Post-Trip Log scan rate is once every 30 seconds.

1.2.1.4 Format for Displaying Data and Information

A sample printout from the Process Computer Alarm Printer is included in Appendix E. The following is a brief description of the format. The date is given at the top of the page and beginning in the left-most column is the time signature in hours, minutes and seconds, followed by the cycle (if applicable), type of alarm point (e.g., SEQ = sequential, ALM = Alarm, NORM = normal), computer scan address, instrument description, and instrument status. Note that the primary variables are indented slightly to distinguish them from the remaining computer points. Also, a time signature beginining with the number "3"

indicates that the information was stored in the print buffer and is not real-time, (low priority computer points only).

Example printouts of the NSSS and BOP Post-Trip Logs are also provided in Appendix F. The time of the reactor trip is identified in the Title Banner, followed by a tabular listing of the parameters listed in Appendix B, identified by scan address, for the applicable time window and scan rate.

Plant Strip Chart Recorders are similar to those utilized elsewhere in the industry, consisting of pen and ink traces of analog variables on gridded paper.

1.2.1.5 Capability for Retention of Data and Information

Strip Chart records are retained in hard copy form. Computer Alarm printer records are retained on microfilm. Control Room Panel Annunciators require Operator recollection, the most important of which are logged in the operator logs and in the post-scram report

1.2.1.6 Power Source(s) (e.g., Class 1E, non-Class 1E, non-interruptable)

The Process Computer is powered by the un-interruptable Motor-Generator set, which is non-Class 1E The Strip Chart Recorders and Panel Annunciators receive power from various power sources.

Sub-Item 1.2.2: "Capability for assessing the time history of analog variables needed to determine the cause of reactor shutdowns, and the functioning of safety-related equipment."

1.2.2.1 Brief Description of Equipment (e.g., plant computer, dedicated computer, strip charts)

In addition to the sources described in Item 1.2.1.1 above, Control Room Indicating Meters and Valve Position Indicating Lights are used to verify the proper functioning of safety-related equipment.

1.2.2.2 Parameters Monitored, Sampling Rate, and Basis for Selecting Parameters and Sampling Rate

See Appendices C and A for the parameters monitored by Strip Chart Recorders and the Process Computer respectively A listing of Selected Control Room Indicating Meters and Valve Position Indicating Lights can be found in Appendix G.

The Analog and Post Scram Log Computer sampling rate depends on the Scan Class (SC) of the particular variable The scan class of each computer point is given in Appendix A and is translated as follows

SC 1 = 5 seconds

SC 2 = 15 seconds
SC 3 = 30 seconds
SC 4 = 60 seconds

Certain analog alarms have an immediate priority and are provided time signatures coinciding with the occurrence of the event. These are designated by Scan Class "S".

These parameters and sampling rate were chosen based upon the original recommendation of the NSSS and Turbine-Generator supplier and have been modified as the need for additional data points, information sources and changes in printer priority have been identified.

1.2.2.3 Duration of Time History (minutes before trip and minutes after trip)

Strip Chart Recorders and Control Room Indicating Meters and Valve Position Indicating Lights provide continous output. As discussed in Item 1.2.1.1, key parameters are stored by the NSSS Post-Trip Log and provided in 5 second intervals for 5 minutes before until 5 minutes after the scram. The BOP Post-Trip Log time window is 7 minutes before until 7 minutes after the scram and are provided in 30 second intervals.

1.2.2.4 Format for Displaying Data Including Scale (Readability) of Time Histories

See Item 1.2.1.4 for the description of computer printouts. See Appendix C for the scale of the various Strip Chart Recorders.

1.2.2.5 Capabililty for Retention of Data, Information and Physical Evidence (Both Hardware and Software)

Strip Chart records are retained in hard copy form, while Computer printouts are retained on microfilm. As with Panel Annunciators, Indicating Meters and Valve Position Indicating Lights require operator recollection and logging in the post-scram report for permanent retention.

1.2.2.6 Power Source(s) (e.g., Class 1E, non-Class 1E, non-interruptable)

See Item 1.2.1.6 above. Control Panel Meters and Valve Position Indicating Lights are powered from various sources.

Sub-Item 1.2.3: "Other Data and Information Provided to Assess the Cause of Unscheduled Reactor Shutdowns."

Operator observation of plant response and panel instrumentation, review of design documents, maintenance inspection and testing play vital roles in determining the root cause of reactor scrams.

Sub-Item 1.2.4: Schedule for Any Planned Changes to Existing Data and Information Capability."

Planned upgrades have been described in various licensing submittals and are included in the Iowa Electric Integrated Plan and Schedule. These improvements are beyond the scope of this Generic Letter and no credit will be taken for these changes with regard to the Salem ATWS concerns.

Generic Letter Item 2.1: Equipment Classification and Vendor Interface (Reactor Trip System Components)

NRC Position:

Sub-Item 1: "Licensees and applicants shall confirm that all components whose functioning is required to trip the reactor are identified as safety-related on documents procedures, and information handling systems used in the plant to control safety-related activities, including maintenance, work orders and parts replacement."

Iowa Electric Response:

NUREG-1000 notes that the Reactor Trip System is the system that initiates a scram, including sensors, power supplies etc., as described in Section 3.1.2.5 of NUREG-1000. The GE Boiling Water Reactor (BWR) Trip System design differs from the design of Pressurized Water Reactors. The GE Reactor Trip System consists of redundant plant process instrumentation that feeds a one out of two taken twice logic that initiates a reactor trip. The trip of the scram logic relays deenergize solenoid-operated scram pilot valves which in turn vent the air from the scram valve diaphragms causing insertion of the control rods. These components which carry out this process are contained within several systems of a BWR rather than a single system called a reactor trip system. Instead GE has identified those systems which perform the reactor trip function (RTF) for the DAEC

(a) The Neutron Monitoring System, Process Radiation Monitoring System, Control Rod Drive System and Nuclear Boiler System provide the sensor inputs to the Reactor Protection System. Also, several sensors are contained within the Reactor Protection System itself.

(b) The Reactor Protection System contains the relay logic, power supplies, etc. for de-energizing the scram pilot valve solenoids

(c) The Control Rod Drive System contains the scram pilot valves which insert the control rods completing the initiation of a scram.

Since creation of a Reactor Trip System (RTS) would cause confusion with existing plant system definitions, Iowa Electric has decided to respond to this item in the Generic Letter by using the RTF approach. The specific components that form the RTS will not be separately identified.

Iowa Electric maintains a single document, Q-200 Quality List to define the safety classification of components installed at the Duane Arnold Energy Center. All documents and procedures, including those related to maintenance, work orders and parts replacement activities rely on the Q-200 Quality List for safety classification of components. Therefore, Iowa Electric will only need to review the Q-200 Quality List to respond to this item.

The NRC's concern, based upon the incident at the Salem Nuclear Station, is that components required to trip the reactor are incorrectly designated as non-safety related on equipment classification lists. The NSSS supplier (General Electric) has supplied Iowa Electric with a list of systems which are part of the RTF. Therefore, Iowa Electric will verify that all RTF components that are designated as non-safety on the Q-200 Quality List are, indeed, non-safety related. This review is scheduled to be completed by July of this year. Any corrections to the Q-200 Quality List, which are required as a result of this review, will be made in accordance with Iowa Electric's Quality Assurance Procedures on, or before, December 31, 1984.

Sub-Item 2: "In addition, for these components, licensees and applicants shall establish implement and maintain a continuing program to ensure that vendor information is complete, current and controlled throughout the life of the plant, and appropriately referenced or incorporated in plant instructions and procedures "

Iowa Electric Response:

Iowa Electric primarily relies upon the GE Customer Services Organization to obtain vendor information on the RTF components, as well as the remaining systems within the GE scope of supply. For GE supplied RTF components GE has, in addition to urgent utility communication procedures and the reporting requirements of 10 CFR 21 various service information systems which convey special information to BWR owner-operators to help them service, maintain, or operate their BWRs in a more effective way so as to result in improved performance lessening of outage time or prevention of possible operating problems. Service Information Letters, (SILs) in particular are generic in nature, may address both equipment and/or procedures, and may even recommend action on equipment not originally furnished by General Electric. These systems therefore, provide channels for formal communication on all recognized safety problems/concerns and channels for special, generic concerns, problems and recommendations.

The process by which this information is made available to utility personnel for review is described in Nuclear Generation Division (NGD) procedure 102.1, "Review of Industry-Related Documents." This also covers the handling of technical information from other key sources as well, such as INPO/NSAC Significant Operating Experience Reports (SOER) and NRC IE Bulletins Circulars, and Information Notices

The above program ensures that vendor information on RTF components is current, complete and controlled throughout the life of the plant The The following paragraphs describe various GE communication channels

Safety Concerns

Safety concerns are dealt with in the following manner:

10 CFR 21 Reporting - The General Electric Company has established a reporting system to handle safety concerns that complies with the requirements of 10 CFR 21.

Urgent Communications - In addition to the 10 CFR 21 reports, a procedure for handling urgent communications to BWR owner/operators has been established for use in providing fast notification of safety concerns. These communications are usually in the form of a short letter which provides a brief explanation and advice or precautionary measures to be observed to avoid a potential operational hazards. Due to their urgent nature, these communications are processed to operating plants by the most effective method (i.e., telex, telecopy, cable, special mail handling, etc.). Verification of receipt is usually handled by telephone confirmation.

Other GE Information Systems

Several other information systems exist to provide channels of communication for various types of information:

Service Information Letters (SILs) - These documents usually provide recommendations for equipment modification, plant design improvements or changes to procedures to improve plant performance. They have a positive feedback mechanism for guaranteeing receipt of the information by the utility. The utility returns the cover letter, indicating receipt and proposed resolution of the SIL. The status of SILs is also discussed at the quarterly customer service meeting between GE and the utility.

Service Advice Letters - These documents are issued by GE Product Departments other than the San Jose based Nuclear Energy Product Departments and are used to provide notification of product problems and/or service information on a broad range of GE consumer and industrial products. Those Service Advice Letters that are recognized by the issuing product department as applying to devices used in nuclear plants are specially identified and are flagged for distribution to all nuclear plants. Utilities can verify that they have received any applicable SALs by contacting their local GE district office and obtaining the most current index.

Turbine Information Letters (TILs) - TILs are issued by GE's Large Steam Turbine Generator Department to provide descriptions that will mitigate problems or improve product performance. As with SILs, TILs have a positive feedback mechanism of returning the cover letter indicating utility receipt and proposed resolution of the TIL.

Operation and Maintenance Manuals - These documents are issued by all GE product departments to provide instructions for installation, operation and maintenance of GE designed repairable equipment and systems. Final revisions to the manuals provided for the NSSS scope of supply are delivered as contractually required, but usually are shipped at about the time of plant commercial operation.

Application Information Documents (AID's) - are white papers that describe potential operating problems and provide design changes or operating recommendations to avoid them. These documents are primarily aimed at requisition plants, but are also forwarded to operating plants when they have any applicability to those plants.

Field Disposition Instructions (FDIs) - This system is used to communicate engineering instructions to the field that implement approved design modifications of GE supplied NSSS equipment or procedures, authorize field work, and confirm that the tasks have been completed on requisition plants.

Field Deviation Disposition Requests (FDDR's) - This system is used to communicate requests for nonconformance dispositions on GE supplied NSSS equipment or service on requisition plants.

Generic Letter Item 2.2.1: Equipment Classification (Programs for All Safety-Related Components)

NRC Position

"For equipment classification, licensees and applicants shall describe their program for ensuring that all components of safety-related systems necessary for accomplishing required safety functions are identified as safety-related on documents, procedures, and information handling systems used in the plant to control safety-related activities, including maintenance, work orders and replacement parts."

Sub-Item 1: "The criteria for identifying components as safety-related within systems currently classified as safety-related."

Iowa Electric Response

The current criteria used for identifying components as safety-related are defined in the Iowa Electric Corporate Quality Assurance Manual, Chapter 2, Section 2.2.1, "Quality Level I."

Equipment purchased as part of the original plant were procured and classified in accordance with the Updated FSAR criteria.

Sub-Item 2: "A description of the information handling system used to identify safety-related components (e.g., computerized equipment list) and the methods used for its development and validation."

Iowa Electric Response

The Iowa Electric information handling system used to identify safety-related components is a computerized equipment list known as the "Q-200" list. The Design Engineering Department has the responsibility for developing and maintaining this list. Administrative Control Procedure (ACP) 1202.6 Section 6.2 "Safety Evaluations" describes the process for making modifications to the Q-200 List, while ACP 1202.8 "Safety-Related Classification List" details the process for making changes to the information handling system.

Iowa Electric has recently implemented a new Quality Assurance Program. As part of this program a new set of equipment classifications has been developed. We are developing a procedure, NGD 102.4, "Quality Level Designation", which provides guidelines to be used by all organizations which support the DAEC in determining the Quality Level of systems, structures and components. We currently expect to have this procedure issued by the end of April of this year. This will necessitate that the Q-200 List be updated to correspond to these new Quality Level definitions. As part of this update process, the current Q-200 List of safety-related components will undergo reverification. This update program is currently scheduled to begin May 1984 and tentatively scheduled to be completed by the end of 1985.

As part of the BWROG effort previously described, the committee has contracted GE to help develop guidelines for classifying equipment as safety-related. These guidelines can be used as an educational tool for instructing utility personnel in the classification of components. The BWROG committee has made these guidelines available to utilities in its final report. Iowa Electric will review this information and incorporate it into the above procedures, as deemed appropriate.

Sub-Item 3: "A description of the process by which station personnel use this information handling system to determine that an activity is safety-related and what procedures for maintenance, surveillance, parts replacement and other activities defined in the introduction to 10 CFR 50, Appendix B, apply to safety-related components."

Iowa Electric Response

Determination of safety-related activities is based upon the component's classification on the Q-200 List. If a component is classified as safety-related, then testing and maintenance activities on that component, if the activity is determined to affect the safety-related function of the component, are classified as safety-related.

The control of plant work on safety-related components is described by DAEC procedure 1408.1, "Corrective Maintenance." This procedure addresses the controls for the use of maintenance instructions, parts replacement, quality control, testing, and return to service for safety-related corrective maintenance. Preventative maintenance activities are controlled by ACP 1406.1, "Preventative Maintenance Program."

The Q-200 update program described previously is part of a larger program for installing an equipment database management system called the Computerized History and Maintenance Planning System (CHAMPS) at the DAEC. CHAMPS will use the updated Q-200 List as part of its engineering database for scheduling the maintenance and surveillance testing of safety-related components. CHAMPS will be an improvement in the current information handling system for safety-related activities, in that all the required information for performing maintenance and surveillance testing of safety-related components will be included in the centralized CHAMPS database and thus more readily available to plant personnel.

Sub-Item 4: "A description of the management controls utilized to verify that the procedures for preparation, validation and routine utilization of the information handling system have been followed."

Iowa Electric Response

DAEC procedure 1408.1 and ACP 1406.1, described above, contain the management controls for "the routine utilization of the information

handling system." The Quality Control group has the responsibility independently reviewing all safety-related requests for corrective maintenance, as well as the assigned maintenance and post-maintenance test prior to performance of the work.

A Supervising Engineer, Nuclear Projects has the responsiblity for reviewing and approving all changes to the Q-200 List as described in ACP 1202.8, (see Sub-Item 2).

The overall management control for verifying that all procedures dealing with safety-related activities have been followed correctly is performed by the Quality Assurance Department's Audit program, as described in Section 17.2.18 of the Updated FSAR (UFSAR).

The CHAMPS program described earlier will augment management control over the routine utilization of the information handling system.

Sub-Item 5: "A demonstration that appropriate design verification and qualification testing is specified for procurement of safety-related components. The specifications shall include qualification testing for expected safety service conditions and provide support for the licensees' receipt of testing documentation to support the limits of life recommended by the supplier."

Iowa Electric Response

Nuclear Generation Division procedure 104.1, "Preparation, Review and Approval of Purchase Requisitions" requires that the appropriate vendor documentation be specified when procuring safety-related equipment. The Design Engineering Department, through procedure 1204.1, "Preparation and Approval of Engineering Procurement Specification" is responsible for requesting the necessary quality verification and test results documents from the equipment vendor. Once these documents are received from the vendor they are reviewed by Design Engineering for adequacy, prior to their inclusion in the Master Document List; per Nuclear Generation Division procedure 104.3, "Review of Supplier Technical Documents."

Generic Letter Item 2.2.2: Vendor Interface (Programs for All Safety-Related Components)

NRC Position

"For vendor interface, licensees and applicants shall establish, implement and maintain a continuing program to ensure that vendor information for safety-related components is complete, current and controlled throughout the life of their plants, and appropriately referenced or incorporated in plant instructions and procedures, etc."

Iowa Electric Response

In response to this item in the Generic Letter, Iowa Electric joined with 55 other nuclear utilities and formed an INPO Nuclear Utility Task Action Committee (NUTAC). This committee has developed and approved an industry-wide Vendor Equipment Technical Information Program (VETIP), which is described in detail in Appendix H. This program promotes interaction among the major organizations involved in the generation of commercial nuclear power. As illustrated in Figure 1 to Appendix H, individual utilities exchange and disemminate information on safety-related systems and components with equipment vendors, INPO, NRC and other utilities. The primary purpose of the VETIP is to ensure that current information and data will be made available to those plant personnel responsible for developing and maintaining plant instructions and procedures. These information systems and programs currently exist and are capable of identifying to the industry precursors that could lead to a Salem-type event.

In order to effectively control vendor information in-house, Iowa Electric is developing an on-site vendor library based upon the INPO "Good Practice," (MA-304), "Control of Vendor Manuals." The vendor library will ensure proper and timely review and control of vendor technical information, through Nuclear Generation Division (NGD) procedure 106.9, "Control of Vendor Technical Information", currently being written. The library, upon receipt of the information, shall ensure proper review for the following: plant, procedure and CHAMPS Engineering Data Base applicability, as well as maintain control of the document review process. The review process is controlled by NGD procedure 104.3, "Review of Supplier Technical Documents", prior to the information being incorporated into the plant Master Document List, CHAMPS Engineer Data Base, or maintenance and testing procedures. Upon completion of the review process, the necessary modifications in the plant information systems will be promulgated and implemented in a timely manner. All applicable plant maintenance procedures will be modified per DAEC 1406.3 "Revision of Procedures and Instructions."

As described in our response to Generic Letter Item 2.1.2, certain industry information, such as GE SILs and TILs, NRC Bulletins and Information Notices, INPO Significant Event Reports (SERs), and Significant Operating Experience Reports (SOERs) are controlled and

reviewed for applicability per NGD procedure 102.1, "Review of Industry-Related Documents", prior to their incorporation into plant operating, maintenance, or testing procedures.

As the in-house vendor manuals are collected and catalogued, we will make a good faith effort to determine that vendor information is current and complete: a form letter will be issued to the equipment supplier requesting that any updated information, such as manual revisions, errata and addendum sheets, or service bulletin letters, be provided to the library. Upon receipt of such information, it will be catalogued and routed for review per NGD 106.9, described above.

In order to insure that this vendor information is properly referenced in plant procedures, an index will be included in the CHAMPS Engineering Data Base cross-referencing the manuals to the applicable testing and maintenance procedures.

The schedule for establishing the vendor information library is closely coupled with the CHAMPS program described earlier, as vendor manual identification will be included in the CHAMPS Engineering Data Base. This data collection for CHAMPS is currently scheduled to begin in May 1984 and tentatively scheduled to be completed in 1986. The building which will house the library is currently under construction and is scheduled to be completed by September. We expect the library to be functional by the end of this year.

Generic Letter Item 3.1: Post-Maintenance Testing (Reactor Trip System Components)

NRC Position

"The following actions are applicable to post-maintenance testing:"

Sub-Item 1: "Licensees and applicants shall submit the results of their review of test and maintenance procedures and Technical Specifications to assure that post-maintenance operability testing of safety-related components in the reactor trip system is required to be conducted and that the testing demonstrates that the equipment is capable of performing its safety functions before being returned to service "

Iowa Electric Response

Iowa Electric's shares the staff's concern that safety-related RTF components be tested after maintenance to verify proper operation To ensure this, Iowa Electric has taken the alternate position that each maintenance activity should be uniquely analyzed to determine the correct post-maintenance testing. DAEC procedure 1408.1. "Corrective Maintenance," requires appropriate post-maintenance testing be assigned during the initial review and acceptance of a maintenance request on all safety-related components. The Operations Shift Supervisor determines the necessary post-maintenance test from Technical Specifications, previous maintenance experience and other applicable documentation, based on the nature of the maintenance and its effect on the equipment's operability. The assigned test is reviewed and approved for applicability by the Operations Supervisor prior to the performance of the maintenance activity. Sometimes post-maintenance testing is not required to be performed based upon the nature of the maintenance activity. It is required that the approved test be satisfactorily performed, and the results approved by the Maintenance Supervisor (or designee) and a Senior Licensed Operator prior to the system or component being declared operable. Where applicable, the post-maintenance test often consists of performing the regular Surveillance Test Procedure (STP) for that system or component. The Plant Performance Department performs an independent review of completed STPs to verify completeness, validity and proper results The review of STP's for adequacy is a continual effort at Iowa Electric as part of our plant surveillance program, as described in ACP 1408.3. "Surveillance Program."

This position is justified by the complexity of post-maintenance testing. It is not feasible to foresee every possible maintenance activity and, therefore, any effort to incorporate post-maintenance testing requirements into maintenance procedures would have to be generic. Generic requirements have several, major problems: first, the generic post-maintenance testing requirements may not adequately address the maintenance activity actually performed: second, the

generic requirement may be much more extensive than is actually required which could lead to component "wear-out" due to overtesting lastly, revisions to generic requirements would lag any updated information such as previous testing experience, vendor recommendation or other applicable industry sources (INPO, NSAC, etc.), due to the time delay incurred by the administrative process for revising procedures. The inescapable conclusion is that only unique analysis of each maintenance activity can ensure every component is adequately tested, using the latest information, to determine that it is capable of performing its safety function prior to being returned to service.

Sub-Item 2: "Licensees and applicants shall submit the results of their check of vendor and engineering recommendations to ensure that any appropriate test guidance is included in the test and maintenance procedures or the Technical Specifications, where required."

Iowa Electric Response

The components that perform the Reactor Trip Function (RTF) are within the GE scope of supply. All pertinent testing guidance was included in the Operations and Maintenance Manuals (GEKs) provided by GE at plant startup. The GEKs were used to write the maintenance and test procedures on the RTF components. In order to ensure that these procedures have been updated to reflect recommendations made since that time, Iowa Electric will review industry recommendations on RTF components received through the communication channels described in Item 2.1, as well as other applicable sources (INPO reports, IE Bulletins and Information Notices, etc) for post-maintenance testing applicability. We currently anticipate this effort to be completed by the first quarter of 1985.

Sub-Item 3: "Licensees and applicants shall identify, if applicable any post-maintenance test requirements in existing Technical Specifications which can be demonstrated to degrade rather than enhance safety Appropriate changes to these test requirements, with supporting justification, shall be submitted for staff approval. (Note that action 4.5 discusses on-line system functional testing.)"

Iowa Electric Response

Iowa Electric has completed its review of the existing post-maintenance test requirements in the Technical Specifications and have found none which we believe degrade plant safety.

Generic Letter Item 3.2: Post-Maintenance Testing (All Other Safety-Related Components)

NRC Position

"The following actions are applicable to post-maintenance testing:"

Sub-Item 1: "Licensees and applicants shall submit a report documenting the extending of test and maintenance procedures and Technical Specifications review to assure that post-maintenance operability testing of all safety-related equipment is required to be conducted and that the testing demonstrates that the equipment is capable of performing its safety functions before being returned to service."

Iowa Electric Response

As previously described in our response to Generic Letter Item 3.1, appropriate post-maintenance testing of all safety-related equipment is conducted and such tests are reviewed for adequacy. In addition, Section 4.6.G.2 of the DAEC Technical Specifications requires that appropriate inservice testing of certain, specified pumps and valves be conducted in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (except where NRC relief has been granted). This requirement is administered by procedure DAEC 1407.3, "ASME Pump and Valve Testing," assures that the equipment is capable of performing its safety function prior to being returned to service.

Sub-Item 2: "Licensees and applicants shall submit the results of their check of vendor and engineering recommendations to ensure that any appropriate test guidance is included in the test and maintenance procedures or the Technical Specifications where required."

Iowa Electric Response

As part of the review described in Item 3.1.2, we will review industry information GE as well as INPO & NRC sources relating to the remaining safety-related components within the GE scope of supply. For other vendor supplied safety-related components we will review applicable vendor recommendations, as well as other industry sources (e.g., NRC IE Bulletins and Information Notices and INPO NPRDS, SEE-IN, SOER reports) for post-maintenance testing applicability. Our present schedule for completing this review is the end of 1985.

Sub-Item 3: "Licensees and applicants shall identify, if applicable any post-maintenance test requirements in existing Technical Specifications which are perceived to degrade rather than enhance safety. Appropriate changes to these test requirements, with supporting justification, shall be submitted for staff approval."

Iowa Electric Response

Iowa Electric has completed its review of the existing post-maintenance test requirements in the Technical Specifications and have found none which are perceived to degrade plant safety.

Generic Letter Item 4.1: Reactor Trip System Reliability (Vendor-Related Modifications)

NRC Position

"All vendor-recommended reactor trip breaker modifications shall be reviewed to verify that either: (1) each modification has, in fact, been implemented; or (2) a written evaluation of the technical reasons for not implementing a modification exists.

For example, the modifications recommended by Westinghouse in NCD-Elec-18 for the DB-50 breakers and a March 31, 1983, letter for the DS-416 breakers shall be implemented or a justification for not implementing shall be made available. Modifications not previously made shall be incorporated or a written evaluation shall be provided."

Iowa Electric Response

This Generic Letter Item applies only to PWR licensees and OL applicants. The Duane Arnold Energy Center is a boiling water type reactor and, thus, the above position is not applicable to Iowa Electric.

Generic Letter Item 4.2: Reactor Trip System Reliability (Preventative Maintenance and Surveillance Program for Reactor Trip Breakers)

NRC Position

"Licensees and applicants shall describe their preventative maintenance and surveillance program to ensure reliable reactor trip breaker operation. The program shall include the following:

1. A planned program of periodic maintenance, including lubrication, housekeeping, and other items recommended by the equipment supplier.

2. Trending of parameters affecting operation and measured during testing to forecast degradation of operability.

3. Life testing of the breakers (including the trip attachments) on an acceptable sample size.

4. Periodic replacement of breakers or components consistent with demonstrated life cycles."

Iowa Electric Response

As with Generic Letter Item 4.1, this position applies only to PWR licensees and OL applicants and, therefore, is not applicable to Iowa Electric.

Generic Letter Item 4.3: Reactor Trip System Reliability (Automatic Actuation of Shunt Trip Attachment for Westinghouse and B&W Plants)

NRC Position

"Westinghouse and B&W reactors shall be modified by providing automatic reactor trip system actuation of the breaker shunt trip attachments. The shunt trip attachment shall be considered safety-related (Class IE)."

Iowa Electric Response

The Duane Arnold Energy Center is a Boiling Water Reactor manufactured by the General Electric Company and, therefore, the above position is not applicable to Iowa Electric.

Generic Letter Item 4.4: Reactor Trip System Reliability (Improvements in Maintenance and Test Procedures for B&W Plants)

NRC Position

"Licensees and applicants with B&W reactors shall apply safety-related maintenance and test procedures to the diverse reactor trip feature provided by interrupting power to control rods through the silicon controlled rectifiers."

Iowa Electric Response

As stated in our response to Generic Letter Item 4.3, the Duane Arnold Energy Center was manufactured by the General Electric Company and, therefore, the above position does not apply to Iowa Electric.

Generic Letter Item 4.5: Reactor Trip System Reliability (System Functional Testing)

NRC Position

"On-line functional testing of the reactor trip system, including independent testing of the diverse trip features, shall be performed on all plants."

Sub-Item 1: "The diverse trip features to be tested include the breaker undervoltage and shunt trip features on Westinghouse, B&W (see Action 4.3 above) and CE plants; the circuitry used for power interruption with the silicon controlled rectifiers on B&W plants (see Action 4.4 above); and the scram pilot valve and backup scram valves (including all initiating circuitry) on GE plants."

Iowa Electric Response:

The DAEC Reactor Protection System (RPS) design complies with all applicable regulatory requirements for the reactor trip system.

A review of the DAEC RPS on-line functional testing and testing intervals was performed and found to be consistent with achieving a high scram system reliability. The following is a summary of the on-line functional testing and testing intervals performed on the RPS.

On-line channel functional testing of multiple and diverse reactor transient trip sensors are performed monthly. Average Power Range Monitor and Intermediate Range Monitor reactor trip signal channels are functionally tested prior to reactor start-up and weekly thereafter. The multiple and diverse Scram Discharge Volume High Water Level trips are functionally tested quarterly. Based on the required trip sensor channel tests discussed above, each scram contactor which actuates the scram pilot solenoid valves is tested at least 11 times per month. The simple operation of the scram contactors minimizes concerns of wear and frequent testing assures that any failures are detected early. The Scram Pilot Solenoid Valves which are actuated by the scram contactors are all tested after core alterations and are tested following maintenance. Redundant Electrical Protection Assemblies (EPAs) protect the Scram Pilot Solenoid Valves from low voltage chattering (and the associated potential consequence of accelerated wear). The EPAs are functionally tested every 6 months and calibrated once per cycle. These surveillance testing requirements related to the Scram Pilot Solenoid Valves assure that the probability of undetected failures of these independently acting solenoid valves is small. In summary, the current Reactor Protection System on-line surveillance testing requirement, in conjunction with multiple and diverse scram sensors, assure that the probability of failure of enough control rods to prevent reactor shutdown is negligible.

Sub-Item 2: "Plants not currently designed to permit periodic on-line testing shall justify not making modifications to permit such testing. Alternatives to on-line testing proposed by licensees will be considered where special circumstances exist and where the objective of high reliability can be met in another way."

Iowa Electric Response

On-line functional testing of back-up scram valves in GE designed plants is not possible without major system modifications.

Therefore, Iowa Electric proposed the following alternative:

> Independent testing of each Back-up Pilot scram solenoid valve will be added to the plant operating procedures and will be performed during each refueling outage.

The acceptability of this level of testing was confirmed by the NRC in NUREG-0979, "Safety Evaluation Report Related to the Fuel Design Approval of the GESSAR II, BWR/6 Nuclear Island Design."

The following is a justification for why modifications to permit such testing need not be made.

The back-up scram valves have been added as an additional improvement in response to an already extremely remote event and are not required by applicable regulatory requirements. Also no credit is taken for the functioning of the back-up scram valves in any safety analysis. The back-up scram function has been designed to be highly reliable by the use of redundant valves and actuating logic, thus frequent testing, i.e., on-line testing, is not required. The primary scram pilot valve solenoids which are normally energized and tested frequently are diverse to the back-up scram solenoids which are normally de-energized and cycled infrequently. Thus a lower testing frequency of the back-up scram valves is warranted as the potential for a common cause or human error affecting the primary and back-up RPS is reduced.

In the Generic Letter the back-up scram valves in BWR's are implied to be comparable to the shunt trip device in PWR designs, and as such require the same on-line testing capability. On the contrary, the reliability of the back-up scram valves is not as critical as that of the shunt trip device, due to the higher reliability of the primary scram mechanism in the BWR design over that of the PWR. This is demonstrated by the fact that each control rod drive in the BWR has 2 scram pilot valves, only one of which need function to insert the control rod. In addition, it has been shown that only 69% of the control rods need to be inserted to shutdown the reactor, (see reference 2). Thus, in order to prevent a reactor shutdown, multiple failures of scram pilot valves (well over 100) must occur: whereas only 2 undervoltage trip devices need fail in the PWR design. Therefore, the reliability of the diverse trip feature, i.e., the back-up scram

valve, in the BWR is not as critical as that of the shunt trip device in PWR's, and extension of on-line testing requirements to the BWR, based upon a similar requirement for PWR's is not warranted.

Sub-Item 3: "Existing intervals for on-line functional testing required by Technical Specifications shall be reviewed to determine that the intervals are consistent with achieving high reactor trip system availability when accounting for considerations such as:

1. uncertainties in component failure rates
2. uncertainty in common mode failure rates
3. reduced redundancy during testing
4. operator errors during testing
5. component "wear-out" caused by the testing

Iowa Electric Response

Reactor Protection System and Control Rod Drive System test intervals have been developed in the DAEC Technical Specifications to provide early identification of component failures during stand-by operation and to ensure that any indication of systematic problems will be identified and corrective action initiated on a timely basis. By identifying component failures and any systematic problems early in reactor operation, corrective actions can be taken to ensure that systems achieve and maintain high scram system reliability. The purpose of this evaluation is to review the current DAEC on-line functional testing for the RPS and CRD systems required by Technical Specifications to verify that testing intervals are consistent with achieving high scram system reliability. It is concluded from this evaluation that the current DAEC on-line functional testing intervals for the RPS and CRD system are consistent with achieving a high scram system reliability.

CHANNEL FUNCTIONAL TEST

Channel functional tests are performed monthly for the following sensor trips:

- Reactor Vessel Dome Pressure-High
- Reactor Vessel Water Level-Low
- Main Steam Line Isolation Valve-Closure
- Main Steam Line Radiation-High
- Drywell Pressure-High
- Turbine Control Valve Fast Closure, Control Oil Pressure-Low
- Turbine Stop Valve-Closure

Channel functional tests are also performed for Average Power Range Monitors weekly as well as prior to startup. Intermediate Range Monitors are functionally tested weekly in all Reactor modes, except "Run", as well as prior to startup.

In References 1 and 2, it is shown that each of the above plant variables used to initiate a protective function is backed up by a completely different plant variable. In fact, it can be seen from Table 1 that for the most frequent transients, scram is initiated by three diverse sensors in all but one case (regulator failure-primary pressure increase which is initiated by two diverse sensors). This indicates that adequate redundancy exists in the design to provide protection against multiple independent sensor failures. Also, diversity among sensor types reduces the potential for common cause failures, failures due to human error, and increases in failure rate due to wearout. A pictorial representation of the RPS logic configuration with the frequency of channel functional tests is provided in Figure 1.

Each sensor channel functional test includes full actuation of the associated logic, the two output scram contactors in each channel, and the individual CRD scram air pilot valve solenoids for the associated logic division (solenoids from both logic Division A and B are required for scram initiation). Based on the sensor channel tests, the scram contactor is tested at least 11 times per month and thus the pilot valve solenoid actuation (de-energized) is tested at least 22 times per month once for each of the two scram pilot valves associated with each CRD.

The most credible failures within the RPS logic will de-energize a set of scram solenoids which causes a half scram, i.e., one of the two scram solenoids required for scram initiation is de-energized at some or all hydraulic control units. These failures would be "SAFE" failures that would increase the probability of plant shutdown.

The less credible logic failures which prevent a channel from de-energizing will be detected during channel functional test in compliance with Technical Specification requirements. The frequency of tests described above ensures that an increase in failure rate due to a wearout condition or a common cause failure potential could be detected early and corrective action taken before the failure condition becomes systematic.

BACKUP SCRAM LOGIC

In addition to the primary RPS scram logic, a backup scram logic is provided in the RPS. The backup scram function is accomplished by two air operated solenoid valves which isolate the main air supply and vent the air supply header which connects to the individual Hydraulic Control Units. The backup scram valves are redundant valves with redundant trip signals from both RPS logic A and B. The logic is diverse from the primary RPS since the backup scram valve solenoids are energized and D.C. power to trip versus the primary scram pilot valves which are de-energized to trip and A.C. powered. Although one-half of the backup scram logic is actuated for each valve during channel functional tests, the only time the backup scram solenoids are actuated is when a complete scram signal is initiated. Plant procedures will be modified to require an independent test of each backup scram solenoid valve during refueling outages.

1. The backup scram function is incorporated as an additional improvement in response to an already extremely remote event and is not required by applicable regulatory requirements.

2. The backup scram function has been designed to be highly reliable by use of redundant valves and actuating logic.

3. Testing during operation would require either a plant scram or test procedures that have a potential for human error caused failures to the primary RPS.

4. The primary scram pilot valve solenoids which are normally energized and tested frequently are diverse to the backup scram solenoids which are normally de-energized and not cycled frequently Due to the lower testing frequency of the backup scram valves, the potential for a common cause or human error affecting the primary and backup RPS is reduced.

OTHER CHANNEL FUNCTIONAL TESTS

Other channel functional tests include quarterly testing of the Scram Discharge Volume (SDV) Water Level-High trip and manual scram trip and test of the reactor mode switch in the shutdown position every refueling (at least once every operating cycle). The first two trips involve on-line testing and the latter mode switch test can only be conducted during reactor shutdown. The manual scram trip can be tested on-line without creating a scram. The testing frequency for this trip is considered adequate based on the automatic trips and alternate means of manually scramming the reactor.

The quarterly testing of the SDV Water Level-High trip is considered adequate based on the current designed redundancy and diversity incorporated into the system. There are two diverse and redundant sets of level sensors which scram the reactor in the unlikely event of high water level in the SDV during power operation. These trips are designed to allow sufficient scram water discharge volume given the scram trip point is reached.

SCRAM INSERTION TESTS

The following tests of the scram insertion times are required by the DAEC Technical Specifications:

Number of Control Rods	Frequency
1) 100%	After core alterations
2) Specific Rods	After maintenance or modifications affecting scram insertion times

Reference 2 concluded that reactor shutdown can be achieved if at least 50% of the control rods in checkerboard pattern and 69% in a random pattern are inserted in the core. The probability of independent

failure of enough rods to prevent shutdown is negligible. The most unlikely type of failure would be some common cause mechanism that if undetected over a long period of time could cause unsafe shutdown. The surveillance requirements given above adequately ensures that a failure mechanism affecting several individual drives (considered to be very remote) would not go undetected. One of the major features that ensures that several drives do not fail at one time due to wearout or a common cause is the staggered maintenance and overhaul of selected CRDs or Hydraulic Control Units (HCUs) at refueling outages. This ensures a mix of drives by age, component lot, maintenance time and servicing personnel, and testing.

The scram insertion time tests include, in addition to drive timing and insertion capability, a test of operability of the HCU scram insert and discharge valves including associated scram air pilot valves. As stated in the previous paragraph, the required frequency of testing given in the Technical Specification ensures that a systematic failure mechanism in the HCUs would be detected early enough and corrective action taken before the condition becomes a critical failure preventing scram.

REFERENCES

1. NEDO-1-189, "An Analysis of Functional Common-Mode Failures in GE BWR Protection and Control Instrumentation," L.G. Frederick, et al, July 1970.

2. "BWR Scram System Reliability Analysis," W. P. Sullivan, et al, September 30, 1976 (Transmitted in letter from E. A. Hughes (GE) to D. F. Ross (NRC), "General Electric Company ATWS Reliability Report," September 30, 1976).

3. Required Actions Based on Generic Implications of Salem ATWS Events, D. G. Eisenhut to Operating Reactor Licensees, July 8, 1983, NRC Generic Letter 83-28.

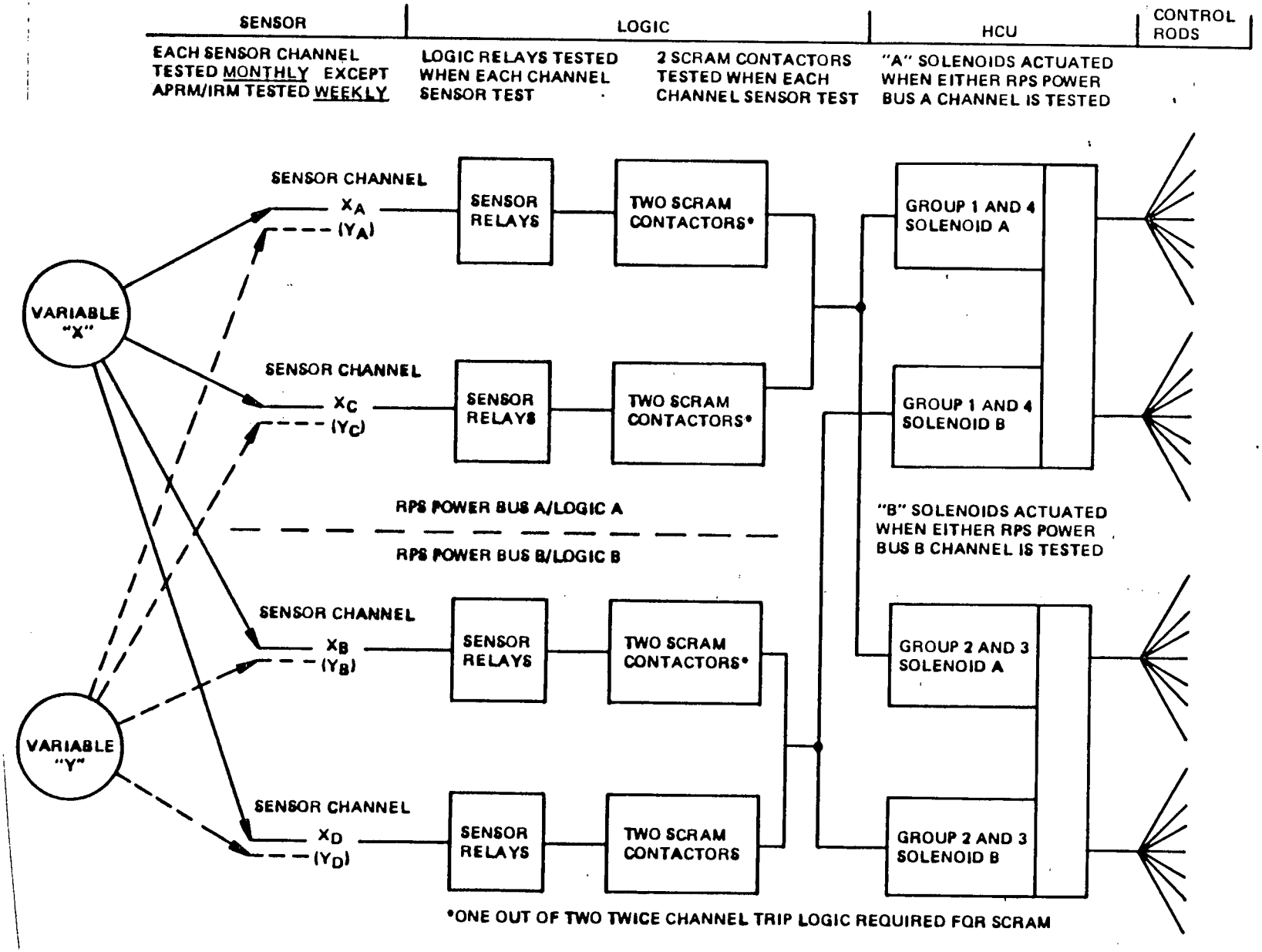

Figure 1. RPS Relay Logic Configuration

Table 1
SENSOR DIVERSITY FOR MAJOR TRANSIENTS

Transient	Scram Signals - Order of Occurrence						
	Inputs From Pressure or Differential Pressure Transmitters and Trip Units		Inputs From Pressure Position or Micro Switch Contact Opening			Inputs From Neutron Flux or Radiation Sensors	
	Reactor Pressure > 1035 PSIG	Reactor Level < Level 3	Turb Cont. Valve Oil Pres. Set Pt.	Turb Stop Valve Pos <90% Full Open	MSIV Pos. < 90% Full Open	APRM > 120%	MSIV Hi Rad. > 3 x Background
MSIV Closure	3	4			1	2	
Turb Trip (with bypass)	3			1		2	
Generator Trip (with bypass)	3		1			2	
Pres. Regulator Failure (primary pressure decrease)	3	4			1	2	
Pres. Regulator Failure (primary pressure increase)	2					1	
F.W. Flow Control, Failure (reactor water inventory increase	3			1		2	
F.W. Flow Control, Failure (reactor water inventory decrease)	3	1			2		4
Loss of Condenser Vacuum	3		4	1	5	2	
Loss of Normal AC Power	4	5	2	1	6	3	

LIST OF APPENDICES

Appendix A

Computer I/O List

Table of Contents

I. Analog

II. Digital (Contact)

NO.	DATE	REVISIONS	BY	CHK'D.	APPR
3	9/29/75	ISSUED	LK	GWE	WHK

IOWA ELECTRIC LIGHT & POWER CO.
CEDAR RAPIDS, IOWA

COMPUTER I/O LIST

DRAWING NO.	REV.
M-402	3

07/08/75 PAGE 1

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE			SIGNAL RGE				BD TYPE MPL NO INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB SC CA	AVG CAL GN SA ALARM/ST				REFERENCE DRAWING	H D M ER T LOGGING	NOTE REV
A000	A1500	LPRM 08-09 FLUX LEVEL A % PWR 07-000-03	0.0	125.0		0 160				3C NMIED	C51 08-09A	A D
A001	A1501	LPRM 08-09 FLUX LEVEL B % PWR 07-000-10	0.0	125.0		0 160				3C NMIED	C51 08-09B	A D
A002	A1502	LPRM 08-09 FLUX LEVEL C % PWR 07-000-11	0.0	125.0		0 160				3C NMIED	C51 08-09C	A D
A003	A1503	LPRM 08-09 FLUX LEVEL D % PWR 07-000-12	0.0	125.0		0 160				3C NMIED	C51 08-09D	A D
A004	A1504	LPRM 16-09 FLUX LEVEL A % PWR 07-000-13	0.0	125.0		0 160				3C NMIED	C51 16-09A	A D
A005	A1505	LPRM 16-09 FLUX LEVEL B % PWR 07-000-20	0.0	125.0		0 160				3C NMIED	C51 16-09B	A D
A006	A1506	LPRM 16-09 FLUX LEVEL C % PWR 07-000-21	0.0	125.0		0 160				3C NMIED	C51 16-09C	A D
A007	A1507	LPRM 16-09 FLUX LEVEL D % PWR 07-000-22	0.0	125.0		0 160				3C NMIED	C51 16-09D	A D
A008	A1508	LPRM 24-09 FLUX LEVEL A % PWR 07-000-23	0.0	125.0		0 160				3C NMIED	C51 24-09A	A D
A009	A1509	LPRM 24-09 FLUX LEVEL B % PWR 07-000-30	0.0	125.0		0 160				3C NMIED	C51 24-09B	A D
A010	A1510	LPRM 24-09 FLUX LEVEL C % PWR 07-000-31	0.0	125.0		0 160				3C NMIED	C51 24-09C	A D
A011	A1511	LPRM 24-09 FLUX LEVEL D % PWR 07-000-32	0.0	125.0		0 160				3C NMIED	C51 24-09D	A D
A012	A1512	LPRM 32-09 FLUX LEVEL A % PWR 07-000-33	0.0	125.0		0 160				3C NMIED	C51 32-09A	A D

1
A

TYPE SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB	SC	CA	SIGNAL RGE AVG	CAL	GN	SA	ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REV REFERENCE DRAWING	H	LOGGING D	M	ER	T	NOTE	REV
A013	A1513	LPRM 32-09 FLUX LEVEL B % PWR 07-001-00	%	0.0	125.0				0		160			3C NMIED	C51		32-09B				A D
A014	A1514	LPRM 32-09 FLUX LEVEL C % PWR 07-001-01	%	0.0	125.0				0		160			3C NMIED	C51		32-09C				A D
A015	A1515	LPRM 32-09 FLUX LEVEL D % PWR 07-001-02	%	0.0	125.0				0		160			3C NMIED	C51		32-09D				A D
A016	A1516	LPRM 08-17 FLUX LEVEL A % PWR 07-001-03	%	0.0	125.0				0		160			3C NMIED	C51		08-17A				A D
A017	A1517	LPRM 08-17 FLUX LEVEL B % PWR 07-001-10	%	0.0	125.0				0		160			3C NMIED	C51		08-17B				A D
A018	A1518	LPRM 08-17 FLUX LEVEL C % PWR 07-001-11	%	0.0	125.0				0		160			3C NMIED	C51		08-17C				A D
A019	A1519	LPRM 08-17 FLUX LEVEL D % PWR 07-001-12	%	0.0	125.0				0		160			3C NMIED	C51		08-17D				A D
A020	A1520	LPRM 16-17 FLUX LEVEL A % PWR 07-001-13	%	0.0	125.0				0		160			3C NMIED	C51		16-17A				A D
A021	A1521	LPRM 16-17 FLUX LEVEL B % PWR 07-001-20	%	0.0	125.0				0		160			3C NMIED	C51		16-17B				A D
A022	A1522	LPRM 16-17 FLUX LEVEL C % PWR 07-001-21	%	0.0	125.0				0		160			3C NMIED	C51		16-17C				B D
A023	A1523	LPRM 16-17 FLUX LEVEL D % PWR 07-001-22	%	0.0	125.0				0		160			3C NMIED	C51		16-17D				A D
A024	A1524	LPRM 24-17 FLUX LEVEL A % PWR 07-001-23	%	0.0	125.0				0		160			3C NMIED	C51		24-17A				A D
A025	A1525	LPRM 24-17 FLUX LEVEL B % PWR 07-001-30	%	0.0	125.0				0		160			3C NMIED	C51		24-17B				A D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE		SIGNAL RGE				BD TYPE MPL NO INSTRUMENT NO.		REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB SC CA	AVG CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	H D M ER T	NOTE REV
A026	A1526	LPRM 24-17 FLUX LEVEL C % PWR 07-001-31	0.0	125.0		0	160			3C NMIED	C51	24-17C A D
A027	A1527	LPRM 24-17 FLUX LEVEL D % PWR 07-001-32	0.0	125.0		0	160			3C NMIED	C51	24-17D A D
A028	A1528	LPRM 32-17 FLUX LEVEL A % PWR 07-001-33	0.0	125.0		0	160			3C NMIED	C51	32-17A A D
A029	A1529	LPRM 32-17 FLUX LEVEL B % PWR 07-002-00	0.0	125.0		0	160			3C NMIED	C51	32-17B A D
A030	A1530	LPRM 32-17 FLUX LEVEL C % PWR 07-002-01	0.0	125.0		0	160			3C NMIED	C51	32-17C A D
A031	A1531	LPRM 32-17 FLUX LEVEL D % PWR 07-002-02	0.0	125.0		0	160			3C NMIED	C51	32-17D A D
A032	A1532	LPRM 40-17 FLUX LEVEL A % PWR 07-002-03	0.0	125.0		0	160			3C NMIED	C51	40-17A A D
A033	A1533	LPRM 40-17 FLUX LEVEL B % PWR 07-002-10	0.0	125.0		0	160			3C NMIED	C51	40-17B A D
A034	A1534	LPRM 40-17 FLUX LEVEL C % PWR 07-002-11	0.0	125.0		0	160			3C NMIED	C51	40-17C A D
A035	A1535	LPRM 40-17 FLUX LEVEL D % PWR 07-002-12	0.0	125.0		0	160			3C NMIED	C51	40-17D A D
A036	A1536	LPRM 08-25 FLUX LEVEL A % PWR 07-002-13	0.0	125.0		0	160			3C NMIED	C51	08-25A A D
A037	A1537	LPRM 08-25 FLUX LEVEL B % PWR 07-002-20	0.0	125.0		0	160			3C NMIED	C51	08-25B A D
A038	A1538	LPRM 08-25 FLUX LEVEL C % PWR 07-002-21	0.0	125.0		0	160			3C NMIED	C51	08-25C A D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE			SIGNAL RGE				BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB	SC CA	AVG CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
A039	A1539	LPRM 08-25 FLUX LEVEL D % PWR 07-002-22	0.0	125.0			0	160			3C NMIED	C51	08-25D	A D
A040	A1540	LPRM 16-25 FLUX LEVEL A % PWR 07-002-23	0.0	125.0			0	160			3C NMIED	C51	16-25A	A D
A041	A1541	LPRM 16-25 FLUX LEVEL B % PWR 07-002-30	0.0	125.0			0	160			3C NMIED	C51	16-25B	A D
A042	A1542	LPRM 16-25 FLUX LEVEL C % PWR 07-002-31	0.0	125.0			0	160			3C NMIED	C51	16-25C	A D
A043	A1543	LPRM 16-25 FLUX LEVEL D % PWR 07-002-32	0.0	125.0			0	160			3C NMIED	C51	16-25D	A D
A044	A1544	LPRM 24-25 FLUX LEVEL A % PWR 07-002-33	0.0	125.0			0	160			3C NMIED	C51	24-25A	A D
A045	A1545	LPRM 24-25 FLUX LEVEL B % PWR 07-003-00	0.0	125.0			0	160			3C NMIED	C51	24-25B	A D
A046	A1546	LPRM 24-25 FLUX LEVEL C % PWR 07-003-01	0.0	125.0			0	160			3C NMIED	C51	24-25C	A D
A047	A1547	LPRM 24-25 FLUX LEVEL D % PWR 07-003-02	0.0	125.0			0	160			3C NMIED	C51	24-25D	A D
A048	A1548	LPRM 32-25 FLUX LEVEL A % PWR 07-003-03	0.0	125.0			0	160			3C NMIED	C51	32-25A	B D
A049	A1549	LPRM 32-25 FLUX LEVEL B % PWR 07-003-10	0.0	125.0			0	160			3C NMIED	C51	32-25B	A D
A050	A1550	LPRM 32-25 FLUX LEVEL C % PWR 07-003-11	0.0	125.0			0	160			3C NMIED	C51	32-25C	A D
A051	A1551	LPRM 32-25 FLUX LEVEL D % PWR 07-003-12	0.0	125.0			0	160			3C NMIED	C51	32-25D	A D

TYPE SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	LIMITS LOW	LIMITS HIGH	INSTRUMENT RGE DB	INSTRUMENT RGE SC	INSTRUMENT RGE CA	SIGNAL RGE AVG	SIGNAL RGE CAL	SIGNAL RGE GN	SIGNAL RGE SA	ALARM/ST	BD TYPE REFERENCE DRAWING	MPL NO	INSTRUMENT NO. LOGGING H	D	M	ER	T	NOTE	REV
A052	A1552	LPRM 40-25 FLUX LEVEL A % PWR 07-003-13			0.0		125.0 Hz			0		160		3C NMIED		C51		40-25A				A D
A053	A1553	LPRM 40-25 FLUX LEVEL B % PWR 07-003-20			0.0		125.0 Hz			0		160		3C NMIED		C51		40-25B				A D
A054	A1554	LPRM 40-25 FLUX LEVEL C % PWR 07-003-21			0.0		125.0 Hz			0		160		3C NMIED		C51		40-25C				A D
A055	A1555	LPRM 40-25 FLUX LEVEL D % PWR 07-003-22			0.0		125.0 Hz			0		160		3C NMIED		C51		40-25D				A D
A056	A1556	LPRM 08-33 FLUX LEVEL A % PWR 07-003-23			0.0		125.0 Hz			0		160		3C NMIED		C51		08-33A				A D
A057	A1557	LPRM 08-33 FLUX LEVEL B % PWR 07-003-30			0.0		125.0 Hz			0		160		3C NMIED		C51		08-33B				A D
A058	A1558	LPRM 08-33 FLUX LEVEL C % PWR 07-003-31			0.0		125.0 Hz			0		160		3C NMIED		C51		08-33C				A D
A059	A1559	LPRM 08-33 FLUX LEVEL D % PWR 07-003-32			0.0		125.0 Hz			0		160		3C NMIED		C51		08-33D				A D
A060	A1560	LPRM 16-33 FLUX LEVEL A % PWR 07-003-33			0.0		125.0 Hz			0		160		3C NMIED		C51		16-33A				A D
A061	A1561	LPRM 16-33 FLUX LEVEL B % PWR 07-010-00			0.0		125.0 Hz			0		160		3C NMIED		C51		16-33B				A D
A062	A1562	LPRM 16-33 FLUX LEVEL C % PWR 07-010-01			0.0		125.0 Hz			0		160		3C NMIED		C51		16-33C				A D
A063	A1563	LPRM 16-33 FLUX LEVEL D % PWR 07-010-02			0.0		125.0 Hz			0		160		3C NMIED		C51		16-33D				A D
A064	A1564	LPRM 24-33 FLUX LEVEL A % PWR 07-010-03			0.0		125.0 Hz			0		160		3C NMIED		C51		24-33A				A D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE		SIGNAL RGE			BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB SC CA	AVG CAL GN SA	ALARM/ST	REFERENCE DRAWING	H D M ER T	NOTE	REV
A065	A1565	LPRM 24-33 FLUX LEVEL B % PWR 07-010-10	0.0	125.0		0 160		3C NM IED	C51	24-33B	A D
A066	A1566	LPRM 24-33 FLUX LEVEL C % PWR 07-010-11	0.0	125.0		0 160		3C NM IED	C51	24-33C	A D
A067	A1567	LPRM 24-33 FLUX LEVEL D % PWR 07-010-12	0.0	125.0		0 160		3C NM IED	C51	24-33D	A D
A068	A1568	LPRM 32-33 FLUX LEVEL A % PWR 07-010-13	0.0	125.0		0 160		3C NM IED	C51	32-33A	A D
A069	A1569	LPRM 32-33 FLUX LEVEL B % PWR 07-010-20	0.0	125.0		0 160		3C NM IED	C51	32-33B	A D
A070	A1570	LPRM 32-33 FLUX LEVEL C % PWR 07-010-21	0.0	125.0		0 160		3C NM IED	C51	32-33C	A D
A071	A1571	LPRM 32-33 FLUX LEVEL D % PWR 07-010-22	0.0	125.0		0 160		3C NM IED	C51	32-33D	A D
A072	A1572	LPRM 16-41 FLUX LEVEL A % PWR 07-010-23	0.0	125.0		0 160		3C NM IED	C51	16-41A	A D
A073	A1573	LPRM 16-41 FLUX LEVEL B % PWR 07-010-30	0.0	125.0		0 160		3C NM IED	C51	16-41B	A D
A074	A1574	LPRM 16-41 FLUX LEVEL C % PWR 07-010-31	0.0	125.0		0 160		3C NM IED	C51	16-41C	A D
A075	A1575	LPRM 16-41 FLUX LEVEL D % PWR 07-010-32	0.0	125.0		0 160		3C NM IED	C51	16-41D	A D
A076	A1576	LPRM 24-41 FLUX LEVEL A % PWR 07-010-33	0.0	125.0		0 160		3C NM IED	C51	24-41A	A D
A077	A1577	LPRM 24-41 FLUX LEVEL B % PWR 07-011-00	0.0	125.0		0 160		3C NM IED	C51	24-41B	A D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE			SIGNAL RGE				BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB SC CA		AVG CAL GN SA			ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
A078	A1578	LPRM 24-41 FLUX LEVEL C 07-011-01	% PWR	0.0	125.0 #2		0	160			3C NM IED	C51 24-41C	A D
A079	A1579	LPRM 24-41 FLUX LEVEL D 07-011-02	% PWR	0.0	125.0 #2		0	160			3C NM IED	C51 24-41D	A D
A080	A1710	NSS SPARE 07-011-32			4		0	160			3C		D
A081	A1712	NSS SPARE 07-011-33			4		0	160			3C		D
A082	A1715	NSS SPARE 07-000-02			4		0	160			3C		D

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB	SC	CA	SIGNAL RGE AVG	CAL	GN	SA	ALARM/ST	BD TYPE / REFERENCE DRAWING	MPL NO / H	INSTRUMENT NO. / LOGGING D M ER T	NOTE	REV
B000	A1677	APRM A FLUX LEVEL 07-011-03	% PWR	0.0	125.0	1			0		160			3C NM IED	C51	1		A D
B001	A1678	APRM B FLUX LEVEL 07-011-10	% PWR	0.0	125.0	2			0		160			3C NM IED	C51			A D
B002	A1679	APRM C FLUX LEVEL 07-011-11	% PWR	0.0	125.0	1			0		160			3C NM IED	C51	1		A D
B003	A1680	APRM D FLUX LEVEL 07-011-12	% PWR	0.0	125.0	2			0		160			3C NM IED	C51			A D
B004	A1681	APRM E FLUX LEVEL 07-011-13	% PWR	0.0	125.0	2			0		160			3C NM IED	C51			A D
B005	A1682	APRM F FLUX LEVEL 07-011-20	% PWR	0.0	125.0	2			0		160			3C NM IED	C51			A D
B006	A1683	NSS SPARE 07-011-21				4			0		160			3C				D
B007	A1684	NSS SPARE 07-011-22				4			0		160			3C				D
B008	A1688	TIP A FLUX LEVEL 07-012-31	% PWR	0.0	125.0	4			0		160			3A NM IED	C51			A D
B009	A1689	TIP B FLUX LEVEL 07-012-32	% PWR	0.0	125.0	4			0		160			3A NM IED	C51			A D
B010	A1690	TIP C FLUX LEVEL 07-012-33	% PWR	0.0	125.0	4			0		160			3A NM IED	C51			A D
B011	A1691	NSS SPARE 07-013-00				4			0		160			3A				D
VELO B012	A1709	REACTOR TOTAL CORE FLOW 07-011-31	M#/H	0.0	60.0	1			32		160			3C NB PID	B21	FY-4527 1		C D

B

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE			SIGNAL RGE				BD TYPE MPL NO INSTRUMENT NO.			REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB SC CA	AVG	CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	H	LOGGING D M ER T	NOTE REV
PRES B013	A1694	REACTOR CORE PRESS-DIFF 07-011-23	DPSI	0.0	1 30.0		32	160			3C NB PID	B21	PDT-4528 1	D D
VFLO B014	A1711	CRD SYSTEM FLOW 07-013-03	M#/H	0.0	2# 0.025		32	160			3B CRD PID	C11	FY-1814	C D
CFLO B015	A1713	REACTOR FW LOOP A FLOW 07-012-00	M#/H	0.0	1 4.0	X	32	160			3C FW IED	C31	FT-1581 1	D D
CFLO B016	A1714	REACTOR FW LOOP B FLOW 07-012-01	M#/H	0.0	1 4.0	X	32	160			3C FW IED	C31	FT-1626 1	D D
CFLO B017	A1718	CLEAN-UP SYSTEM FLOW 07-013-12	M#/H	0.0	4 0.0625	X	32	160			3B CU PID	G31	FT-2747	C D
B018	A1717	NSS SPARE 07-013-11			4		0	160			3B			D
B019	A1725	RECIRC PUMP MTR A POWER 07-013-31	MW	0.0	2# 4.0	X	0	160			3B RECRC PID	B31	JT-4662A	D D
B020	A1726	RECIRC PUMP MTR B POWER 07-013-32	MW	0.0	2# 4.0	X	0	160			3B RECRC PID	B31	JT-4662B	D D
B021	A1727	REACTOR WATER LEVEL 07-012-02	INCH 28.0	0.0 37.0	1 60.0		32	160			3C FW IED	C31	LT4559/60 1	E E
B022	A1735	TOTAL STEAM FLOW 07-013-33	M#/H	0.0	1 8.0		32	160			3B FW IED	C31	FY-4450 1	C D
CUTC B023	A1741	CLEANUP SYSTEM INLT TEMPDEGF 17-132-13		0.0	2# 600.0	X					1A CU PID	G31	TE-2713A	C D
CUTC B024	A1742	CLEANUP SYSTEM OULT TEMPDEGF 17-132-12		0.0	2# 600.0	X					1A CU PID	G31	TE-2713D	C D
PRES B025	A1693	REACTOR PRESSURE 07-013-02	PSIG	0.0	1 1200.	X	32	160			3B FW IED	C31	PT4563/64 1	D D

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB SC CA	SIGNAL RGE AVG CAL GN SA ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REV REFERENCE DRAWING	H	LOGGING D M ER T	NOTE	REV
VFLO B026	A1731	RECIRC LOOP A1 DRV FLOW 07-012-12	M#/H	0.0	15.1 2A		32 160	3C NB PID	B21	FY-4631A		D D
VFLO B027	A1732	RECIRC LOOP A2 DRV FLOW 07-012-13	M#/H	0.0	15.1 2A		32 160	3C NB PID	B21	FY-4631D		F D
VFLO B028	A1733	RECIRC LOOP B1 DRV FLOW 07-012-20	M#/H	0.0	15.1 2A		32 160	3C NB PID	B21	FY-4632A		F D
VFLO B029	A1734	RECIRC LOOP B2 DRV FLOW 07-012-21	M#/H	0.0	15.1 2A		32 160	3C NB PID	B21	FY-4632D		E D
B030	A1744	REACTOR FW CHNL A1 TEMP 07-020-00	DEGF	280.0	430.0 1	X	0 150	3B NB PID	B21	TT-4452A 1		C D
B031	A1745	REACTOR FW CHNL A2 TEMP 07-020-01	DEGF	280.0	430.0 1	X	0 150	3B NB PID	B21	TT-4452C		C D
B032	A1746	REACTOR FW CHNL B1 TEMP 07-020-02	DEGF	280.0	430.0 1		0 150	3B NB PID	B21	TT-4452B		C D
B033	A1747	REACTOR FW CHNL B2 TEMP 07-020-03	DEGF	280.0	430.0 1		0 150	3B NB PID	B21	TT-4452D		C D
B034	A1795	RECIRC LOOP A1 INLT TEMP 07-020-11	DEGF	260.0	580.0 2A		-160160	3B NB PID	B21	TT-4603A		D D
B035	A1796	RECIRC LOOP A2 INLT TEMP 07-020-12	DEGF	260.0	580.0 2A		-160160	3B NB PID	B21	TT-4603B		D D
B036	A1797	RECIRC LOOP B1 INLT TEMP 07-020-13	DEGF	260.0	580.0 2A		-160160	3B NB PID	B21	TT-4604A		D D
B037	A1798	RECIRC LOOP B2 INLT TEMP 07-020-20	DEGF	260.0	580.0 2A		-160160	3B NB PID	B21	TT-4604B		D D
2.31 B038	A1685	RECIRC A WIDE RANGE TEMP 07-012-22	DEGF	50.4	789.6 4		-160160	3G		TT4603A		B D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE LOW	INSTRUMENT RGE HIGH	DB SC CA	SIGNAL RGE AVG CAL GN SA	ALARM/ST	BO TYPE MPL NO REFERENCE DRAWING	INSTRUMENT NO. LOGGING H D M ER T	NOTE	REV
SCAN AORS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS									
2.31 B039	A1686	RECIRC B WIDE RANGE TEMP 07-012-29	DEGF	50.4	789.6 4		-160 160		3G	TT4604A		A D
B040	A1687	NSS SPARE 07-012-30			4		0 160		3A			D
B041	A1692	NSS SPARE 07-013-01			4		0 160		3A			D
B042	A1695	NSS SPARE 07-011-30			4		0 160		3C			D
B043	A1716	NSS SPARE 07-013-10			4		0 160		3B			C D
B044	A1719	NSS SPARE 07-013-13			4		0 160		3B			D
B045	A1720	NSS SPARE 07-013-20			4		0 160		3B			D
B046	A1721	NSS SPARE 07-013-21			4		0 160		3B			D
B047	A1722	NSS SPARE 07-013-22			4		0 160		3B			D
B048	A1723	NSS SPARE 07-013-23			4		0 160		3B			D
OK B049	A1724	NSS SPARE 07-013-30			4		0 160		3B			D
B050	A1728	NSS SPARE 07-012-03			4		0 160		3C			D
B051	A1729	NSS SPARE 07-012-10			4		0 160		3C			D

per DCR 693
Roger Otto
for Rx Bldg
Vent Stack
Radiation Monitor
total of 9 Inputs
7-26-77
I.D. E. West
This May not come
to pass 1-16-78 IDEW

Rx ~~Narrow Range~~ DEG x2
PASS NARROW RANGE

TYPE / SCAN ADDRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	LIMITS LOW	LIMITS HIGH	DB SC CA	INSTRUMENT RGE AVG CAL GN SA	SIGNAL RGE ALARM/ST	BD TYPE MPL NO / REFERENCE DRAWING	LOGGING H D M ER T	INSTRUMENT NO.	NOTE REV
B052	A1730	NSS SPARE 07-012-11				4	0 160		3C			D
CUTC B053	A1736	NSS SPARE 17-132-00 SPARE				4			1A			D
OK CUTC B054	A1737	PSV 4401 S/R AIR PLT TEMP DEG F ~~NSS SPARE~~ 17-132-01				4			~~1A~~ 1A M-114		TE-4401A	A D
CUTC B055	A1738	NSS SPARE 17-132-02 SPARE				4			1A			D
CUTC B056	A1739	NSS SPARE 17-132-03 SPARE				4			1A			D
CUTC B057	A1740	NSS SPARE 17-132-10 SPARE				4			1A			D
OK CUTC B058	A1743	PSV 4407 S/R AIR PLT TEMP DEG F ~~NSS SPARE~~ 17-132-13				4			1A M-114		TE-4407A	A D
B059	A1748	NSS SPARE 07-020-10				4			3B			A D
CUTC B060	A1397	CRD PMP A&B DISCH TEMP 17-113-00	DEGF	0.0	200.0	3 X			1A M-117	M155	TE-1811 P	B D
VELO B061	A1398	RCT JET PMPS 9-16 FLOW A 07-020-21	M#/H	0.0	36.7	1 X	32 160		3B M-115	APED	FY-4523	D D
VELO B062	A1399	RCT JET PMPS 1-8 FLOW B 07-020-22	M#/H	0.0	36.7	1 X	32 160		3B M-115	APED	BY-4526	D D
B063	A1400	RCT OUTLET STM FLOW A 07-020-23	M#/H	0.0	2.000	2 X	32 160		3B M-114	APED	FC-4408	C D
B064	A1401	RCT OUTLET STM FLOW B 07-020-30	M#/H	0.0	2.000	2 X	32 160		3B M-114	APED	FC-4409	C D

DCR 407
relief Valves
in drywell
Terry Gucciardo
10-28-76
D E West
changed 3-31-77

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE						SIGNAL RGE					BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB	SC	CA	AVG	CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T		NOTE		REV
R065	A1402	RCT OUTLET STM FLOW C 07-020-31	M#/H	0.0		2	2.000	X		32		160	3B M-114	APED		FC-4410		C D
R066	A1403	RCT OUTLET STM FLOW D 07-020-32	M#/H	0.0		2	2.000	X		32		160	3B M-114	APED		FC-4411		C D
CUTC R067	A1404	RRP A MTR STATOR TEMP P1DEGF 17-113-01		240.0	0.0	6	4	300.0				?	1A M-116	APED		TE-4600D		A D
CUTC R068	A1405	RRP A MTR STATOR TEMP P2DEGF 17-113-02		240.0	0.0	6	4	300.0				?	1A M-116	APED		TE-4600E		A D
CUTC R069	A1406	RRP A MTR STATOR TEMP P3DEGF 17-113-03		240.0	0.0	6	4	300.0				?	1A M-116	APED		TE-4600F		A D
CUTC R070	A1407	RRP B MTR STATOR TEMP P1DEGF 17-113-10		240.0	0.0	6	4	300.0				?	1A M-116	APED		TE-4600Q		A D
CUTC R071	A1408	RRP B MTR STATOR TEMP P2DEGF 17-113-11		240.0	0.0	6	4	300.0				?	1A M-116	APED		TE-4600R		A D
CUTC R072	A1409	RRP B MTR STATOR TEMP P3DEGF 17-113-12		240.0	0.0	6	4	300.0				?	1A M-116	APED		TE-4600S		A D
CUTC R073	A1410	RRP MG SET A STR TEMP P1DEGF 17-113-13		240.0	0.0	6	4	300.0				?	1A M-116	APED		TE-4651A		A D
CUTC R074	A1411	RRP MG SET A STR TEMP P2DEGF 17-113-20		240.0	0.0	6	4	300.0				?	1A M-116	APED		TE-4651B		A D
CUTC R075	A1412	RRP MG SET A STR TEMP P3DEGF 17-113-21		240.0	0.0	6	4	300.0				?	1A M-116	APED		TE-4651C		A D
CUTC R076	A1413	RRP MG SET B STR TEMP P1DEGF 17-113-22		240.0	0.0	6	4	300.0				?	1A M-116	APED		TE-4652A		A D
CUTC R077	A1414	RRP MG SET B STR TEMP P2DEGF 17-113-23		240.0	0.0	6	4	300.0				?	1A M-116	APED		TE-4652B		A D

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	LIMITS LOW	LIMITS HIGH	INSTRUMENT RGE DB	INSTRUMENT RGE SC	INSTRUMENT RGE CA	SIGNAL RGE AVG	SIGNAL RGE CAL	SIGNAL RGE GN	SIGNAL RGE SA	SIGNAL RGE ALARM/ST	BD TYPE MPL NO / REFERENCE DRAWING	LOGGING H	LOGGING D	LOGGING M	LOGGING ER	LOGGING T	INSTRUMENT NO. / NOTE	REV
CUTC B078	A1415	RRP MG SET B STR TEMP P3 17-113-30	DEGF	240.0	0.0	6	4	300.0			7			1A M-116	APED					TE-4652C	A D
B079	A1416	RRP A MTR VIBRATION 07-021-01	MILS	4.00	0.0	6	3	4.50	32	160	7			3B M-116	M181					XVM-4645 P	D D
B080	A1417	RRP B MTR VIBRATION 07-021-02	MILS	4.00	0.0	6	3	4.50	32	160	7			3B M-116	M181					XVM-4646 P	D D
B081	A1418	SPARE 07-021-03					3							3B							D E
B082	A1419	SPARE 07-021-10					3							3B							D E
PRES B083	A1420	CRD DRIVE WTR DIFF PRESS 07-021-11	DPSI		0.0		4	350.0	32	160				3B M-117	APED 6					PDT-1825	D D
PRES B084	A1421	CRD CLG WTR DIFF PRESS 07-021-12	DPSI		0.0		4	60.0	32	160				3B M-117	APED 6					PDT-1832	D D
RTDS B085	A1422	TORUS AIR TEMP #1 17-100-03	R4 DEGF	100.0	0.0	6	4	350.0			7			4B M-143	FLD					TE-4328A	E F
RTDS B086	A1423	TORUS AIR TEMP #2 17-100-10	R4 DEGF	100.0	0.0	6	4	350.0			7			4B M-143	FLD					TE-4328B	E F
RTDS B087	A1424	TORUS AIR TEMP #3 17-100-11	R4 DEGF	100.0	0.0	6	4	350.0			7			4B M-143	FLD					TE-4328C	E F
RTDS B088	A1425	TORUS AIR TEMP #4 17-100-12	R4 DEGF	100.0	0.0	6	4	350.0			7			4B M-143	FLD					TE-4328D	E F
RTDS B089	A1426	DRYWELL TEMP AZ55 EL750 17-100-13	R4 DEGF	90.0	0.0	6	4	350.0			7			4B M-143	FLD					TE-4328E	E F
RTDS B090	A1427	DRYWELL TEMP AZ245 EL750 17-100-20	R4 DEGF	95.0	0.0	6	4	350.0			7			4B M-143	FLD					TE-4328F	E F

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	INSTRUMENT RGE LIMITS HIGH	DB SC CA	SIGNAL RGE AVG CAL GN SA	ALARM/ST	BD TYPE MPL NO REFERENCE DRAWING	INSTRUMENT NO. LOGGING H D M ER T	NOTE	REV
RTD5 B091	A1428	DRYWELL TEMP AZ90 EL765 17-100-21 R4	DEGF	0.0	350.0 110.0	6 4	7		4B M-143	FLD	TE-4328G	E F
RTD5 B092	A1429	DRYWELL TEMP AZ270 EL765 17-100-22 R4	DEGF	0.0	350.0 110.0	6 4	7		4B M-143	FLD	TE-4328H	E F
RTD5 B093	A1430	DRYWELL TEMP AZ0 EL780 17-100-23 R4	DEGF	0.0	350.0 145.0	6 4	7		4B M-143	FLD	TE-4328J	E F
RTD5 B094	A1431	DRYWELL TEMP AZ180 EL780 17-100-30 R4	DEGF	0.0	350.0 145.0	6 4	7		4B M-143	FLD	TE-4328K	E F
RTD5 B095	A1432	DRYWELL TEMP AZ270 EL830 17-100-31 R4	DEGF	0.0	350.0 265.0	6 4	7		4B M-143	FLD	TE-4328L	E F
RTD5 B096	A1433	DRYWELL TEMP CNTR EL750 17-100-32 R4	DEGF	0.0	350.0 90.0	6 4	7		4B M-143	FLD	TE-4328M	E F
RTD2 B097	A1434	SPARE 17-100-33			4				4B			E E
RTD2 B098	A1435	~~SPARE~~ 17-101-00 Torus Wtr Temp			TE-4339C 4	bbb DIG F			4B			E E
RTD2 B099	A1436	~~SPARE~~ 17-101-01 Torus Wtr Temp			TE-4348D 4				4B			E E
~~RTD2~~ B100	A1437	~~SPARE~~ 17-101-02 N2 PRESSURE PSIG		0	4	165 PSI			4B			E E
B101	A1438	DRYWELL DEWPOINT TEMP #1 17-101-03 R4	DEGF	0.0	100.0 90.0	6 4	7		4B M-143	M155	ME-4347A	E E
B102	A1439	DRYWELL DEWPOINT TEMP #2 17-101-10 R4	DEGF	0.0	100.0 90.0	6 4	7		4B M-143	M155	ME-4347B	E D
RTD2 B103	A1440	DRYWELL ABSOLUTE PRESS 17-101-11 R4	PSIA 13.2	14.000	18.000 16.2	6 4	3.36 51.4 7		4B M-143	M155	PI-4368A	E E

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB	SC	CA	SIGNAL RGE AVG	CAL	GN	SA	ALARM/ST	BD TYPE MPL NO REFERENCE DRAWING	INSTRUMENT NO. LDGGING H	D	M	ER	T	NOTE	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP																			
RTD2 B104	A1441	TORUS ABSOLUTE PRESS 17-101-12	PSIA R4	13.2	16.2	12.000 6	4	22.000			5.7	75.7 7		4B M-143	M155		PI-4368B			E E
B105	A1442	TORUS RELATIVE WTR LVL 17-101-13	INCH	-1.8	1.8	~~-18~~ -10	6	4 ~~+18~~ +10			16	80	Al Hagemak 5-9-77	4B M-143	M155		LT-4363			E F
RTD2 B106	A1443	~~SPARE~~ 17-101-20	TORUS WTR TEMP TE-4360E				4						Larry & Tony O DCR 619	4B						D E
RTD2 B107	A1444	~~SPARE~~ 17-101-21	TORUS WTR TEMP TE-4375F				4							4B						D E
RTD2 B108	A1445	~~SPARE~~ 17-101-22	TORUS WTR TEMP TE 4386 R4				4							4B						D
RTD2 B109	A1446	~~SPARE~~ 17-101-23	TORUS WTR TEMP TE 4394 R4				4							4B						D
B110	A1447	SPARE 07-020-33					4							3B						A D
B111	A1448	SPARE 07-021-00					4							3B						A D
CUTC B112	A1449	SPARE 17-113-31	Reserved				4							1A						D
CUTC B113	A1450	SPARE 17-113-32					4							1A						D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE	SIGNAL RGE	BD TYPE MPL NO INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB SC CA AVG CAL GN SA ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T NOTE	REV
C000	B1000	B012 RCT CORE FLOW AVG~~B068 CRD PMP DISCH T~~	MLB/H ~~DEGF~~	EJ		3 L3L		E C
C001	B1001	T039 LP COND PRESS AVG~~B063 RCT OUT STM FLW A~~	INHG ~~MLB/H~~	EJ		L L		D C
C002	B1002	T040 HP COND PRESS AVG~~B064 RCT OUT STM FLW B~~	INHG ~~MLB/H~~	EJ		L L		D C
C003	B1003	F018 TWR A DISCH TEMP AVG~~B065 RCT OUT STM FLW C~~	DEGF ~~MLB/H~~	EJ		L L		D C
C004	B1004	F019 TWR B DISCH TEMP AVG~~B066 RCT OUT STM FLW D~~	DEGF ~~MLB/H~~	EJ		L L		D C
C005	B1005	AVGE007 AUX XFMR LOAD	MW			2 L 2L		D C
C006	B1006	AVGE008 STARTUP XFMR LOAD	MW			2 L 2L		D C
C007	B1007	AVGE009 STANDBY XFMR LOAD	MW			2 L 2L		D C
C008	B1008	AVGF000 STM FLW TO MSR A	K~~LB~~/H			OK 3 3		D C
C009	B1009	AVGF001 STM FLW TO MSR B	K~~LB~~/H			OK 3 3		D C
C010	B1010	AVGF004 COND PMP DISCH PR	PSIG			4 L 4L		E C
C011	B1011	AVGF005 LP CON CW IN T A	DEGF			OK 7 7		E C
C012	B1012	AVGF006 LP CON CW IN T B	DEGF			OK 7 7		E C

C

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE							SIGNAL RGE						BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB	SC	CA	AVG	CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	H	LOGGING D	M	ER T	NOTE	REV
C013	B1013	AVGF007 LP CON CW OUT T B	DEGF											?	?				E C
C014	B1014	AVGF008 LP CON CW OUT T A	DEGF											?	?				E C
C015	B1015	AVGF026 1E-1A FW HTR DRT	DEGF																D C
C016	B1016	AVGF027 1E-1B FW HTR DRT	DEGF																D C
C017	B1017	AVGF030 1E-2A FW HTR DRT	DEGF																D C
C018	B1018	AVGF031 1E-2B FW HTR DRT	DEGF																D C
C019	B1019	AVGF032 1E-3A FW HTR DRT	DEGF																D C
C020	B1020	AVGF033 1E-3B FW HTR DRT	DEGF																D C
C021	B1021	AVGF034 1E-4A FW HTR DRT	DEGF																D C
C022	B1022	AVGF035 1E-4B FW HTR DRT	DEGF																D C
C023	B1023	AVGF036 1E-5A FW HTR DRT	DEGF																D C
C024	B1024	AVGF037 1E-5B FW HTR DRT	DEGF																D C
C025	B1025	AVGF038 1E-6A FW HTR DRT	DEGF																D C

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE			SIGNAL RGE				BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB	SC	CA	AVG	CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	LOGGING H	D	M	ER	T	NOTE	REV
C026	B1026	AVGF039 1E-6B FW HTR DRT	DEGF																	D C
C027	B1027	AVGF046 COND REJCT FLOW	K#/H											4	3	4	3			D C
C028	B1028	AVGB038 RCT FW CHNL A1 T DEGF																		E C
C029	B1029	AVGB039 RCT FW CHNL A2 T DEGF																		E C
C030	B1030	AVGF053 10A DR CLR FW OT	DEGF											5	4	5	4			D C
C031	B1031	AVGF054 10B DR CLR FW OT	DEGF											6	3	6	3			D C
C032	B1032	AVGF055 FW T FROM HTR 1A	DEGF												4		4			D C
C033	B1033	AVGF056 FW T FROM HTR 1B	DEGF												5		5			D C
C034	B1034	AVGF057 FW T FROM HTR 2A	DEGF												4		4			D C
C035	B1035	AVGF058 FW T FROM HTR 2B	DEGF												5		5			D C
C036	B1036	AVGF059 FW T FROM HTR 3A	DEGF												4		4			D C
C037	B1037	AVGF060 FW T FROM HTR 3B	DEGF												5		5			D C
C038	B1038	AVGF061 FW T FROM HTR 4A	DEGF												4		4			D C

T022 INT VA CIV-2 OUT PSIG

T023 INT VA CIV-1 OUT PSIG

TYPE SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	LIMITS LOW	LIMITS HIGH	INSTRUMENT RGE DB SC CA	SIGNAL RGE AVG CAL GN SA ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REV REFERENCE DRAWING	LOGGING H D M ER T	NOTE	REV
C039	B1039	AVGF062 FW T FROM HTR 4B	DEGF						5 5		D C
C040	B1040	AVGF063 FW T FROM HTR 5A	DEGF						4 4		D C
C041	B1041	AVGF064 FW T FROM HTR 5B	DEGF						5 5		D C
C042	B1042	AVGF065 FW T TO HTR 6A	DEGF						4 4		D C
C043	B1043	AVGF066 FW T TO HTR 6B	DEGF						5 5		D C
C044	B1044	AVGF067 FW T FROM HTR 6A	DEGF						1 1		D C
C045	B1045	AVGF068 FW T FROM HTR 6B	DEGF						1 1		D C
C046	B1046	AVGG001 GEN GROSS WATTS	MW					OK	1 1		D C
C047	B1047	AVGM000 BAROMETRIC PRESS	INHG						1 1		D C
C048	B1048	AVGT000 1A LP FW HTR PR	PSIA						4 4		D C
C049	B1049	AVGT001 2A LP FW HTR PR	PSIA						4 4		D C
C050	B1050	AVGT002 3A LP FW HTR PR	PSIA						4 4		D C
C051	B1051	AVGT003 4A LP FW HTR PR	PSIA						4 4		D C

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE		SIGNAL RGE						BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB SC CA	AVG CAL GN SA	ALARM/ST	REFERENCE DRAWING	H	LOGGING D M ER T	NOTE	REV			
C052	B1052	AVGT004 5A LP FW HTR PR	PSIA						4	4		D C			
C053	B1053	AVGT005 1B LP FW HTR PR	PSIA						5	5		D C			
C054	B1054	AVGT006 2B LP FW HTR PR	PSIA						5	5		D C			
C055	B1055	AVGT007 3B LP FW HTR PR	PSIA						5	5		D C			
C056	B1056	AVGT008 4B LP FW HTR PR	PSIA						5	5		D C			
C057	B1057	AVGT009 5B LP FW HTR PR	PSIA						5	5		D C			
C058	B1058	AVGT011 6A LP FW HTR PR	PSIA						4	4		D C			
C059	B1059	AVGT012 6B LP FW HTR PR	PSIA						5	5		D C			
C060	B1060	AVGT024 EXH HOOD 1B TEMP	DEGF						3	3		D C			
C061	B1061	AVGT025 EXH HOOD 1C TEMP	DEGF						3	3		D C			
C062	B1062	AVGF094 FW FINAL PRESS	PSIG						1	1		D C			
C063	B1063	AVGB025 REACTOR PRESS	PSIG						1	1		D C			
C064	B1064	AVGB015 RCT FW LOOP A FLW M#/H										D C			

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE	SIGNAL RGE	BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB SC CA AVG CAL GN SA ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE	REV
C065	B1065	AVGB016 RCT FW LOOP B FLW	M#/H						D C
C066	B1066	AVGB017 CLEANUP SYS FLOW	M#/H				4 4		D C
C067	B1067	F011 LP CONDR DP A AVG~~B019 RRP MTR A PWR~~	DPSI MW						D C
C068	B1068	F012 LP CONDR DPB AVG~~B020 RRP MTR B PWR~~	DPSI MW						D C
C069	B1069	AVGB023 CU SYS INLT TEMP	DEGF				4 4		D C
C070	B1070	AVGB024 CU SYS OULT TEMP	DEGF				4 4		D C
C071	B1071	F015 CWP A&B DIS PRESS PSIG AVGF~~002 CONDR HOTWELL LVL INCH~~							D C
C072	B1072	AVGF003 STM EJECT FLOW A	CFM				2 2		D C
C073	B1073	AVGF009 HP CON CW OT T B	DEGF			OK	7 7		E C
C074	B1074	AVGF010 HP CON CW OT T A	DEGF			OK	7 7		E C
C075	B1075	F013 HP CONDR DP B AVGB~~061 JET PMP 1-16 FLOW A~~	DPSI M#/H				4 4		D C
C076	B1076	F014 HP CONDR DP A AVGB~~062 JET PMP 1-8 FLOW B~~	DPSI M#/H				4 4		D C
C077	B1077	AVGG003 GEN STATOR AMP PL	KAMP				2 2		E C

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB SC CA	SIGNAL RGE AVG CAL GN SA ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REFERENCE DRAWING	LOGGING H D M ER T	NOTE	REV
C078	B1078	AVGG002 GEN GROSS VARS	MVAR					2 X2X			D C
C079	B1079	AVGM008 BLOWDOWN FLOW	KGPM					5X5X			D C
C080	B1080	~~AVGG049 GEN STR INLET T~~ F002 CONDR HOTWELL LVL INCH	DEGC					OK 2 2		E3	D C
C081	B1081	AVGG051 STR WTR CONDUCT	MMHO					OK 2 2			D C
C082	B1082	AVGM006 RVR WTR MU FLOW B	KGPM					4X4X			E C
C083	B1083	AVGM007 RVR WTR MU FLOW A	KGPM					4X4X			E C
C084	B1084	AVGF040 1A RFP SUCT PR	PSIG					6X6X			D C
C085	B1085	AVGF041 1B RFP SUCT PR	PSIG					6X6X			D C
C086	B1086	AVGF042 1A RFP DISCH PR	PSIG					6X6X			D C
C087	B1087	AVGF043 1B RFP DISCH PR	PSIG					6X6X			D C
C088	B1088	AVGF044 COND TOTAL FLOW	M*/H					4X4X			D C
C089	B1089	AVGF045 COND MAKEUP FLOW	K*/H					4X4X			D C
C090	B1090	AVGF047 COND PMP A SUCT T	DEGF					4X4X			D C

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL	E.UNITS	LIMITS LOW	LIMITS HIGH	INSTRUMENT RGE DB SC CA	SIGNAL RGE AVG CAL GN SA ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REV / REFERENCE DRAWING	LOGGING H D M ER T	NOTE	REV
C091	B1091	AVGF048 COND PMP B SUCT T	DEGF					4 1 41			D C
C092	B1092	AVGF069 LOOP A FW PRESS	PSIG					OK 5 5			D C
C093	B1093	AVGF070 LOOP B FW PRESS	PSIG					6 1 65			D C
C094	B1094	AVGF084 COND DEM DIFF PR	DPSI					4 1 44			D C
C095	B1095	AVGG052 GEN HYDRO GAS PR	PSIG					OK 2 2			D C
C096	B1096	AVGM~~001~~ M011 OUTSIDE T ~~165~~ 35 FT	DEGF		83			1 1			D C
C097	B1097	AVGM005 OTSD DEW PT 35FT	DEGF					1 1			D C
C098	B1098	AVGF093 STM EJECT FLOW B	CFM					2 1 21			D C
C099	B1099	AVGM009 RADWASTE DIL FLOW	KGPM					5 1 51			D C
C100	B1100	ROCG001 GEN GROSS WATTS	MW/M								D C
C101	B1101	ROCT033 LST STG TEMP	DEGF/M		3.333						D C
C102	B1102	~~+C100/G001 % ROC GROSS WATTS %~~			20.0	(C100/G001) 100 GROSS WATTS		%/M			D C
C103	B1103	DRYWELL AIR AVG TEMP	DEGF								D C

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE	SIGNAL RGE	BD TYPE MPL NO INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH DB SC CA	AVG CAL GN SA ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T NOTE REV
C104	B1104	DRYWELL ATMOSPHERIC WT	KLBS				D C
C105	B1105	TORUS AIR AVG TEMP	DEGF				D C
C106	B1106	TORUS ATMOSPHERIC WEIGHT	KLBS				D C
C107	B1107	CONTAINMENT ATMOS WEIGHT	KLBS				D C
C108	B1108	WATER IN TORUS	KGAL				D C
C109	B1109	BYPASS HYDRAULIC FACTOR					D C
C110	B1110	ROCB038 RECIRC A TEMP	DEGF/HR				E C
C111	B1111	ROCB039 RECIRC A TEMP	DEGF/HR				D C
C112	B1112	ROCB023 CLEANUP TEMP	DEGF/HR				D C
C113	B1113	C116-C079 CONDR FLOW KGPM ~~SPARE~~					C C
C114	B1114	~~SPARE~~ CONDR FLOWIALITY ~~GAL / MTV SHIP LB~~ VESTS					C C
C115	B1115	HEAT RATE (NET)	BTU/KWHR	* C179/C154 NET HEAT RATE BTU/KWHR MJT			D C
C116	B1116	CIRC WTR ~~TOTAL~~ FLOW F(F015, F092)	KGPM				D C

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE			SIGNAL RGE				BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB	SC	CA	AVG	CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE	REV
C117	B1117	LP COND CLEANLINESS FACT	%													D C
C118	B1118	HP COND CLEANLINESS FACT	%													D C
C119	B1119	*C048-C032 FW HTR 1A TD	DEGF													D C
C120	B1120	*C053-C033 FW HTR 1B TD	DEGF													D C
C121	B1121	*C049-C034 FW HTR 2A TD	DEGF													D C
C122	B1122	*C054-C035 FW HTR 2B TD	DEGF													D C
C123	B1123	*C050-C036 FW HTR 3A TD	DEGF													D C
C124	B1124	*C055-C037 FW HTR 3B TD	DEGF													D C
C125	B1125	*C051-C038 FW HTR 4A TD	DEGF													D C
C126	B1126	*C056-C039 FW HTR 4B TD	DEGF													D C
C127	B1127	*C052-C040 FW HTR 5A TD	DEGF													D C
C128	B1128	*C057-C041 FW HTR 5B TD	DEGF													D C
C129	B1129	*C058-C044 FW HTR 6A TD	DEGF													D C

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB SC CA	SIGNAL RGE AVG CAL GN SA ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REV REFERENCE DRAWING	LOGGING H D M ER T	NOTE	REV
C130	B1130	*C059-C045 FW HTR 6B TD	DEGF								D C
C131	B1131	AVG APRM FLUX LEVEL	%PWR								D C
C132	B1132	B014+C200+C201 STM FLOW	M#/HR								D C
C133	B1133	*C179 % OF RATED CMWT	%PWR								C C
C134	B1134	B103-*M000 DRYWELL PRESS	PSIG								C C
C135	B1135	B104-*M000 TORUS PRESS	PSIG								C C
C136	B1136	F(C179,B012) RX LOAD LINE	%								D C
C137	B1137	~~SPARE~~ Rainfall SINCE Last 24 Hrs	INCH								C C
C138	B1138	~~SPARE~~ TSATT TEMP LP CONDR	DEGF							E3	C C
C139	B1139	~~SPARE~~ TSATT TEMP HP CONDR	DEGF								C C
C140	B1140	~~SPARE~~ % FULL POWER EQUIL IODINE	%								C C
C141	B1141	~~SPARE~~ " " " XENON	%								C C
C142	B1142	~~SPARE~~ " CURRENT " " "	%								C C

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE	SIGNAL RGE	BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH DB SC CA	AVG CAL GN SA ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE RFV
C143	B1143	SPARE				C067+68+75+76/2	CONDR DP	DPSI C
C144	B1144	SPARE C000/.49 % OF RATED CORE FLOW %						C C
C145	B1145	SPARE C046/5.657 % OF RATED GROSS MWE %						C C
C146	B1146	SPARE C046/C179 GROSS THERMAL EFF %						C C
C147	B1147	SPARE (C090+C091)/2 COND PMP SUCT T	DEGF					C C
C148	B1148	SPARE HEAT BALANCE FLOWIALITY						C C
C149	B1149	SPARE CIRC WTR FLOW FROM HEAT BALANCE	KGPM					C C
C150	B1150	SPARE ~~C064+C065 RCT EW FLOW~~	~~MW/H~~					D C
C151	B1151	MAX E004 AUX XFMR XTEMP	DEGC					D C
C152	B1152	SPARE ~~(C073+C074)/2 CW OUT TEMP~~	~~DEGF~~					E C
C153	B1153	C005+C006+C007 TOT STA PWR	MW			1 1		D C
C154	B1154	C046-C153 UNIT NET POWER	MW			1 1		D C
C155	B1155	SPARE ~~(C060+C061)/2 EXH HOOD T~~	~~DEGF~~					E C

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE	SIGNAL RGE	BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH DB SC CA	AVG CAL GN SA ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
C156	B1156	C015-C030 FW HTR 1A APPR	DEGF					D C
C157	B1157	C016-C031 FW HTR 1B APPR	DEGF					D C
C158	B1158	C017-C032 FW HTR 2A APPR	DEGF					D C
C159	B1159	C018-C033 FW HTR 2B APPR	DEGF					D C
C160	B1160	C019 (C034+C035)/2 3A APPR	DEGF					D C
C161	B1161	C020 (C034+C035)/2 3B APP	DEGF					D C
C162	B1162	C021-C036 FW HTR 4A APPR	DEGF					D C
C163	B1163	C022-C037 FW HTR 4B APPR	DEGF					D C
C164	B1164	C023-C038 FW HTR 5A APPR	DEGF					D C
C165	B1165	C024-C039 FW HTR 5B APPR	DEGF					D C
C166	B1166	C025-C042 FW HTR 6A APPR	DEGF					D C
C167	B1167	C026-C043 FW HTR 6B APPR	DEGF					D C
C168	B1168	~~(C011+C012)/2 LP CON IN T~~ SPARE AUG TOP OUTR TEMP	~~DEGF~~ DEGF					E C

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE LIMITS LOW	INSTRUMENT RGE LIMITS HIGH	SIGNAL RGE DB	SC	CA	AVG	CAL	GN	SA	ALARM/ST	BD TYPE REFERENCE DRAWING	MPL NO INSTRUMENT NO. H	D	M	ER	T	NOTE	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP																			
C169	B1169	~~(C013+C014)/2 LP CON IN T~~ SPARE	DEGF																		E C
C170	B1170	API Y504 GEN GROSS ENERGY	MWH												1	1					D C
C171	B1171	API Y505 AUX XFMR ENERGY	MWH												1	1					D C
C172	B1172	API Y507 STBY XFMR ENERGY	MWH												1	1					D C
C173	B1173	API Y506 STARTUP XFMR EN	MWH												1	1					D C
C174	B1174	C171+C172+C173 TOT STA EN	MWH												1	1					D C
C175	B1175	C170-C174 UNIT NET ENERGY	MWH												1	1					D C
C176	B1176	~~C001+C002+C003+C004~~ SPARE STM FL	MW/H																		D C
C177	B1177	~~(C044+C045)/2 FW TEMP~~ SPARE	DEGF																		E C
C178	B1178	~~C176-C150 CALC CRD FLOW~~ SPARE	MW/H																		D C
C179	B1179	P4 CORE THERMAL POWER	MWT																		D C
C180	B1180	SMO F000 REHEAT STM FLOW TO MSR A MAXE005 AUX XFMR-Y TEMP	DEGF																		D C
C181	B1181	SMO F001 REHEAT STM FLOW TO MSR B MAXE006 STANDBY XFMR T	DEGF																		D C

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE	SIGNAL RGE	BD TYPE MPL NO INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH DB SC CA	AVG CAL GN SA ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T NOTE REV
C182	B1182	~~MAXF011 LP CON PR DIFF A DPSI~~ SMO F095 MSR A REHEAT 1ST STAGE DPSI					D C
C183	B1183	~~MAXF012 LP CON PR DIFF B DPSI~~ SMO F096 MSR B REHEAT 1ST STAGE DPSI					D C
C184	B1184	~~MAXF013 LP CON PR DIFF B DPSI~~ SPARE					D C
C185	B1185	~~MAXF014 LP CON PR DIFF A DPSI~~ SPARE					D C
C186	B1186	~~MAXF015 CWP AGB DISCH PR PSIG~~					D C
C187	B1187	~~MAXF016 CLG TWR A DISCH DEGF~~					D C
C188	B1188	~~MAXF017 CLG TWR B DISCH DEGF~~					D C
C189	B1189	~~MAXG058 GEN HDR OUTLET T DEGC~~					D C
C190	B1190	~~MAXG056 MAIN XFMR A TEMP DEGC~~					D C
C191	B1191	~~MAXG057 MAIN SFMR B TEMP DEGC~~					D C
C192	B1192	~~MAXG058 MAIN XFMR C TEMP DEGC~~					D C
C193	B1193	~~MAXG059 MAIN XFMR D TEMP DEGC~~					D C
C194	B1194	~~MAXG060 SU XFMR X TEMP DEGC~~					D C

E3

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS / LIMITS LOW	LIMITS HIGH	INSTRUMENT RGE DB SC CA	SIGNAL RGE AVG CAL GN SA ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REFERENCE DRAWING	LOGGING H D M ER T	NOTE	REV
C195	B1195	~~MAXG061 SU XFMR-Y TEMP~~	~~DEGC~~							D C
C196	B1196	MAXM022 RVR WTR INLET T	DEGF							D C
C197	B1197	MAXM023 CANAL DISCH WTR	DEGF							D C
C198	B1198	~~MAXT026 TURB OIL CLR OUT~~	~~DEGF~~							C C
C199	B1199	~~MAXT027 TURB OIL CLR IN T~~	~~DEGF~~							C C
C200	B1200	SMO ~~AVG~~8015 RX FW LOOP A	M~~A~~/H							A
C201	B1201	SMO ~~AVG~~8016 RX FW LOOP B	M~~A~~/H							A

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB SC CA	AVG	SIGNAL RGE CAL	GN SA ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REV REFERENCE DRAWING	LOGGING H D M ER T	NOTE	REV
F000	A1000	4160 V SWGR BUS 1A1 A-B 18-202-00	KV 3.800	0.0	5.250 6 4			0	100 7	3D E-4	M155	VT-A1	B D
F001	A1001	4160 V SWGR BUS 1A2 A-B 18-202-01	KV 3.800	0.0	5.250 6 4			0	100 7	3D E-4	M155	VT-A2	B D
F002	A1002	4160 V SWGR BUS 1A3 A-B 18-202-02	KV 3.800	0.0	5.250 6 4			0	100 7	3D E-5	M155	VT-A3	B D
F003	A1003	4160 V SWGR BUS 1A4 A-B 18-202-03	KV 3.800	0.0	5.250 6 4			0	100 7	3D E-5	M155	VT-A4	B D
RTD1 F004	A1004	AUX XFMR-X HOT SPOT TEMP R2 18-200-02	DEGC	0.0 105.0	200.0 6 4				7	4A	E3 2 2	49W	D D
RTD1 F005	A1005	AUX XFMR-Y HOT SPOT TEMP R2 18-200-03	DEGC	0.0 105.0	200.0 6 4				7	4A	E3 2 2	49W	D D
F006	A1006	STANDBY XFMR HOT SPOT T R2 18-200-10	DEGC	0.0 105.0	200.0 6 4				7	4A	E7 2 2	49W	D D
F007	A1007	AUX XFMR LOAD 18-202-10	MW	-42.0 V4G001 6	42.00 2	X		-35	35 7	3B E-4	M155	WT/AT	D D
F008	A1008	STARTUP XFMR LOAD 18-202-11	MW	-42.0	42.00 2	X		-100	100	3B E-4	M155	WT/ST	E D
F009	A1009	STANDBY XFMR LOAD 18-202-12	MW	-7.0	7.00 2	X		-40	40	3B E-5	M155	WT-SB	D D
E010	A1010	SPARE 18-202-13			4					3B			C D
RTD1 F011	A1011	SPARE 18-200-11			4					4A			E

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E

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	INSTRUMENT RGE LIMITS HIGH	DB SC CA	SIGNAL RGE AVG CAL GN SA ALARM/ST	BD TYPE MPL NO REFERENCE DRAWING	INSTRUMENT NO. LOGGING H D M ER T	REV NOTE REV
CFLO F000	A1012	REHEAT STM FLOW TO MSR A 07-021-13	K#/H	0.0 V9T016	0.0 6 4 170.0 X	32 160 7	38 M-103	M155	FT-1081	D D
CFLO F001	A1013	REHEAT STM FLOW TO MSR B 07-021-20	K#/H	0.0 V10T016	0.0 6 4 170.0 X	32 160 7	38 M-103	M155	FT-1080	D D
F002	A1014	CONDENSER HOTWELL LEVEL 07-021-21	INCH	0.0	0.0 4 14.00 X	32 160	38 M-106	M144	LT-1490	C D
FLOW F003	A1015	STM EJECT OFF GAS FLOW A 07-021-22	CFM	75.0	0.0 6 3 150.0 X	32 160 7	38 M-105	M3	FT1374A P	C D
PRES F004	A1016	COND PMP A&B DISCH PRESS 07-021-23	PSIG	575.0	0.0 6 3 600.0 X	32 160 7	38 M-106	M178	PT-1433 P	D D
RTD4 F005	A1017	LP CONDR CW IN TEMP A R4 17-111-00	DEGF	0.0	0.0 4 100.0 X		48 M-142	M155	TE4219A-D	D D
RTD4 F006	A1018	LP CONDR CW IN TEMP B R4 17-111-01	DEGF	0.0	0.0 4 100.0 X		48 M-142	M155	TE4220A-D	E D
RTD4 F007	A1019	LP CONDR CW OUT TEMP B R4 17-111-02	DEGF	0.0	0.0 4 200.0 X		48 M-142	M155	TE4217A-D	D D
RTD4 F008	A1020	LP CONDR CW OUT TEMP A R4 17-111-03	DEGF	0.0	0.0 4 200.0 X		48 M-142	M155	TE4218A-D	D D
RTD4 F009	A1021	HP CONDR CW OUT TEMP B R4 17-111-10	DEGF	0.0	0.0 4 200.0 X		48 M-142	M155	TE4216A-D	D D
RTD4 F010	A1022	HP CONDR CW OUT TEMP A R4 17-111-11	DEGF	0.0	0.0 4 200.0 X		48 M-142	M155	TE4215A-D	D D
PRES F011	A1023	LP CONDR PRESS DIFF A 07-021-30	DPSI	6.0	0.0 6 3 10.00	32 160 7	38 M-142	M155 7 7	PDT-4222 P	E D
PRES F012	A1024	LP CONDR PRESS DIFF B 07-021-31	DPSI	6.0	0.0 6 3 10.00	32 160 7	38 M-142	M155 7 7	PDT-4221 P	F D

F

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	INSTRUMENT RGE LIMITS HIGH	INSTRUMENT RGE DB SC CA	SIGNAL RGE AVG CAL GN SA ALARM/ST	BD TYPE MPL NO REFERENCE DRAWING	INSTRUMENT NO. LOGGING H D M ER T	REV NOTE REV
PRES F013	A1025	HP CONDR PRESS DIFF B 07-021-32	DPSI	6.0	0.0 6 3 10.00		32 160 7	38 M-142	M155 7 7 P PDT-4214	E D
PRES F014	A1026	HP CONDR PRESS DIFF A 07-021-33	DPSI	6.0	0.0 6 3 10.00		32 160 7	38 M-142	M155 7 7 P PDT-4213	E D
PRES F015	A1027	CWP A&B DISCH PRESS 07-022-00	PSIG		0.0 3 100.0		32 160	38 M-142	M155 7 7 P PT-4205	E D
F016	A1028	CLG TWR A BASIN LEVEL 07-022-01	INCH 52.0	58.0	0.0 6 3 60.0		32 160 7	38 M-142	M155 LT-4231	D E
F017	A1029	CLG TWR B BASIN LEVEL 07-022-02	INCH 52.0	58.0	0.0 6 3 60.0		32 160 7	38 M-142	M155 LT-4232	D E
RTD2 F018	A1030	CLG TWR A DISCH WTR TEMP R4 50.0 17-101-30	DEGF		0.0 6 4 200.0		7	48 M-142	M155 7 7 TE-4240	D D
RTD2 F019	A1031	CLG TWR B DISCH WTR TEMP R4 50.0 17-101-31	DEGF		0.0 6 4 200.0		7	48 M-142	M155 7 7 TE-4241	D D
RTD1 F020	A1032	CWP A MTR STATOR TEMP P1 R2 18-200-12	DEGC	120.0	0.0 6 4 200.0		7	4A M-142	E25 TE-4233A	A D
RTD1 F021	A1033	CWP A MTR STATOR TEMP P2 R2 18-200-13	DEGC	120.0	0.0 6 4 200.0		7	4A M-142	E25 TE-4233B	A D
RTD1 F022	A1034	CWP A MTR STATOR TEMP P3 R2 18-200-20	DEGC	120.0	0.0 6 4 200.0		7	4A M-142	E25 TE-4233C	A D
RTD1 F023	A1035	CWP B MTR STATOR TEMP P1 R2 18-200-21	DEGC	120.0	0.0 6 4 200.0		7	4A M-142	E25 TE-4234A	A D
RTD1 F024	A1036	CWP B MTR STATOR TEMP P2 R2 18-200-22	DEGC	120.0	0.0 6 4 200.0		7	4A M-142	E25 TE-4234B	A D
RTD1 F025	A1037	CWP B MTR STATOR TEMP P3 R2 18-200-23	DEGC	120.0	0.0 6 4 200.0		7	4A M-142	E25 TE-4234C	A D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE			SIGNAL RGE			BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB	SC CA	AVG CAL GN SA	ALARM/ST	REFERENCE DRAWING	H D M ER T	NOTE	REV
RTD2 F026	A1038	1E-1A LP FW HTR DR TEMP DEGF 17-101-32 R4	0.0	200.0 4		X			48 M-104	M155	TE-1101	D D
RTD2 F027	A1039	1E-1B LP FW HTR DR TEMP DEGF 17-101-33 R4	0.0	200.0 4		X			48 M-105	M155	TE-1311	D D
RTD2 F028	A1040	1E-10A LP DR CLR DR TEMPDEGF 17-102-00 R4	0.0	200.0 4					48 M-104	M155	TE-1105	D D
RTD2 F029	A1041	1E-10B LP DR CLR DR TEMPDEGF 17-102-01 R4	0.0	200.0 4					48 M-105	M155	TE-1315	D D
RTD2 F030	A1042	1E-2A LP FW HTR DR TEMP DEGF 17-102-02 R4	0.0	200.0 4		X			48 M-104	M155	TE-1110	D D
RTD2 F031	A1043	1E-2B LP FW HTR DR TEMP DEGF 17-102-03 R4	0.0	200.0 4		X			48 M-105	M155	TE-1304	D D
RTD2 F032	A1044	1E-3A LP FW HTR DR TEMP DEGF 17-102-10 R4	0.0	300.0 4		X			48 M-104	M155	TE-1119	D D
RTD2 F033	A1045	1E-3B LP FW HTR DR TEMP DEGF 17-102-11 R4	0.0	300.0 4		X			48 M-105	M155	TE-U320	D D
RTD2 F034	A1046	1E-4A LP FW HTR DR TEMP DEGF 17-102-12 R4	0.0	300.0 4		X			48 M-104	M155	TE-1137	D D
RTD2 F035	A1047	1E-4B LP FW HTR DR TEMP DEGF 17-102-13 R4	0.0	300.0 4		X			48 M-105	M155	TE-1395	D D
RTD2 F036	A1048	1E-5A LP FW HTR DR TEMP DEGF 17-102-20 R4	0.0	400.0 4		X			48 M-104	M155	TE-1145	D D
RTD2 F037	A1049	1E-5B LP FW HTR DR TEMP DEGF 17-102-21 R4	0.0	400.0 4		X			48 M-105	M155	TE-1341	D D
RTD2 F038	A1050	1E-6A HP FW HTR DR TEMP DEGF 17-102-22 R4	0.0	400.0 4		X			48 M-104	M155	TE-1152	D D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB	SC	CA	SIGNAL RGE AVG	CAL	GN	SA	ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REV REFERENCE DRAWING	H	LOGGING D	M	ER	T	NOTE	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP																			
RTD2 F039	A1051	1E-6B HP FW HTR DR TEMP 17-102-23 R4	DEGF	0.0	400.0	4		X						48 M-105	M155		TE-1349			D	D
PRES F040	A1052	1P-1A RFP SUCT PRESS 07-022-03	PSIG 200.0	0.0	600.0	6	3	X	32	160	7			38 M-107	M155		PT-1575	P		D	D
PRES F041	A1053	1P-1B RFP SUCT PRESS 07-022-10	PSIG 200.0	0.0	600.0	6	3	X	32	160	7			38 M-107	M155		PT-1617	P		D	D
PRES F042	A1054	1P-1A RFP DISCH PRESS 07-022-11	PSIG	0	2000		3	X	32	160				38 M-107	M155		PT-1577	P		E	D
PRES F043	A1055	1P-1B RFP DISCH PRESS 07-022-12	PSIG	0	2000		3	X	32	160				38 M-107	M155		PT-1619	P		E	D
CFLO F044	A1056	COND TOTAL FLOW 07-022-13	M[illegible]H	0.0	8.0		3	X	32	160				38 M-106	M155		FT-1426			C	D
CFLO F045	A1057	COND MAKEUP FLOW 07-022-20	K[illegible]H	0.0	100.0		3	X	32	160				38 M-106	M155		FT-1493			C	D
CFLO F046	A1058	COND REJECTION FLOW 07-022-21	K[illegible]H	0.0	50.00		3	X	32	160				38 M-106	M155		FT-1500			C	D
RTD2 F047	A1059	COND PMP A SUCT TEMP 17-102-30 R4	DEGF	0.0	200.0		4	X						48 M-106	M155		TE-1403			E	D
RTD2 F048	A1060	COND PMP B SUCT TEMP 17-102-31 R4	DEGF	0.0	200.0		4	X						48 M-106	M155		TE-1413			E	D
RTD2 F049	A1061	STM PKG EXHTR SUCT TEMP 17-102-32 R4	DEGF	0.0	200.0		4							48 M-106	M155	3	TE-1420			C	D
RTD2 F050	A1062	COND TEMP TO COND DEMIN 17-102-33 R4	DEGF	0.0	200.0		4							48 M-108	M155	3	TE-1430			C	D
RTD2 F051	A1063	1E-10A DR CLR FW IN TEMP 17-103-00 R4	DEGF	0.0	200.0		4							48 M-106	M155	4	TE-1439			D	D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE		SIGNAL RGE						BD TYPE MPL NO INSTRUMENT NO. REV					
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB SC CA	AVG CAL GN SA	ALARM/ST					REFERENCE DRAWING	H	D M ER T	NOTE	REV	
RTD2 F052	A1064	1E-10B DR CLR FW IN TEMPDEGF 17-103-01 R4	0.0	4 200.0								48 M-106	M155 5	TE-1445		D D	
RTD2 F053	A1065	1E-10A DR CLR FW OT TEMPDEGF 17-103-02 R4	0.0	4 200.0	X							48 M-106	M155	TE-1443		D D	
RTD2 F054	A1066	1E-10B DR CLR FW OT TEMPDEGF 17-103-03 R4	0.0	4 200.0	X							48 M-106	M155	TE-1449		D D	
RTD2 F055	A1067	FW TEMP FROM HTR 1E-1A DEGF 17-103-10 R4	0.0	4 300.0	X							48 M-106	M155	TE-1453		D D	
RTD2 F056	A1068	FW TEMP FROM HTR 1E-1B DEGF 17-103-11 R4	0.0	4 300.0	X							48 M-106	M155	TE-1459		D D	
RTD2 F057	A1069	FW TEMP FROM HTR 1E-2A DEGF 17-103-12 R4	0.0	4 300.0	X							48 M-106	M155	TE-1463		D D	
RTD2 F058	A1070	FW TEMP FROM HTR 1E-2B DEGF 17-103-13 R4	0.0	4 300.0	X							48 M-106	M155	TE-1469		D D	
RTD2 F059	A1071	FW TEMP FROM HTR 1E-3A DEGF 17-103-20 R4	0.0	4 300.0	X							48 M-107	M155	TE-1555		D D	
RTD2 F060	A1072	FW TEMP FROM HTR 1E-3B DEGF 17-103-21 R4	0.0	4 300.0	X							48 M-107	M155	TE-1597		D D	
RTD2 F061	A1073	FW TEMP FROM HTR 1E-4A DEGF 17-103-22 R4	0.0	4 400.0	X							48 M-107	M155	TE-1563		D D	
RTD2 F062	A1074	FW TEMP FROM HTR 1E-4B DEGF 17-103-23 R4	0.0	4 400.0	X							48 M-107	M155	TE-1605		D D	
RTD2 F063	A1075	FW TEMP FROM HTR 1E-5A DEGF 17-103-30 R4	0.0	4 400.0	X							48 M-107	M155	TE-1568		D D	
RTD2 F064	A1076	FW TEMP FROM HTR 1E-5B DEGF 17-103-31 R4	0.0	4 400.0	X							48 M-107	M155	TE-1610		D D	

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE				SIGNAL RGE				BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB	SC	CA	AVG	CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	H D M ER T	LOGGING	NOTE REV
RTD2 F065	A1077	FW TEMP TO HTR 1E-6A 17-103-32 R4	DEGF	0.0	4	400.0	X						4B M-107	M155	TE-1583	D D
RTD2 F066	A1078	FW TEMP TO HTR 1E-6B 17-103-33 R4	DEGF	0.0	4	400.0	X						4B M-107	M155	TE-1627	D D
RTD2 F067	A1079	FW TEMP FROM HTR 1E-6A 17-110-00 R4	DEGF	0.0	4	500.0	X						4B M-107	M155	TE-1587A P T	D D
RTD2 F068	A1080	FW TEMP FROM HTR 1E-6B 17-110-01 R4	DEGF	0.0	4	500.0	X						4B M-107	M155	TE-1587B P T	D D
PRES F069	A1081	LOOP A FW CONTROL PRESS 07-022-22	PSIG	0.0	1	2000.0	X	32	160				3B M-107	M155	PT-1582	C D
PRES F070	A1082	LOOP B FW CONTROL PRESS 07-022-23	PSIG	0.0	1	2000.0	X	32	160				3B M-107	M155	PT-1623	C D
RTD1 F071	A1083	CP A MTR STATOR TEMP P1 07-032-03 R2	DEGC	0.0 120.0	6	4	200.0				7		4A M-106	M7	TE-1512A	A D
RTD1 F072	A1084	CP A MTR STATOR TEMP P2 07-032-10 R2	DEGC	0.0 120.0	6	4	200.0				7		4A M-106	M7	TE-1512B	A D
RTD1 F073	A1085	CP A MTR STATOR TEMP P3 07-032-11 R2	DEGC	0.0 120.0	6	4	200.0				7		4A M-106	M7	TE-1512C	A D
RTD1 F074	A1086	CP B MTR STATOR TEMP P1 07-032-12 R2	DEGC	0.0 120.0	6	4	200.0				7		4A M-106	M7	TE-1513A	A D
RTD1 F075	A1087	CP B MTR STATOR TEMP P2 07-032-13 R2	DEGC	0.0 120.0	6	4	200.0				7		4A M-106	M7	TE-1513B	A D
RTD1 F076	A1088	CP B MTR STATOR TEMP P3 07-032-20 R2	DEGC	0.0 120.0	6	4	200.0				7		4A M-106	M7	TE-1513C	A D
RTD1 F077	A1089	RFP A MTR STATOR TEMP P1 07-032-21 R2	DEGC	0.0 120.0	6	4	200.0				7		4A M-107	E25	TE-1645A	A D

TYPE / SCAN ADPS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	INSTRUMENT RGE LIMITS HIGH	DB	SC	CA	AVG	CAL	GN	SA	ALARM/ST	BD TYPE MPL NO REFERENCE DRAWING	INSTRUMENT NO. H	LOGGING D M ER T	NOTE	REV
PTD1 F078	A1090	REP A MTR STATOR TEMP P2DEGC 07-032-22 R2		0.0 120.0	200.0	6	4						7	4A M-107	E25	TE-1645B		A D
PTD1 F079	A1091	REP A MTR STATOR TEMP P3DEGC 07-032-23 R2		0.0 120.0	200.0	6	4						7	4A M-107	E25	TE-1645C		A D
PTD1 F080	A1092	REP B MTR STATOR TEMP P1DEGC 07-032-30 R2		0.0 120.0	200.0	6	4						7	4A M-107	E25	TE-1646A		A D
PTD1 F081	A1093	REP B MTR STATOR TEMP P2DEGC 07-032-31 R2		0.0 120.0	200.0	6	4						7	4A M-107	E25	TE-1646B		A D
RTD1 F082	A1094	REP B MTR STATOR TEMP P3DEGC 07-032-32 R2		0.0 120.0	200.0	6	4						7	4A M-107	E25	TE-1646C		A D
F083	A1095	DEMIN WTR TANK EFFL COND 17-111-20	MMHO	0.00	10.00		3			16	80			3F M-109	M20	CIT-5209		D D
PRES F084	A1096	COND DEM DIFF PRESS 07-022-30	DPSI	0.0	40.00	X	4			32	160			3B M-108	M20	PDT-1707		C D
F085	A1097	COND DEM INFL CONDUCT 17-111-21	MMHO	0.0	1.000		3			0	10			3F M-147	M20	CIT-1704		C D
F086	A1098	DEM TK A EFFL CONDUCT 17-111-22	MMHO	0.0	1.000		3			0	10			3F M-147	M20	CIT-1726A		A D
F087	A1099	DEM TK B EFFL CONDUCT 17-111-23	MMHO	0.0	1.000		3			0	10			3F M-147	M20	CIT-1726B		A D
F088	A1100	DEM TK C EFFL CONDUCT 17-111-30	MMHO	0.0	1.000		3			0	10			3F M-147	M20	CIT-1726C		A D
F089	A1101	DEM TK D EFFL CONDUCT 17-111-31	MMHO	0.0	1.000		3			0	10			3F M-147	M20	CIT-1726D		A D
F090	A1102	DEM TK E EFFL CONDUCT 17-111-32	MMHO	0.0	1.000		3			0	10			3F M-147	M20	CIT-1726E		A D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE				SIGNAL RGE				BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB	SC	CA	AVG	CAL	GN	SA ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
F091	A1103	COND DEM EFFL CONDUCT 17-111-33	MMHO	0.000	3	1.000		0	10			3F M-147	M20	CIT-1705	B D
F092	A1104	CIRC WTR PMP PIT LEVEL 07-022-31	FT	0.0	4	35.0		32	160			3B M-142	M158	LT-4212	A D
FLOW F093	A1105	STM EJECT OFF GAS FLOW B 07-022-32	CFM	0.0 75.0	4	150.0	X	32	160 7			3B M-105	M3	FT-13748 P	C E
PRES F094	A1106	FW FINAL PRESS 07-022-33	PSIG	0	4	2000	X	32	160			3B M-107	M155	PT-1637	D D
PRES F095	A1107	MSR A REHEAT 1ST STAGE 17-112-00	DPSI	0.0 V7TO16	4	15.0		16	80 7			3E M-103	LSTG	FT-1045A	D D
PRES F096	A1108	MSR B REHEAT 1ST STAGE 17-112-01	DPSI	0.0 V8TO16	4	15.0		16	80 7			3E M-103	LSTG	FT-1045B	D D
RTD1 F097	A1109	SPARE 07-032-33	R2		4							4A			D
RTD1 F098	A1110	GEN COLLECTOR INLET TEMP 18-200-30	DEGC R2	0.0 75.0	4	100.0						4A M-145	LSTG	TE-3689A	A E
RTD1 F099	A1111	GEN COLLECTOR OUT TEMP 18-200-31	DEGC R2	0.0 75.0	4	100.0						4A M-145	LSTG	TE-3689B	A E
RTD2 F100	A1112	~~SPARE~~ TURB WTR TEMP TE 4394A 17-110-02	R4		4							4B			D
RTD2 F101	A1113	~~SPARE~~ TURB WTR TEMP TE 4394B 17-110-03	R4		4							4B			D
RTD2 F102	A1114	SPARE 17-110-10	R4		4							4B			D
RTD2 F103	A1115	SPARE 17-110-11	R4		4							4B			D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE		SIGNAL RGE			BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB SC CA	AVG CAL GN SA	ALARM/ST	REFERENCE DRAWING	H	LOGGING D M ER T	NOTE	REV
RT02 F104	A1116	SPARE 17-110-12 R4	Reserved	4				4B				D

TYPE / SCAN ADPS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS / LIMITS LOW	LIMITS HIGH	INSTRUMENT RGE DB	SC	CA	SIGNAL RGE AVG	CAL	GN	SA	ALARM/ST	BD TYPE MPL NO / REFERENCE DRAWING	INSTRUMENT NO. / LOGGING H	D	M	ER	T	NOTE	REV
G000	A1124	GEN VOLT 22KV P 1/2 18-202-20	KV 20.90	0.0 23.10	6	4	27.50		0	100 7			3D E-4	M155		VT/G P				B D
G001	A1125	GEN GROSS WATTS 18-202-21	MW	0.0 VLT039	6	3	720.0	X	0	60 7			3D E-4	M155		WT/G P	T			C D
G002	A1126	GEN GROSS VARS 18-202-22	MVAR	-300.0		4	300.0	X	-25	25			3D E-4	M155		VART/G P				D D
G003	A1127	GEN STATOR KILOAMPS P1 18-202-23	KAMP	0.00		3	20.00	X	0	100			3D E-4	M155		AT/G P				D D
G004	A1128	GEN STATOR KILOAMPS P2 18-202-30	KAMP	0.00		3	20.00		0	100			3D E-4	M155		AT/G				D D
G005	A1129	GEN STATOR KILOAMPS P3 18-202-31	KAMP	0.00		3	20.00		0	100			3D E-4	M155		AT/G				D D
G006	A1130	GEN FIELD VOLTAGE 07-023-00	VOLTS 100.0	0.0 450.0	6	3	600.0		32	160 7			3B E-4	LSTG 1		DCPT P				A E
G007	A1131	GEN FIELD CURRENT 07-023-01	AMPS	0.0	6	3	3000.0		32	160			3B E-4	LSTG 1		DCCT P				C D
PTD1 G008	A1132	GEN HYDRO BEFORE CLR 1 07-033-00 R2	DEGC	0.0 80.0	6	4	100.0			7			4A M-145	LSTG		TE-3683A				C D
PTD1 G009	A1133	GEN HYDRO BEFORE CLR 2 07-033-01 R2	DEGC	0.0 80.0	6	4	100.0			7			4A M-145	LSTG		TE-3683B				A D
PTD1 G010	A1134	GEN HYDRO BEFORE CLR 3 07-033-02 R2	DEGC	0.0 80.0	6	4	100.0			7			4A M-145	LSTG		TE-3683C				A D
PTD1 G011	A1135	GEN HYDRO BEFORE CLR 4 07-033-03 R2	DEGC	0.0 80.0	6	4	100.0			7			4A M-145	LSTG		TE-3683D				A D
PTD1 G012	A1136	GEN HYDRO AFTER CLR 1 07-033-10 R2	DEGC	0.0 51.0	6	4	75.0			7			4A M-145	LSTG		TE-3684A				A D

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	LIMITS LOW	LIMITS HIGH	INSTRUMENT RGE DB SC CA	SIGNAL RGE AVG CAL GN SA ALARM/ST	BD TYPE MPL NO REFERENCE DRAWING	INSTRUMENT NO. LOGGING H D M ER T	NOTE	REV
RTD1 G013	A1137	GEN HYDRO AFTER CLR 2 R2 07-033-11	DEGC	51.0	0.0 6 4 75.0		7	4A M-145	LSTG TE-3684B		A D
RTD1 G014	A1138	GEN HYDRO AFTER CLR 3 R2 07-033-12	DEGC	51.0	0.0 6 4 75.0		7	4A M-145	LSTG TE-3684C		A D
RTD1 G015	A1139	GEN HYDRO AFTER CLR 4 R2 07-033-13	DEGC	51.0	0.0 6 4 75.0		7	4A M-145	LSTG TE-3684D		A D
RTD1 G016	A1140	ALTEREX CLR INLET AIR T R2 07-033-20	DEGC	0.0	3 50.0			4A M-145	LSTG TE-3685A P		A D
RTD1 G017	A1141	ALTEREX CLR OUTLET AIR T R2 07-033-21	DEGC	0.0	3 75.0			4A M-145	LSTG TE-3685B		A D
CUTC G018	A1142	GEN STR CLG COIL OUT T1 17-120-00	DEGC	90.00	0.0 6 4 100.0		7	1A M-145	LSTG TE-3686A		A D
CUTC G019	A1143	GEN STR CLG COIL OUT T2 17-120-01	DEGC	90.00	0.0 6 4 100.0		7	1A M-145	LSTG TE-3686B		A D
CUTC G020	A1144	GEN STR CLG COIL OUT T3 17-120-02	DEGC	90.00	0.0 6 4 100.0		7	1A M-145	LSTG TE-3686C		A D
CUTC G021	A1145	GEN STR CLG COIL OUT T4 17-120-03	DEGC	90.00	0.0 6 4 100.0		7	1A M-145	LSTG TE-3686D		A D
CUTC G022	A1146	GEN STR CLG COIL OUT T5 17-120-10	DEGC	90.00	0.0 6 4 100.0		7	1A M-145	LSTG TE-3686E		A D
CUTC G023	A1147	GEN STR CLG COIL OUT T6 17-120-11	DEGC	90.00	0.0 6 4 100.0		7	1A M-145	LSTG TE-3686F		A D
CUTC G024	A1148	GEN STR CLG COIL OUT T7 17-120-12	DEGC	90.00	0.0 6 4 100.0		7	1A M-145	LSTG TE-3686G		A D
CUTC G025	A1149	GEN STR CLG COIL OUT T8 17-120-13	DEGC	90.00	0.0 6 4 100.0		7	1A M-145	LSTG TE-3686H		A D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE	SIGNAL RGE	BD TYPE MPL NO INSTRUMENT NO. REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW HIGH	DB SC CA	AVG CAL GN SA ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
CUTC G026	A1150	GEN STR CLG COIL OUT T9 17-120-20	DEGC	90.00 0.0 6 4 100.0	7	1A M-145	LSTG	TE-3686J	A D
CUTC G027	A1151	GEN STR CLG COIL OUT T10 17-120-21	DEGC	90.00 0.0 6 4 100.0	7	1A M-145	LSTG	TE-3686K	A D
CUTC G028	A1152	GEN STR CLG COIL OUT T11 17-120-22	DEGC	90.00 0.0 6 4 100.0	7	1A M-145	LSTG	TE-3686L	A D
CUTC G029	A1153	GEN STR CLG COIL OUT T12 17-120-23	DEGC	90.00 0.0 6 4 100.0	7	1A M-145	LSTG	TE-3686M	A D
RTD1 G030	A1154	GEN STATOR TEMP 1 18-201-00 R2	DEGC	85.00 0.0 6 4 100.0	7	4A M-145	LSTG	TE-3687A	A D
RTD1 G031	A1155	GEN STATOR TEMP 2 18-201-01 R2	DEGC	85.00 0.0 6 4 100.0	7	4A M-145	LSTG	TE-3687B	A D
RTD1 G032	A1156	GEN STATOR TEMP 3 18-201-02 R2	DEGC	85.00 0.0 6 4 100.0	7	4A M-145	LSTG	TE-3687C	A D
RTD1 G033	A1157	GEN STATOR TEMP 4 18-201-03 R2	DEGC	85.00 0.0 6 4 100.0	7	4A M-145	LSTG	TE-3687D	A D
RTD1 G034	A1158	GEN STATOR TEMP 5 18-201-10 R2	DEGC	85.00 0.0 6 4 100.0	7	4A M-145	LSTG	TE-3687E	A D
RTD1 G035	A1159	GEN STATOR TEMP 6 18-201-11 R2	DEGC	85.00 0.0 6 4 100.0	7	4A M-145	LSTG	TE-3687F	A D
RTD1 G036	A1160	GEN STATOR TEMP 7 18-201-12 R2	DEGC	85.00 0.0 6 4 100.0	7	4A M-145	LSTG	TE-3687G	A D
RTD1 G037	A1161	GEN STATOR TEMP 8 18-201-13 R2	DEGC	85.00 0.0 6 4 100.0	7	4A M-145	LSTG	TE-3687H	A D
RTD1 G038	A1162	GEN STATOR TEMP 9 18-201-20 R2	DEGC	85.00 0.0 6 4 100.0	7	4A M-145	LSTG	TE-3687J	A D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE					SIGNAL RGE					BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB	SC	CA		AVG	CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
PTD1 G039	A1163	GEN STATOR TEMP 10 18-201-21 R2	DEGC 0.0 85.00		6	4	100.0				7			4A M-145	LSTG	TE-3687K A D
PTD1 G040	A1164	GEN STATOR TEMP 11 18-201-22 R2	DEGC 0.0 85.00		6	4	100.0				7			4A M-145	LSTG	TE-3687L A D
PTD1 G041	A1165	GEN STATOR TEMP 12 18-201-23 R2	DEGC 0.0 85.00		6	4	100.0				7			4A M-145	LSTG	TE-3687M A D
PTD1 G042	A1166	ALTEREX STR COIL TEMP 1 18-201-30 R2	DEGC 0.0 100.0		6	4	100.0				7			4A M-145	LSTG	TE-3688A A D
PTD1 G043	A1167	ALTEREX STR COIL TEMP 2 18-201-31 R2	DEGC 0.0 100.0		6	4	100.0				7			4A M-145	LSTG	TE-3688B A D
PTD1 G044	A1168	ALTEREX STR COIL TEMP 3 18-201-32 R2	DEGC 0.0 100.0		6	4	100.0				7			4A M-145	LSTG	TE-3688C A D
PTD1 G045	A1169	ALTEREX STR COIL TEMP 4 18-201-33 R2	DEGC 0.0 100.0		6	4	100.0				7			4A M-145	LSTG	TE-3688D A D
PTD1 G046	A1170	ALTEREX STR COIL TEMP 5 19-200-32 R2	DEGC 0.0 100.0		6	4	100.0				7			4A M-145	LSTG	TE-3688E A D
PTD1 G047	A1171	ALTEREX STR COIL TEMP 6 19-200-33 R2	DEGC 0.0 100.0		6	4	100.0				7			4A M-145	LSTG	TE-3688F A D
CUTC G048	A1172	SPARE 17-113-33				4								1A		A D
PTD1 G049	A1173	GEN STR LIQ HDR INLET T R4	DEGC 0.0 48.0		6	3	50.0	X			7			4A M-145	LSTG	TE-3614 A E
RTD1 G050	A1174	GEN STR LIQ HDR OUTLET T R4	DEGC 0.0 90.0		6	4	100.0				7			4A M-145	LSTG 2 2	TE-3620 P A D
G051	A1175	STR CLG WTR IN CONDUCT 07-023-02	MMHO 0.0 09.90		6	3	10.00	X		32	160 7			3B M-145	LSTG	CIT-3612 P C D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB SC CA	SIGNAL RGE AVG CAL GN SA ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REV REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP								
PRES G052	A1176	GEN HYDRO GAS PRESS 07-023-03	PSIG	7.0	47.0	0.0 6 4 50.0 X	32 160 7	3B M-145	LSTG PT-3647	B E
								1A		A D
CUTC G053	A1177	SPARE 17-120-30				4				
								1A		A D
CUTC G054	A1178	SPARE 17-120-31				4				
								3B		C D
G055	A1179	SPARE 18-202-32				4				
RTD1 G056	A1180	MAIN XFMR-A HOT SPOT T_{R2}	DEGC	105.0	0.0	6 4 200.0	7	4A	E2 2 2 49W	C D
RTD1 G057	A1181	MAIN XFMR-B HOT SPOT T_{R2} 07-033-23	DEGC	105.0	0.0	6 4 200.0	7	4A	E2 2 2 49W	C D
RTD1 G058	A1182	MAIN XFMR-C HOT SPOT T_{R2} 07-033-30	DEGC	105.0	0.0	6 4 200.0	7	4A	E2 2 2 49W	C D
RTD1 G059	A1183	MAIN XFMR-D HOT SPOT T_{R2} 07-033-31	DEGC	105.0	0.0	6 4 200.0	7	4A	E2 2 2 49W	C D
RTD1 G060	A1184	SU XFMR-X HOT SPOT TEMP $_{R2}$ 07-033-32	DEGC	105.0	0.0	6 4 200.0	7	4A	E4 2 2 49W	D D
RTD1 G061	A1185	SU XFMR-Y HOT SPOT TEMP $_{R2}$ 07-033-33	DEGC	105.0	0.0	6 4 200.0	7	4A	E4 2 2 49W	D D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE LOW	INSTRUMENT RGE HIGH	DB	SC	CA	SIGNAL RGE AVG	SIGNAL RGE CAL	GN	SA	ALARM/ST	BD TYPE MPL NO REFERENCE DRAWING	INSTRUMENT NO. LOGGING H	D	M	ER	T	NOTE	REV
SCAN ADPS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS																		
PRES M000	A1191	OUTSIDE BAROMETRIC PRESSINHG 18-203-00			15.00	4	33.00	X		32	160			3B M-143	M155			PT-4364			E E
M001	A1192	OUTSIDE TEMP ~~165 FT~~ DIFF 165'-35' 17-110-13	DEGF	~~-30.0~~ -10	~~120.0~~ +10	4			.4 ~~8~~		80			3B M-143	IELP						E E
CUTC M002	A1193	RCT CLG WTR HX TEMP OUT 17-131-33	DEGF	115.0	0.0	4	200.0							12-7-76 Dave Harrington 1A M-112	M155 6			TE-4812			B E
RTD2 M003	A1194	SERV WTR PMPS DISCH TEMP R4 17-110-20	DEGF	90.0	0.0	6	4	100.0			7			4B M-146	M155 6			TE-4901			D E
RTD2 M004	A1195	SERV WTR OUTLET TEMP R4 17-110-21	DEGF		0.0		4	200.0						4B M-111	M155 6			TE-4773			B D
M005	A1196	OUTSIDE DEW POINT 35 FT 17-110-22	DEGF		-20.0		4	80.0		0	~~80~~ 10			3B M-143	IELP						E E
FLOW M006	A1197	RIVER WATER MAKEUP FLW B 18-203-01	KGPM		0.0		4	14.0	X		32	160		3B M-146	M155			FT-4916			F D
FLOW M007	A1198	RIVER WATER MAKEUP FLW A 18-203-02	KGPM		0.0		4	14.0	X		32	160		3B M-146	M155			FT-4917			F D
FLOW M008	A1199	BLOWDOWN FLOW 18-203-03	KGPM		0.0		4	7.0	X		32	160		3B M-142	M155			FT-4247			E D
FLOW M009	A1200	RADWASTE DILUTION FLOW 18-203-10	KGPM		0.0		4	20.0	X		32	160		3B M-146	M155			FT-4909			D D
M010	A1201	RIVER WATER INTAKE LEVEL 18-203-11	FT		724.0		4	764.0			32	160		3B M-142	M155			LT-2901			F D
M011	A1202	OUTSIDE TEMP 35 FT 18-203-12	DEGF		-30.0		4	120.0		3.56 ~~8~~	~~80~~	160		12-7-76 Dave Harrington 3B M-143	IELP						D E
M012	A1203	~~SPARE~~ CIRC WATER PH 18-203-13	PH		~~2.0~~ 0.0		4	~~10.0~~ 14.0		32		160		7-28-77 Dave Harrington 3B M-~~143~~ -180				PHIT-8004/5			E E

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE LOW	INSTRUMENT RGE HIGH	SIGNAL RGE DB	SC	CA	AVG	CAL	GN	SA	ALARM/ST	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	LIMITS HIGH										REFERENCE DRAWING	LOGGING H	D	M	ER	T	NOTE	REV
M013	A1204	OUTSIDE TEMP ~~DIFF~~ 165~~35~~ FEET 18-203-20	DEGF	-10.0	-30 to +120°F 10.0	4			3.77 12-7-76		160 mv 80MV Dave Harrington			3B M-143	IELP						D E
M014	A1205	CANAL DISCH CONDUCTIVITY MMHO 07-023-10	0.0	0	1000	4			32		160			3B M-142	M180	CIT-4261					E D
M015	A1206	RW SUP PUMPS A&C CONDUC TMMHO 07-023-11		0	1000	4			32		160			3B M-129	M180	CIT-2914					E D
M016	A1207	RW SUP PUMPS B&D CONDUC TMMHO 07-023-12		0	1000	4			32		160			3B M-129	M180	CIT-2915					E D
M017	A1208	WIND DIRECTION 165 FT 07-023-13	DEG	0	540	4			0		80			3B M-143	IELP						E E
M018	A1209	CANAL DISCH PH 18-203-31	PH	2.0	10.0	4			32		160			3B M-142	M180	PHIT-4262					D D
M019	A1210	RW SUP PUMPS A&C PH 18-203-32	PH	2.0	10.0	4			32		160			3B M-129	M180	PHIT-2914					E D
M020	A1211	RW SUP PUMPS A&C TEMP 18-203-21	DEGF	~~40.0~~ 20.0	~~100.0~~ 120.0	4			32		160			3B M-129	M155	TT-2916					F D
M021	A1212	RW SUP PUMPS B&D TEMP 18-203-22	DEGF	~~40.0~~ 20.0	~~100.0~~ 120.0	4			32		160			3B M-129	M155	TT-2917					F D
M022	A1213	RIVER WATER INLET TEMP 18-203-23	DEGF	0.0	100.0	4			32		160			3B M-129	M155 ? ?	TT-2900					E D
M023	A1214	CANAL DISCH WATER TEMP 18-203-30	DEGF	20.0	120.0	4			32		160			3B M-142	M155 ? ?	TT-4263					D D
M024	A1215	WIND SPEED 165 FT 18-210-00	MPH	0	100	4			0		~~80~~ 160			3B M-143	IELP						B E
M025	A1216	WIND DIRECTION 35 FT 07-023-20	DEG	0	540	4			0		~~80~~ 160			3B M-143	IELP						C E

TYPE / SCAN ADPS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB	SC	CA	SIGNAL RGE AVG	CAL	GN	SA	ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REV / REFERENCE DRAWING	LOGGING H	D	M	ER	T	NOTE	REV
M026	A1217	RW SUP PUMPS B&D PH 18-202-33	PH	2.0			10.0	4	32		160			3B M-129	M180			PHIT-2915			E D
M027	A1218	WIND SPEED 35 FT 18-203-33	MPH	0			100 SQ	4	0		160 SQ			3B M-143	IELP						E E

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE			SIGNAL RGE					BO TYPE MPL NO INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB SC CA	AVG	CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
OUT 0000	A5000	ANALOG RECORDER 1 PEN 1 10AT-0102					4	20					C C
OUT 0001	A5001	ANALOG RECORDER 1 PEN 2 10AT-0304					4	20					C C
OUT 0002	A5002	ANALOG RECORDER 2 PEN 1 10AT-0506					4	20					C C
OUT 0003	A5003	ANALOG RECORDER 2 PEN 2 10AT-0708					4	20					C C

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB	SC	CA	SIGNAL RGE AVG	CAL	GN	SA	ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REV REFERENCE DRAWING	LOGGING H	D	M	ER	T	NOTE	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP																			
S000	A1850	SHORT CIRCUIT CH 0 07-000-00	MV	0.0	10.0		4		0		10			3B							C D
S001	A1851	10 MV REFERENCE CH 0 07-000-01	MV	0.0	10.0		4		0		10			3B							C D
S002	A1852	SHORT CIRCUIT CH 1 17-100-00	MV	0.0	10.0		4		0		10			3B							C D
S003	A1853	10 MV REFERENCE CH 1 17-100-01	MV	0.0	10.0		4		0		10			3B							C D
PT03 S004	A1854	T/C REFERENCE JUNCTION 17-100-02	DEGF				4							4B							C D
S005	A1855	SHORT CIRCUIT CH 2 18-200-00	MV	0.0	10.0		4		0		10			3B							C D
S006	A1856	10 MV REFERENCE CH 2 18-200-01	MV	0.0	10.0		4		0		10			3B							C D

TYPE SCAN ADPS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB	SC	CA	AVG	SIGNAL RGE CAL	GN	SA	ALARM/ST	BD TYPE MPL NO REFERENCE DRAWING	INSTRUMENT NO. LOGGING H	D	M	ER	T	NOTE	REV
PRES T000	A1225	1E-1A LP FW HTR PRESS 07-023-21	PSIA	7.4	0.0	6	4	30.00	X	32	160/7			3B M-104	M155			PT-1188			D D
PRES T001	A1226	1E-2A LP FW HTR PRESS 07-023-22	PSIA	16.00	0.0	6	4	30.00	X	32	160/7			3B M-104	M155			PT-1112			D D
PRES T002	A1227	1E-3A LP FW HTR PRESS 07-023-23	PSIA	58.40	0.0	6	4	100.0	X	32	160/7			3B M-104	M155			PT-1125			D D
PRES T003	A1228	1E-4A LP FW HTR PRESS 07-023-30	PSIA	99.0	0.0	6	4	100.0	X	32	160/7			3B M-104	M155			PT-1135			D E
PRES T004	A1229	1E-5A LP FW HTR PRESS 07-023-31	PSIA	190.2	0.0	6	4	200.0	X	32	160/7			3B M-104	M155			PT-1147			D D
PRES T005	A1230	1E-1B LP FW HTR PRESS 07-023-32	PSIA	7.400	0.0	6	4	30.00	X	32	160/7			3B M-105	M155			PT-1308			D D
PRES T006	A1231	1E-2B LP FW HTR PRESS 07-023-33	PSIA	16.00	0.0	6	4	30.00	X	32	160/7			3B M-105	M155			PT-1300			D D
PRES T007	A1232	1E-3B LP FW HTR PRESS 07-030-00	PSIA	58.40	0.0	6	4	100.0	X	32	160/7			3B M-105	M155			PT-1318			D D
PRES T008	A1233	1E-4B LP FW HTR PRESS 07-030-01	PSIA	99.0	0.0	6	4	100.0	X	32	160/7			3B M-105	M155			PT-1330			D E
PRES T009	A1234	1E-5B LP FW HTR PRESS 07-030-02	PSIA	190.2	0.0	6	4	200.0	X	32	160/7			3B M-105	M155			PT-1337			D D
PRES T010	A1235	HP TURB REHEAT STM PRESS 07-030-03	PSIG	VSG001	0.0	6	3	300.0		32	160/7			3B M-103	M155 3			PT-1009A T			D D
PRES T011	A1236	1E-6A HP FW HTR PRESS 07-030-10	PSIA	366.9	0.0	6	4	400.0	X	32	160/7			3B M-104	M155			PT-1159 T			D D
PRES T012	A1237	1E-6B HP FW HTR PRESS 07-030-11	PSIA	366.9	0.0	6	4	400.0	X	32	160/7			3B M-105	M155			PT-1357 T			D D

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	INSTRUMENT RGE LIMITS HIGH	INSTRUMENT RGE DB SC CA	SIGNAL RGE AVG CAL GN SA ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REV REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
PRES T013	A1238	MS PRESS WIDE RANGE 07-030-12	PSIG	0.0	1200.0 2		32 160	3B M-103	M155 2	PT-1000 T	D D
PRES T014	A1239	MS PRESS NARROW RANGE 07-030-13	PSIG	600.0 1000. 6	1200.0 2		32 160 7	3B M-103	M155 2	PT-1001 T	D D
T015	A1240	SPARE 07-030-20			2		0				C E
PRES T016	A1241	TURB 1ST STAGE PRESS 07-030-21	PSIG	0.0	1200.0 3		32 160	3B M-103	M155 2	PT-1004 P T	C D
PRES T017	A1242	STM SEAL HDR PRESS 07-030-22	PSIG 2.5	0.0 4.5 6	10.00 3		32 160 7	3B M-104	LSTG 2	PT-1167 T	A E
RTD2 T018	A1243	STM TEMP MSR A TO TURB C R4 17-110-23	DEGF	0.0	600.0 4			4B M-103	M155 3	TE-1075 T	B D
RTD2 T019	A1244	STM TEMP MSR B TO TURB B R4 17-110-30	DEGF	0.0	600.0 4			4B M-103	M155 3	TE-1071 T	B D
RTD2 T020	A1245	STM TEMP MSR A TO TURB B R4 17-110-31	DEGF	0.0	600.0 4			4B M-103	M155 3	TE-1067 T	B D
RTD2 T021	A1246	STM TEMP MSR B TO TURB C R4 17-110-32	DEGF	0.0	600.0 4			4B M-103	M155 3	TE-1079 T	B D
PRES T022	A1247	INTERCEPT VA CIV-2 OUT 07-030-23	PSIG	0.0 V6G001 6	200.0 4		32 160 7	3B M-103	M155 2	PT-1012 P	C D
PRES T023	A1248	INTERCEPT VA CIV-1 OUT 07-030-30	PSIG	0.0 V6G001 6	200.0 4		32 160 7	3B M-103	M155 2	PT-1013 P	C D
CATC T024	A1249	EXH HOOD GEN END 1B TEMP 17-132-20	DEGF	0.0 175.0 6	300.0 4	X	7	1C M-106	LSTG	TE-1510 T	A D
CATC T025	A1250	EXH HOOD GEN END 1C TEMP 17-132-21	DEGF	0.0 175.0 6	300.0 4	X	7	1C M-106	LSTG	TE-1509 T	A D

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB SC CA	SIGNAL RGE AVG CAL GN SA ALARM/ST	BD TYPE MPL NO INSTRUMENT NO. REV REFERENCE DRAWING	LOGGING H D M ER T	NOTE	REV
CUTC T026	A1251	TURB OIL CLR OUTLET TEMP 17-120-32	DEGF 90.00	150.0	0.0 6 4	200.0	7	1A M-131	LSTG 3 3	TE-3126	C D
CUTC T027	A1252	TURB OIL CLR INLET TEMP 17-120-33	DEGF		0.0 4	200.0		1A M-131	LSTG 3 3	TE-3125	C D
T028	A1253	TURB SHAFT DIFF EXP 18-210-02	MILS		0.0 3	750.0	8 40	3E M-145	LSTG	DXD T	A D
T029	A1254	TURB SHAFT ECCENTRICITY 18-210-03	MILS		0.0 3	15.00	8 40	3E M-145	LSTG	ED T	A D
RT02 T030	A1255	SPARE 17-110-33 R4 Reserved			4			4B			A D
CATC T031	A1256	VLV CHEST INN SURF TEMP 17-132-22	DEGF		0.0 4	600.0		1C M-145	LSTG	TE-9000C T	C D
CATC T032	A1257	VLV CHEST OUT SURF TEMP 17-132-23	DEGF		0.0 4	600.0		1C M-145	LSTG	TE-9000D T	C D
CATC T033	A1258	1ST STG INN SURF TEMP 17-132-30	DEGF		0.0 3	600.0		1C M-145	LSTG	TE-9000A T	C D
CATC T034	A1259	1ST STG OUT SURF TEMP 17-132-31	DEGF		0.0 3	600.0		1C M-145	LSTG	TE-9000B T	C D
T035	A1260	TURB ROTOR EXPANSION 18-210-10	MILS		0.0 3	1500.0	8, 40	3E M-145	LSTG	RXD T	B D
T036	A1261	SHELL EXP DIFF TEMP 18-210-11	DEGF		0.0 4	200.0	8 40	3E M-145	LSTG	SXDT T	A D
T037	A1262	TURBINE SPEED 18-210-01	RPM		0 1	2500	32 160	3B M-145	LSTG	TSI T	E D
5.00 T038	A1263	GENERATOR FREQUENCY 17-112-11	HZ		55.00 1	65.00	-81.7 -8.2 71	3G E-4	MISS	FT	C D

TYPE / SCAN ADDS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB	SC	CA	SIGNAL RGE AVG	CAL	GN	SA	ALARM/ST	BD TYPE MPL NO REFERENCE DRAWING	INSTRUMENT NO. LOGGING H	D	M	ER	T	NOTE	REV
PRES T039	A1264	LP CONDENSER PRESS 07-030-31	INHG	0.0	30.00	V3G001 6	4		32		160 7			3B M-106	M155		PT-1476				D D
PRES T040	A1265	HP CONDENSER PRESS 07-030-32	INHG	0.0	30.00	V2G001 6	4		32		160 7			3B M-106	M155		PT-1477				C D
T041	A1266	SPARE 17-112-02					4							3E							A D
CATC T042	A1267	SPARE 17-132-32					4							1C							A D
CATC T043	A1268	SPARE 17-132-33					4							1C							A D
CUTC T044	A1269	SPARE 17-121-00					4							1A							A D
CUTC T045	A1270	SPARE 17-121-01					4							1A							A D

Reserved

Reserved

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE	SIGNAL RGE	BD TYPE MPL NO INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH DB SC CA	AVG CAL GN SA ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T NOTE REV
CUTC W000	A1275	RFP A MTR DE BRG TEMP 17-112-12	DEGF	180.0 0.0 6 4 300.0	?	1A M-107	M6 TE-1511G C D
CUTC W001	A1276	RFP B MTR DE BRG TEMP 17-112-13	DEGF	180.0 0.0 6 4 300.0	?	1A M-107	M6 TE-1511M C D
CUTC W002	A1277	RFP A MTR ODE BRG TEMP 17-112-20	DEGF	180.0 0.0 6 4 300.0	?	1A M-107	M6 TE-1511H C D
CUTC W003	A1278	RFP B MTR ODE BRG TEMP 17-112-21	DEGF	180.0 0.0 6 4 300.0	?	1A M-107	M6 TE-1511N C D
CUTC W004	A1279	RFP A TRST SLV BRG TEMP 17-112-22	DEGF	180.0 0.0 6 4 300.0	?	1A M-107	M6 TE-1511L C D
CUTC W005	A1280	RFP B TRST SLV BRG TEMP 17-112-23	DEGF	180.0 0.0 6 4 300.0	?	1A M-107	M6 TE-1511S C D
CUTC W006	A1281	RFP A RADL SLV BRG TEMP 17-112-30	DEGF	180.0 0.0 6 4 300.0	?	1A M-107	M6 TE-1511K C D
CUTC W007	A1282	RFP B RADL SLV BRG TEMP 17-112-31	DEGF	180.0 0.0 6 4 300.0	?	1A M-107	M6 TE-1511R C D
CUTC W008	A1283	RFP A INBD TRST BRG TEMP 17-112-32	DEGF	190.0 0.0 6 4 300.0	?	1A M-107	M6 TE-1511V D D
CUTC W009	A1284	RFP B INBD TRST BRG TEMP 17-112-33	DEGF	190.0 0.0 6 4 300.0	?	1A M-107	M6 TE-1511Y D D
W010	A1285	CWP A MTR GUIDE BRG TEMP 07-031-23	DEGF	180.0 0.0 6 4 300.0	32 160 ?	3B M-142	M8 TT-4233D A D
W011	A1286	CWP B MTR GUIDE BRG TEMP 07-031-30	DEGF	180.0 0.0 6 4 300.0	32 160 ?	3B M-142	M8 TT-4234D A D
W012	A1287	CWP A GUIDE BRG TEMP 07-031-31	DEGF	180.0 0.0 6 4 300.0	32 160 ?	3B M-142	M8 TT-4233E A D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE LIMITS LOW	INSTRUMENT RGE LIMITS HIGH	DB	SC	CA	SIGNAL RGE AVG	SIGNAL RGE CAL	SIGNAL RGE GN	SIGNAL RGE SA	ALARM/ST	BD TYPE REFERENCE DRAWING	MPL NO	INSTRUMENT NO.	REV
SCAN ADDS		COMPUTER TERMINAL NO CABLE NO WP													H D M ER T	NOTE	
W013	A1288	CWP B GUIDE BRG TEMP 07-031-32	DEGF	0.0	180.0	6	4	300.0		32	160 7			38 M-142	M8	TT-4234E	A D
W014	A1289	CWP A MTR TRST BRG TEMP 07-031-33	DEGF	0.0	180.0	6	4	300.0		32	160 7			38 M-142	M8	TT-4233F	A D
W015	A1290	CWP B MTR TRST BRG TEMP 07-030-33	DEGF	0.0	180.0	6	4	300.0		32	160 7			38 M-142	M8	TT-4234F	A D
CUTU W016	A1291	CP A MTR TRST BRG TEMP 17-121-02	DEGF	0.0	180.0	6	4	300.0			7			1A M-106	M7	TE-1511A	D D
CUTU W017	A1292	CP A MTR UPPER BRG TEMP 17-121-03	DEGF	0.0	180.0	6	4	300.0			7			1A M-106	M7	TE-1511B	D D
CUTC W018	A1293	SPARE 17-121-10												1A			C D
CUTU W019	A1294	CP B MTR TRST BRG TEMP 17-121-11	DEGF	0.0	180.0	6	4	300.0			7			1A M-106	M7	TE-1511D	D D
CUTU W020	A1295	CP B MTR UPPER BRG TEMP 17-121-12	DEGF	0.0	180.0	6	4	300.0			7			1A M-106	M7	TE-1511E	D D
CUTC W021	A1296	SPARE 17-121-13												1A			C D
CUTC W022	A1297	RFP A BRG OIL TEMP 17-121-20	DEGF	0.0	150.0	6	4	200.0			7			1A M-107	M6	TE-1501A	D D
CUTC W023	A1298	RFP B BRG OIL TEMP 17-121-21	DEGF	0.0	150.0	6	4	200.0			7			1A M-107	M6	TE-1502A	D D
CUTC W024	A1299	TURB TRST BRG T FRT PL 17-121-22	DEGF	0.0	175.0	6	4	300.0			7			1A M-104	LSTG	TE-1216A T	A E
CUTC W025	A1300	TURB TRST BRG T FRT PLDR 17-121-23	DEGF	0.0	185.0	6	4	300.0			7			1A M-104	LSTG	TE-1216B T	C D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE				SIGNAL RGE					BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB	SC	CA	AVG	CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
CUTC W026	A1301	TURB TRST BRG T RER PL 17-121-30	DEGF	175.0	0.0 6	4	300.0			?			1A M-104	LSTG	TE-1216C T	C D
CUTC W027	A1302	TURB TRST BRG T RER PLDR 17-121-31	DEGF	185.0	0.0 6	4	300.0			?			1A M-104	LSTG	TE-1216D T	C D
CUTC W028	A1303	RRP MG A MTR BRG T FWD 17-121-32	DEGF	194.0	0.0 6	4	300.0			?			1A M-116	APED	TE-4653A	A D
CUTC W029	A1304	RRP MG B MTR BRG T FWD 17-121-33	DEGF	194.0	0.0 6	4	300.0			?			1A M-116	APED	TE-4654A	A D
CUTC W030	A1305	RRP MG A MTR BRG T RER 17-122-00	DEGF	194.0	0.0 6	4	300.0			?			1A M-116	APED	TE-4653B	A D
CUTC W031	A1306	RRP MG B MTR BRG T RER 17-122-01	DEGF	194.0	0.0 6	4	300.0			?			1A M-116	APED	TE-4654B	A D
CUTC W032	A1307	RRP MG A GEN BRG T FWD 17-122-02	DEGF	194.0	0.0 6	4	300.0			?			1A M-116	APED	TE-4655A	A D
CUTC W033	A1308	RRP MG B GEN BRG T FWD 17-122-03	DEGF	194.0	0.0 6	4	300.0			?			1A M-116	APED	TE-4656A	A D
CUTC W034	A1309	RRP MG A GEN BRG T RER 17-122-10	DEGF	194.0	0.0 6	4	300.0			?			1A M-116	APED	TE-4655B	A D
CUTC W035	A1310	RRP MG B GEN BRG T RER 17-122-11	DEGF	194.0	0.0 6	4	300.0			?			1A M-116	APED	TE-4656B	A D
CUTC W036	A1311	RRP MG A IMP OTBD BRG T 17-122-12	DEGF	194.0	0.0 6	4	300.0			?			1A M-116	APED	TE-4657A	D D
CUTC W037	A1312	RRP MG B IMP OTBD BRG T 17-122-13	DEGF	194.0	0.0 6	4	300.0			?			1A M-116	APED	TE-4658A	D D
CUTC W038	A1313	RRP MG A IMP INBD BRG T 17-122-20	DEGF	194.0	0.0 6	4	300.0			?			1A M-116	APED	TE-4657B	A D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE			SIGNAL RGE				BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB	SC	CA	AVG	CAL	GN SA ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE	REV
CUTC W039	A1314	RRP MG B IMP INBD BRG T DEGF 17-122-21	0.0	194.0	6	4	300.0			7	1A M-116	APED	TE-4658B	A D
CUTC W040	A1315	RRP MG A RUN OTBD BRG T DEGF 17-122-22	0.0	194.0	6	4	300.0			7	1A M-116	APED	TE-4657C	D D
CUTC W041	A1316	RRP MG B RUN OTBD BRG T DEGF 17-122-23	0.0	194.0	6	4	300.0			7	1A M-116	APED	TE-4658C	D D
CUTC W042	A1317	RRP MG A RUN INBD BRG T DEGF 17-122-30	0.0	194.0	6	4	300.0			7	1A M-116	APED	TE-4657D	A D
CUTC W043	A1318	RRP MG B RUN INBD BRG T DEGF 17-122-31	0.0	194.0	6	4	300.0			7	1A M-116	APED	TE-4658D	A D
CUTU W044	A1319	RRP A MTR UPPER BRG TEMPDEGF 17-122-32	0.0	200.0	6	4	300.0			7	1A M-116	APED	TE-4600A	D D
CUTU W045	A1320	RRP A MTR LOWER BRG TEMPDEGF 17-122-33	0.0	200.0	6	4	300.0			7	1A M-116	APED	TE-4600B	D D
CUTC W046	A1321	TURB HP BRG OIL DR TEMP 1 DEGF 17-123-00	0.0	185.0	6	4	300.0			7	1A M-104	LSTG	TE-1217A	C D
CUTC W047	A1322	TURB HP BRG OIL DR TEMP 2 DEGF 17-123-01	0.0	185.0	6	4	300.0			7	1A M-104	LSTG	TE-1217B	C D
CUTC W048	A1323	TURB LP BRG OIL DR TEMP 3 DEGF 17-123-02	0.0	185.0	6	4	300.0			7	1A M-104	LSTG	TE-1217C	C D
CUTC W049	A1324	TURB LP BRG OIL DR TEMP 4 DEGF 17-123-03	0.0	185.0	6	4	300.0			7	1A M-104	LSTG	TE-1217D	C D
CUTC W050	A1325	TURB LP BRG OIL DR TEMP 5 DEGF 17-123-10	0.0	185.0	6	4	300.0			7	1A M-104	LSTG	TE-1217E	C D
CUTC W051	A1326	TURB LP BRG OIL DR TEMP 6 DEGF 17-123-11	0.0	185.0	6	4	300.0			7	1A M-104	LSTG	TE-1217F	C D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE				SIGNAL RGE					BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP		LIMITS LOW	HIGH	DB	SC CA	AVG	CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
CUTC W052	A1327	GEN BRG OIL DR TEMP 17-123-12	7 DEGF	0.0 185.0		6	4 300.0			7			1A M-104	LSTG	TE-1217G C D
CUTC W053	A1328	GEN BRG OIL DR TEMP 17-123-13	8 DEGF	0.0 185.0		6	4 300.0			7			1A M-104	LSTG	TE-1217H C D
CUTC W054	A1329	EXCT BRG OIL DR TEMP 17-123-20	9 DEGF	0.0 185.0		6	4 300.0			7			1A M-104	LSTG	TE-1217J C D
CUTC W055	A1330	EXCT BRG OIL DR TEMP 17-123-21	10 DEGF	0.0 185.0		6	4 300.0			7			1A M-104	LSTG	TE-1217K C D
W056	A1331	TURB HP BRG VIBRATION 18-210-12	1 MILS	0.0 7.00		6	2 15.00		8	40 7			3E M-104	LSTG	XVE-1218A T D E
W057	A1332	TURB HP BRG VIBRATION 18-210-13	2 MILS	0.0 7.00		6	2 15.00		8	40 7			3E M-104	LSTG	XVE-1218B T D E
W058	A1333	TURB LP BRG VIBRATION 18-210-20	3 MILS	0.0 7.00		6	2 15.00		8	40 7			3E M-104	LSTG	XVE-1218C 3 D E
W059	A1334	TURB LP BRG VIBRATION 18-210-21	4 MILS	0.0 7.00		6	2 15.00		8	40 7			3E M-104	LSTG	XVE-1218D T D E
W060	A1335	TURB LP BRG VIBRATION 18-210-22	5 MILS	0.0 7.00		6	2 15.00		8	40 7			3E M-104	LSTG	XVE-1218E T D E
W061	A1336	TURB LP BRG VIBRATION 18-210-23	6 MILS	0.0 7.00		6	2 15.00		8	40 7			3E M-104	LSTG	XVE-1218F T D E
W062	A1337	GEN BRG VIBRATION 18-210-30	7 MILS	0.0 7.00		6	2 15.00		8	40 7			3E M-104	LSTG	XVE-1218G T D E
W063	A1338	GEN BRG VIBRATION 18-210-31	8 MILS	0.0 7.00		6	2 15.00		8	40 7			3E M-104	LSTG	XVE-1218H T D E
W064	A1339	EXCT BRG VIBRATION 18-210-32	9 MILS	0.0 7.00		6	2 15.00		8	40 7			3E M-104	LSTG	XVE-1218J T D E

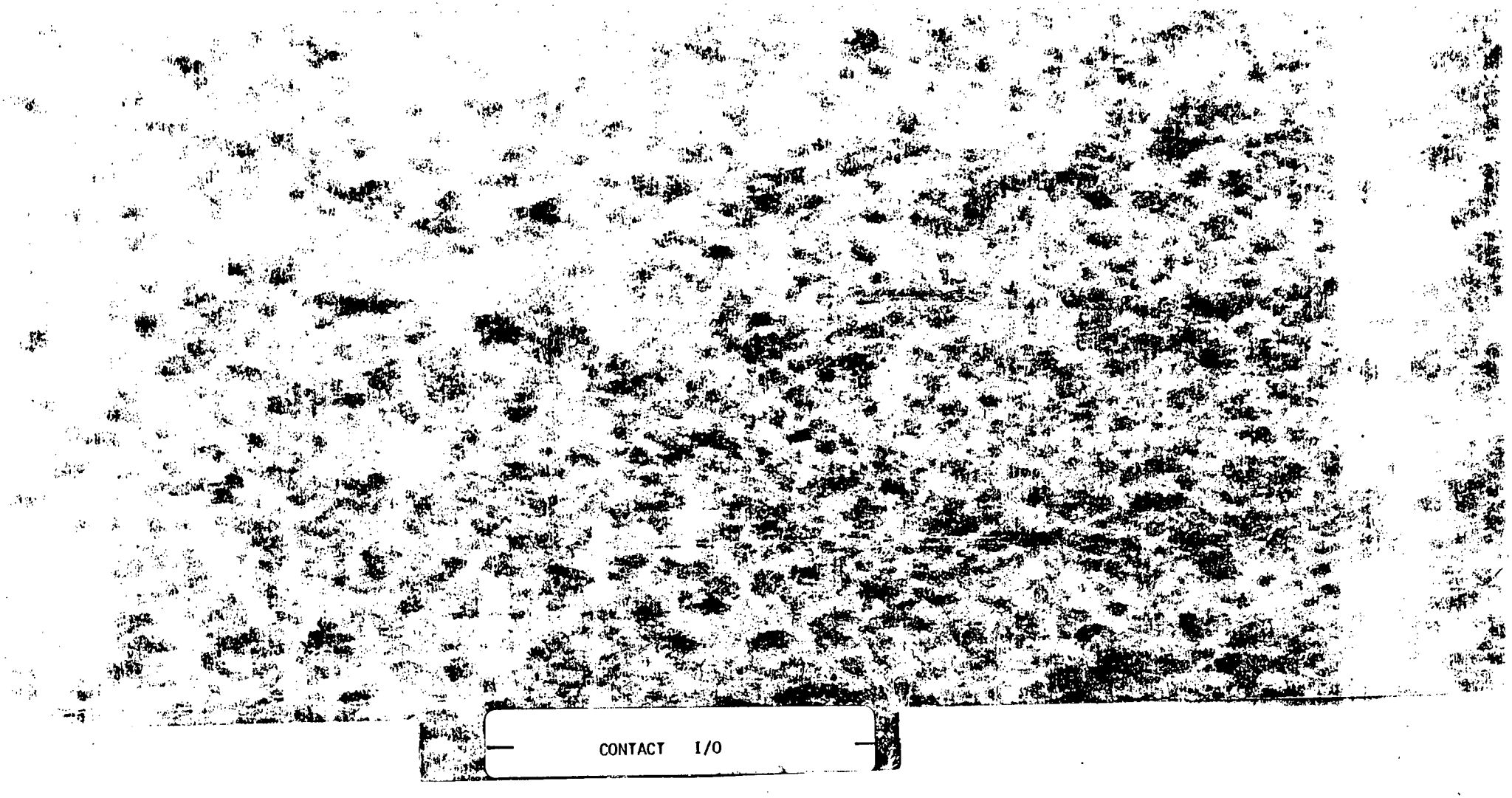
TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE LOW	INSTRUMENT RGE HIGH	DB	SC	CA	SIGNAL RGE AVG	CAL	GN	SA	ALARM/ST	BD TYPE MPL NO REFERENCE DRAWING	LOGGING H	D	M	ER	T	NOTE	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS																			
W065	A1340	EXCT BRG VIBRATION 10 18-210-33	MILS	0.0 7.00	15.00	6	2			8	40 7			3E M-104	LSTG		XVE-1218K		T		D E
CUTC W066	A1341	TURB HP BRG METAL TEMP 1 17-123-22	DEGF	0.0 185.0	300.0	6	4				7			1A M-104	LSTG		TE-1219A				A D
CUTC W067	A1342	TURB HP BRG METAL TEMP 2 17-123-23	DEGF	0.0 185.0	300.0	6	4				7			1A M-104	LSTG		TE-1219B				A D
CUTC W068	A1343	TURB LP BRG METAL TEMP 3 17-123-30	DEGF	0.0 185.0	300.0	6	4				7			1A M-104	LSTG		TE-1219C				A D
CUTC W069	A1344	TURB LP BRG METAL TEMP 4 17-123-31	DEGF	0.0 185.0	300.0	6	4				7			1A M-104	LSTG		TE-1219D				A D
CUTC W070	A1345	TURB LP BRG METAL TEMP 5 17-123-32	DEGF	0.0 185.0	300.0	6	4				7			1A M-104	LSTG		TE-1219E				A D
CUTC W071	A1346	TURB LP BRG METAL TEMP 6 17-123-33	DEGF	0.0 185.0	300.0	6	4				7			1A M-104	LSTG		TE-1219F				A D
CUTC W072	A1347	GEN BRG METAL TEMP 7 17-130-00	DEGF	0.0 185.0	300.0	6	4				7			1A M-104	LSTG		TE-1219G				A D
CUTC W073	A1348	GEN BRG METAL TEMP 8 17-130-01	DEGF	0.0 185.0	300.0	6	4				7			1A M-104	LSTG		TE-1219H				A D
CUTC W074	A1349	EXCT BRG METAL TEMP 9 17-130-02	DEGF	0.0 185.0	300.0	6	4				7			1A M-104	LSTG		TE-1219J				A D
CUTC W075	A1350	EXCT BRG METAL TEMP 10 17-130-03	DEGF	0.0 185.0	300.0	6	4				7			1A M-104	LSTG		TE-1219K				A D
CUTC W076	A1351	RRP B MTR UPPER BRG TEMP 17-130-10	DEGF	0.0 200.0	300.0	6	4				7			1A M-116	APED		TE-4600M				B D
CUTC W077	A1352	RRP B MTR LOWER BRG TEMP 17-130-11	DEGF	0.0 200.0	300.0	6	4				7			1A M-116	APED		TE-4600N				B D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE				SIGNAL RGE					BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADDS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB	SC	CA	AVG	CAL	GN	SA	ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE	REV
CUTC W078	A1353	RHR PMP A UPPER BRG TEMP 17-130-12	DEGF	0.0 195.0	6	4	300.0			7			1A M-120	APED	TE-2074A	B D
CUTC W079	A1354	RHR PMP A LOWER BRG TEMP 17-130-13	DEGF	0.0 195.0	6	4	300.0			7			1A M-120	APED	TE-2074B	B D
CUTC W080	A1355	RHR PMP B UPPER BRG TEMP 17-130-20	DEGF	0.0 195.0	6	4	300.0			7			1A M-119	APED	TE-1995A	B D
CUTC W081	A1356	RHR PMP B LOWER BRG TEMP 17-130-21	DEGF	0.0 195.0	6	4	300.0			7			1A M-119	APED	TE-1995B	B D
CUTC W082	A1357	RHR PMP C UPPER BRG TEMP 17-130-22	DEGF	0.0 195.0	6	4	300.0			7			1A M-120	APED	TE-2075A	B D
CUTC W083	A1358	RHR PMP C LOWER BRG TEMP 17-130-23	DEGF	0.0 195.0	6	4	300.0			7			1A M-120	APED	TE-2075B	B D
CUTC W084	A1359	RHR PMP D UPPER BRG TEMP 17-130-30	DEGF	0.0 195.0	6	4	300.0			7			1A M-119	APED	TE-1996A	B D
CUTC W085	A1360	RHR PMP D LOWER BRG TEMP 17-130-31	DEGF	0.0 195.0	6	4	300.0			7			1A M-119	APED	TE-U996B	B D
CUTC W086	A1361	CSP A MTR UPPER BRG TEMP 17-130-32	DEGF	0.0 195.0	6	4	300.0			7			1A M-121	APED	TE-2149A	B D
CUTC W087	A1362	CSP A MTR LOWER BRG TEMP 17-130-33	DEGF	0.0 195.0	6	4	300.0			7			1A M-121	APED	TE-2149B	B D
CUTC W088	A1363	CSP B MTR UPPER BRG TEMP 17-131-00	DEGF	0.0 195.0	6	4	200.0			7			1A M-121	APED	TE-2150A	D D
CUTC W089	A1364	CSP B MTR LOWER BRG TEMP 17-131-01	DEGF	0.0 195.0	6	4	200.0			7			1A M-121	APED	TE-2150B	D D
CUTC W090	A1365	CRD A PMP INB BRG TEMP 17-131-02	DEGF	150.0 200.0	6	4	250.0			7			1A M-117	APED	TE-1890A	C D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE	SIGNAL RGE	BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH DB SC CA	AVG CAL GN SA ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
CUTC W091	A1366	CRD A ~~PMP~~ MTR OBD BRG TEMR 17-131-03	DEGF	200.0 150.0 6 4 250.0	7	1A M-117	APED	TE-18908	C D
CUTC W092	A1367	CRD B ~~PMP~~ MTR INB BRG TEMP 17-131-10	DEGF	200.0 150.0 6 4 250.0	7	1A M-117	APED	TE-1891A	C D
CUTC W093	A1368	CRD B ~~PMP~~ MTR OBD BRT TEMP 17-131-11	DEGF	200.0 150.0 6 4 250.0	7	1A M-117	APEDP	TE-1891B	C D
W094	A1369	RHR SWP A MTR TRST BRG 07-031-00	DEGF	190.0 0.0 6 4 300.0	32 160 7	3B M-146	M155	TT-4930A	E E
W095	A1370	RHR SWP A MTR LOWER BRG 07-031-01	DEGF	190.0 0.0 6 4 300.0	32 160 7	3B M-146	M155	TT-4931A	E E
W096	A1371	RHR SWP B MTR TRST BRG 07-031-02	DEGF	190.0 0.0 6 4 300.0	32 160 7	3B M-146	M155	TT-4930B	E E
W097	A1372	RHR SWP B MTR LOWER BRG 07-031-03	DEGF	190.0 0.0 6 4 300.0	32 160 7	3B M-146	M155	TT-4931B	E E
W098	A1373	RHR SWP C MTR TRST BRG 07-031-10	DEGF	190.0 0.0 6 4 300.0	32 160 7	3B M-146	M155	TT-4930C	E E
W099	A1374	RHR SWP C MTR LOWER BRG 07-031-11	DEGF	190.0 0.0 6 4 300.0	32 160 7	3B M-146	M155	TT-4931C	E E
W100	A1375	RHR SWP D MTR TRST BRG 07-031-12	DEGF	190.0 0.0 6 4 300.0	32 160 7	3B M-146	M155	TT-4930D	E E
W101	A1376	RHR SWP D MTR LOWER BRG 07-031-13	DEGF	190.0 0.0 6 4 300.0	32 160 7	3B M-146	M155	TT-4931D	E E
W102	A1377	GEN SWP A LWR MTR BRG T 07-031-20	DEGF	190.0 0.0 6 4 300.0	32 160 7	3B M-146	M155	TT-4932A	E E
W103	A1378	GEN SWP A UPR MTR BRG T 07-031-21	DEGF	190.0 0.0 6 4 300.0	32 160 7	3B M-146	M155	TT-4933A	E E

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	E.UNITS	INSTRUMENT RGE LIMITS LOW	HIGH	DB	SC	CA	SIGNAL RGE AVG	CAL	GN	SA	ALARM/ST	BD TYPE MPL NO REFERENCE DRAWING	INSTRUMENT NO. LOGGING H	D	M	ER	T	NOTE	REV
W104	A1379	GEN SWP B LWR MTR BRG T 07-031-22	DEGF	0.0	190.0	6	4	300.0		32	160/7			3B M-146	M155			TT-4932B			E E
W105	A1380	GEN SWP B UPR MTR BRG T 07-032-00	DEGF	0.0	190.0	6	4	300.0		32	160/7			3B M-146	M155			TT-4933B			E E
W106	A1381	GEN SWP C LWR MTR BRG T 07-032-01	DEGF	0.0	190.0	6	4	300.0		32	160/7			3B M-146	M155			TT-4932C			E E
W107	A1382	GEN SWP C UPR MTR BRG T 07-032-02	DEGF	0.0	190.0	6	4	300.0		32	160/7			3B M-146	M155			TT-4933C			E E
RTD W108	A1383	SPARE 17-112-03	Reserved				4							3E							B D
RTD W109	A1384	SPARE 17-112-10					4							3E							B D
CUTC W110	A1385	SPARE 17-131-12					4							1A							A D
CUTC W111	A1386	SPARE 17-131-13					4							1A							D
CUTC W112	A1387	SPARE 17-131-20					4							1A							D
CUTC W113	A1388	SPARE 17-131-21					4							1A							D
CUTC W114	A1389	SPARE 17-131-22					4							1A							D
CUTC W115	A1390	SPARE 17-131-23					4							1A							D
CUTC W116	A1391	SPARE 17-131-30					4							1A							D

TYPE	NID NO.	PRINTED DESCRIPTION	E.UNITS	INSTRUMENT RGE	SIGNAL RGE	BD TYPE MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	LIMITS LOW	HIGH	DB SC CA AVG CAL GN SA ALARM/ST	REFERENCE DRAWING	LOGGING H D M ER T	NOTE REV
CUTC W117	A1392	SPARE 17-131-31		4		1A		D
CUTC W118	A1393	SPARE 17-131-32		4		1A		D


CONTACT I/O

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	NORMAL PRINT / SCAN CLASS	NT	ALARM PRINT / REFERENCE DRAWING	AT	ALARM STATUS / LOG SA	CS / NOTE NO.	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV / REV
CIN A500	C1541	MAIN STM LINE A HI FLOW 081405-00	NORM D	02 NB	HIGH FCD	01	CLSD	0		1			D1	B21		A B
CIN A501	C1542	MAIN STM LINE B HI FLOW 081405-01	NORM D	02 NB	HIGH FCD	01	CLSD	0		1			D1	B21		A B
CIN A502	C1543	MAIN STM LINE C HI FLOW 081405-02	NORM D	02 NB	HIGH FCD	01	CLSD	0		1			D1	B21		A B
CIN A503	C1544	MAIN STM LINE D HI FLOW 081405-03	NORM D	02 NB	HIGH FCD	01	CLSD	0		1			D1	B21		A B
CIN A504	C1545	MSL A LEAK DETECTION 081405-04	NORM D	02 NB	HIGH FCD	01	CLSD	0		1			D1	B21		B B
CIN A505	C1546	MSL B LEAK DETECTION 081405-05	NORM D	02 NB	HIGH FCD	01	CLSD	0		1			D1	B21		B B
CIN A506	C1547	MSL C LEAK DETECTION 081405-06	NORM D	02 NB	HIGH FCD	01	CLSD	0		1			D1	B21		B B
CIN A507	C1548	MSL D LEAK DETECTION 081405-07	NORM D	02 NB	HIGH FCD	01	CLSD	0		1			D1	B21		B B
CIN A508	C1601	DISCH VOL ~~HIGH WATER LVL~~ 24 GAL ROD BLK 081405-08	NORM D	02 CRD	HIGH FCD	01	CLSD	0		1			D1	C11		A B
CIN A509	C1603	REFUEL INTLK ROD BLOCK 081405-09	NORM D	02 CRD	ON FCD	25	CLSD	0		1			D1	C11		A B
CIN A510	C1604	CRD ROD TIMER MALFUNC 081405-10	NORM D	02 CRD	TRBL FCD	08	CLSD	0		1			D1	C11		A B
CIN A511	C1605	RWM ROD BLOCK 081405-11	OFF D	22 CRD	ON FCD	25	CLSD	0		1			D1	C11		B B
CIN A512	C1606	SRM DET NOT START-UP POS 081405-12	NORM D	02 NM	TRBL FCD	08	CLSD	0		1			D1	C51		D B

A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN A513	C1607	SRM UPSCALE ALAPM 081405-13	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	C51		A B
CIN A514	C1608	SRM INOPERATIVE ALARM 081405-14	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	C51		A B
CIN A515	C1609	IRM DET NOT FULL-IN POS 081405-15	NORM D	02 NM	TRBL FCD	08	CLSD	0		1			D1	C51		A B
CIN A516	C1610	IRM DOWNSCALE ALARM 081405-16	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	C51		A B
CIN A517	C1611	IRM INOPERATIVE ALARM 081405-17	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	C51		A B
CIN A518	C1612	IRM UPSCALE ALARM 081405-18	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	C51		A B
CIN A519	C1613	APRM DOWNSCALE ALARM 081405-19	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	C51		A B
CIN A520	C1614	APRM UPSCALE ALARM 081405-20	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	C51		A B
CIN A521	C1615	APRM INOPERATIVE ALARM 081405-21	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	C51		A B
CIN A522	C1616	NSS SPARE 081405-22	D										D1			C
CIN A523	C1847	RWM PRINT NOTCH ERROR 081406-00	OFF D	22 CRD	ON FCD	25	CLSD	0		1			D1	C11		B B
CIN A524	C1848	RWM GROUP OUT OF SERVICE 081406-01	OFF D	22 CRD	ON FCD	25	CLSD	0		1			D1	C11		B B
CIN A525	C1849	RMW ONE ROD PERMISSIVE 081406-02	OFF D	22 CRD	ON FCD	25	CLSD	0		1			D1	C11		B B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN A526	C1850	RWM OPERABLE 081406-03	ON D	22	OFF	25	OPEN	1		1			D1	C11		B B
CIN A527	C1851	NSS SPARE 081406-04	D										D1			B C
CIN A528	C1852	RWM ROD WITHDRAW BLOCK 081406-05	OFF D	22	ON CRD FCD	25	OPEN	0		1			D1	C11		B B
CIN A529	C1853	RWM ROD INSERT BLOCK 081406-06	OFF D	22	ON CRD FCD	25	OPEN	0		1			D1	C11		B B
CIN A530	C1854	RWM 35% PWR AUTO BYPASS 081406-07	OFF D	22	ON CRD FCD	25	OPEN	0		1			D1	C11		B B
CIN A531	C1855	RWM 30% POWER SET POINT 081406-08	OFF D	22	ON CRD FCD	25	OPEN	0		1			D1	C11		B B
A532	C1867	ROD DRIFT ALARM 081406-09	OFF D	22	ON NM FCD	25	CLSD	0		1			D1	C11		A B
CIN A533	C1856	RPIS MALFUNCTION 081406-10	OFF D	22	ON CRD FCD	25	CLSD	0		1			D1	C11		A B
A534	C1868	ROD SELECTED AND DRIVING 081406-11	OFF D	22	ON NM FCD	25	CLSD	0		1			D1	C11		A B
CIN A535	C1859	RWM SYSTEM DIAGNOSTIC 081406-12	OFF D	22	ON	25	CLSD	0		1			D1	C11		B B
CIN A536	C1846	CONTROL ROD WITHDRAW 081406-13	OFF D	22	ON CRD FCD	25	CLSD	0		1			D1	C11		A B
CIN A537	C1656	RECIRC LOOP B INACTIVE 081406-14	NORM D	02	ALRM NB FCD	07	CLSD	0		1			D1	B21		E E
CIN A538	C1657	RECIRC LOOP A INACTIVE 081406-15	NORM D	02	ALRM NB FCD	07	CLSD	0		1			D1	B21		E E

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
A539	C1860	TIP MACHINE A READY 081406-16	ON D	22 NM	OFF FCD	25	OPEN	0		1			D1	C51		B B
A540	C1861	TIP MACHINE B READY 081406-17	ON D	22 NM	OFF FCD	25	OPEN	0		1			D1	C51		B B
A541	C1862	TIP MACHINE C READY 081406-18	ON D	22 NM	OFF FCD	25	OPEN	0		1			D1	C51		B B
CIN A542	C1617	RBM DOWNSCALE BLOCK 081406-19	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	C51		B B
CIN A543	C1618	RBM UPSCALE BLOCK 081406-20	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	C51		B B
CIN A544	C1619	RBM INOPERATIVE BLOCK 081406-21	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	C51		B B
CIN A545	C1620	FLOW UNIT UPSCALE/INOP 081406-22	NORM D	02 NM	TRIP FCD	19	CLSD	0		1			D1	C51		D B
CIN A546	C1641	SRM BYPASSED 081407-00	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	C51		A B
CIN A547	C1642	IRM BYPASSED 081407-01	OFF D	02 NM	ON FCD	25	CLSD	0		1			D1	C51		A B
CIN A548	C1643	APRM CH A BYPASSED 081407-02	OFF D	02 NM	ON FCD	25	CLSD	0		1			D1	C51		B B
CIN A549	C1644	APRM CH B BYPASSED 081407-03	OFF D	02 NM	ON FCD	25	CLSD	0		1			D1	C51		B B
CIN A550	C1645	APRM CH C BYPASSED 081407-04	OFF D	02 NM	ON FCD	25	CLSD	0		1			D1	C51		B B
CIN A551	C1646	APRM CH D BYPASSED 081407-05	OFF D	02 NM	ON FCD	25	CLSD	0		1			D1	C51		B B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN A552	C1647	APRM CH E BYPASSED 081407-06	OFF D	02 NM	ON FCD	25	CLSD	0		1			D1	CS1		B B
CIN A553	C1648	APRM CH F BYPASSED 081407-07	OFF D	02 NM	ON FCD	25	CLSD	0		1			D1	CS1		B B
CIN A554	C1649	RBM BYPASSED 081407-08	OFF D	02 NM	ON FCD	25	CLSD	0		1			D1	CS1		A B
CIN A555	C1650	ROD OUT BLOCK 081407-09	OFF D	02 NM	ON FCD	25	CLSD	0		1			D1	CS1		A B
CIN A556	C1651	ALARM ON FLOW COMPARATOR 081407-10	NORM D	02 NM	ALRM FCD	07	CLSD	0		1			D1	CS1		A B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
CIN B500	C1000	RHR HX A DIFF PRESS 081407-11	NORM D	02	LOW M-120	01	CLSD	0		1			D1	APED	ANN03A318	E A
CIN B501	C1001	RHR HX B DIFF PRESS 081407-12	NORM D	02	LOW M-119	01	CLSD	0		1			D1	APED	ANN03A224	E A
CIN B502	C1002	SPARE 081407-13	D										D1			D B
CIN B503	C1003	SPARE 081407-14	D										D1			D B
CIN B504	C1004	RHR PMP A&C DISCH FLOW 081407-15	NORM D	02	LOW M-120	06	CLSD	0		1			D1	APED	PDIS-1971A ~~1C-34~~	E A
CIN B505	C1005	RHR PMP B&D DISCH FLOW 081407-16	NORM D	02	LOW M-119	01	CLSD	0		1			D1	APED	PDIS-1971B ~~1C-33~~	E A
CIN B506	C1006	DRYWELL PRESS ADS ON AA 081407-17	NORM D	02	HIGH M-143	01	CLSD	0		1			D1	APED	PS-4310A	D C
CIN B507	C1007	DRYWELL PRESS ECCS ON AA 081407-18	NORM D	02	HIGH M-143	01	CLSD	0		1			D1	APED	PS-4310B	D C
CIN B508	C1008	SLC HI/LO TEMP/LEVEL 081407-19	NORM D	02	IRBL M-126	08	CLSD	0		1			D1	APED	ANN05A818 ANN05A826	D A
CIN B509	C1009	SLC SYS FIRING CKT CNTY 081407-20	OK D	05	BAD M-126	04	CLSD	0		1			D1	APED	ANN05A810	D A
CIN B510	C1010	SPARE 081407-21	D										D1			E B
CIN B511	C1011	RCIC TURB EXH PRESS HI 081407-22	NORM D	02	HIGH M-124	01	CLSD	0		1			D1	APED	ANN04A417	D A
CIN B512	C1012	DRYWELL PRESS RHR ON AA 081410-00	NORM D	02	HIGH M-143	01	CLSD	0		1			D1	APED	PS-4310C	D C

B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
CIN B513	C1013	RCIC STM SUPLY FLOW HI 081410-01	NORM D	02	HIGH M-124	01	CLSD	0		1			D1	APED	ANN04A409	D B
CIN B514	C1014	DRYWELL PRESS ADS ON BA 081410-02	NORM D	02	HIGH M-143	01	CLSD	0		1			D1	APED	PS-4311A	D C
CIN B515	C1015	RCIC PMP SUCT PRESS HILO 081410-03	NORM D	02	HILO M-125	06	CLSD	0		1			D1	APED	ANN04A423 ANN04A432	E A
CIN B516	C1016	RCIC AUTO ISOLATION A/B 081410-04	NORM D	02	ALRM M-124	01	CLSD	0		1			D1	APED	ANN04A414 ANN04A436	E A
CIN B517	C1017	RCIC PUMP DISCH FLOW 081410-05	NORM D	02	LOW M-125	06	CLSD	0		1			D1	APED	ANN04A406	D A
CIN B518	C1018	HPCI TURB EXH PRESS HI 081410-06	NORM D	02	HIGH M-122	01	CLSD	0		1			D1	APED	ANN03A126	D A
CIN B519	C1019	HPCI TURB DIAPH PRESS HI 081410-07	NORM D	02	HIGH M-122	01	CLSD	0		1			D1	APED	ANN03A117 PS221SA/D	C A
CIN B520	C1020	COND STORAGE TK A LO LVL 081410-08	NORM D	02	LOW M-109	06	CLSD	0		1			D1	M177	LS-5218	D A
CIN B521	C1021	DRYWELL PRESS ECOS ON BA 081410-09	NORM D	02	HIGH M-143	01	CLSD	0		1			D1	APED	PS-4311B	D C
CIN B522	C1022	HPCI PMP SUCT PRESS LO 081410-10	NORM D	02	LOW M-123	06	CLSD	0		1			D1	APED	ANN03A105	D A
CIN B523	C1023	SUPPRESSION POOL LVL HI 081410-11	NORM D	02	HIGH M-123	01	CLSD	0		1			D1	APED	ANN03A136 LS2319/20	A
CIN B524	C1024	HPCI PMP DISCH FLOW LOW 081410-12	NORM D	02	LOW M-123	06	CLSD	0		1			D1	APED	ANN03A103	E A
CIN B525	C1025	CS PMP A DISCH PRESS HI 081410-13	NORM D	02	HIGH M-121	01	CLSD	0		1			D1	APED	ANN03A316	E C

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN B526	C1026	CS PMP B DISCH PRESS HI 081410-14	NORM D	02	HIGH M-121	01	CLSD	0		1			D1	APED	ANN03A101	D A
CIN B527	C1027	RCT CLEANUP SYS FAILURE 081410-15	NORM D	02	ALRM M-127	07	CLSD	0		1			D1	M134	MO-2740	A A
CIN B528	C1028	RCT CU N-REGEN HX OUT T 081410-16	NORM D	02	HIGH M-127	01	CLSD	0		1			D1	APED	TIS-2722	A A
CIN B529	C1029	BOP ANN DC LOSS 081410-17	NORM D	02	TRBL	08	CLSD	0		1			D1	M155		D C
CIN B530	C1030	NSS ANN DC LOSS 081410-18	NORM D	02	TRBL	08	CLSD	0		1			D1	M155		D C
CIN B531	C1031	FUEL POOL CLG SYS ALARM 081410-19	NORM D	02	TRBL M-134	08	CLSD	0		1			D1	APED	ANN04A402	C C
CIN B532	C1032	RW CU HIGH FLOW DIFF 081410-20	NORM D	02	HIGH M-127	01	CLSD	0		1			D1	APED	FDS-2749	E C
CIN B533	C1033	RW CLN UP ISOL SIGNAL 081410-21	NORM D	02	ALRM M-127	07	CLSD	0		1			D1	APED	A71-K64	C C
CIN B534	C1034	SPARE 081410-22	D										D1			D C
CIN B535	C1035	SPARE 081411-00	D										D1			D C
CIN B536	C1036	OFFGAS RAD HIHIHI/INOP 081411-01	NORM D	02	TRBL M-141	01	CLSD	0	1				D1	APED	ANN03A321	F A
CIN B537	C1037	PRETRT OFFGAS SAMPLE FLW 081411-02	NORM D	02	HILO M-141	08	CLSD	0		1			D1	M173	ANN03A329	F A
CIN B538	C1038	RCT LOLOLO WTR LVL CH A 081411-03	RSET D	12	INTD M-115	11	CLSD	0		1			D1	APED	LIS-4531	D A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
CIN B539	C1039	RCT LOLOLO WTR LVL CH B 081411-04	RSET D	12	INTD M-115	11	CLSD	0		1			D1	APED	LIS-4532	D A
CIN B540	C1040	RCT LOLOLO WTR LVL CH C 081411-05	RSET D	12	INTD M-115	11	CLSD	0		1			D1	APED	LIS-4533	D A
CIN B541	C1041	RCT LOLOLO WTR LVL CH D 081411-06	RSET D	12	INTD M-115	11	CLSD	0		1			D1	APED	LIS-4534	D A
CIN B542	C1042	CRD PMPS A&B SUCT PRESS 081411-07	NORM D	02	LOW M-117	06	CLSD	0		1			D1	APED	C11-K2A/B PS-1802A/B	E B
CIN B543	C1043	CRD PMPS A&B VIBR 081411-08	NORM D	02	HIGH M-117	01	CLSD	0		1			D1	APED	XVS1806AB	E A
CIN B544	C1044	CRD DIFF PRESS AND PRESS 081411-09	NORM D	02	HILO M-117	03	CLSD	0		1			D1	APED	PS1816	E A
CIN B545	C1045	SPARE 081411-10	D										D1			D C
CIN B546	C1046	DRYWELL PRESS RHR ON BA 081411-11	NORM D	02	HIGH M-143	01	CLSD	0		1			D1	APED	PS-4311C	D C
CIN B547	C1047	SCR V PILT AIR HDR PRESS 081411-12	NORM D	02	HILO M-117	03	CLSD	0		1			D1	APED	ANN05A730 PS-1842	E A
CIN B548	C1048	CONTROL ROD OVERTRAVEL 081411-13	NORM D	02	OVTL M-118	13	CLSD	0		1			D1	APED	C11-K3	C C
CIN B549	C1049	COND STORAGE TK B LO LVL 081411-14	NORM D	02	LOW M-109	06	CLSD	0		1			D1	M177	LS-5219	D C
CIN B550	C1050	DRYWELL PRESS ADS ON AB 081411-15	NORM D	02	HIGH M-143	01	CLSD	0		1			D1	APED	PS-4312A	D C
CIN B551	C1051	RRP A MTR VIBR 081411-16	NORM D	02	HIGH M-116	01	CLSD	0		1			D1	APED	ANN04A613	D A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADDS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN B552	C1052	RPP B MTR VIBR 081411-17	NORM D	02	HIGH M-116	01	CLSD	0		1			D1	APED	ANN04A510	D A
CIN B553	C1053	RRP MG A MTR VIBR 081411-18	NORM D	02	HIGH M-116	01	CLSD	0		1			D1	M181	XVS-4649	D A
CIN B554	C1054	RRP MG B MTR VIBR 081411-19	NORM D	02	HIGH M-116	01	CLSD	0		1			D1	M181	XVS-4650	D A
CIN B555	C1055	POST TREAT OFF GAS RADHI 081411-20	NORM D	02	HIGH	01	CLSD	0		1			D1	APED	ANN03A304	E A
CIN B556	C1056	LIQ PROC RAD MON DNSC 081411-21	NORM D	02	DNSC	14	CLSD	0		1			D1	APED	ANN03A313	D A
CIN B557	C1057	RB VENT EXH PLEN RAD HI 081411-22	NORM D	02	HIGH	01	CLSD	0		1			D1	APED	ANN03A322	D A
CIN B558	C1058	RB EXH PLEN RAD MON DNSC 081412-00	NORM D	02	DNSC	14	CLSD	0	1				D1	APED	ANN03A305	D A
CIN B559	C1059	STM LINES RAD MON DNSC 081412-01	NORM D	02	DNSC	14	CLSD	0	1				D1	APED	ANN03A319	C A
CIN B560	C1060	STM LINES RAD HIGH 081412-02	NORM D	02	HIGH	01	CLSD	0		1			D1	APED	ANN03A301	D A
CIN B561	C1061	ADMIN-HOT LAB, SCP RAD H 081412-03	NORM D	02	HIGH	01	CLSD	0		1			D1	APED	ANN04A516	A
CIN B562	C1062	PRETREAT AVE ANNL LIMIT 081412-04	NORM D	02	EXCD M-141	35	CLSD	0		1			D1	APED	ANN03A328	F A
CIN B563	C1063	PRETREAT OFF GAS RAD MON 081412-05	NORM D	02	DNSC M-141	14	CLSD	0		1			D1	APED	ANN03A311	D A
CIN B564	C1064	OFF GAS VT PIPE SMPL FLW 081412-06	NORM D	02	HILO M-141	03	CLSD	0		1			D1	APED	ANN03A303	C A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN APRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN B565	C1065	OFF GAS VT PIPE RAD HIHI 081412-07	NORM D	02	HIHI M-141	15	CLSD	0		1			D1	APED	ANN03A321	C A
CIN B566	C1066	OFF GAS VT PIPE RAD HIGH 081412-08	NORM D	02	HIGH M-141	01	CLSD	0		1			D1	APED	ANN03A312	D A
CIN B567	C1067	OFF GAS VT RAD MON ONSC 081412-09	NORM D	02	NDSC M-141	14	CLSD	0		1			D1	APED	ANN03A330	D A
CIN B568	C1068	REFUEL FLOOR AREA RAD HI 081412-10	NORM D	02	HIGH	01	CLSD	0	1				D1	APED	ANN04A524	D A
CIN B569	C1069	RADWASTE BLDG AREA RAD H 081412-11	NORM D	02	HIGH	01	CLSD	0		1			D1	APED	ANN04A507	E A
CIN B570	C1070	NEW FUEL STG AREA RAD HI 081412-12	NORM D	02	HIGH	01	CLSD	0		1			D1	APED	ANN04A515	D A
CIN B571	C1071	RCT BLDG RAD HIGH 081412-13	NORM D	02	HIGH	01	CLSD	0		1			D1	APED	ANN04A506	E A
CIN B572	C1072	TURB BLDG RADIATION HIGH 081412-14	NORM D	02	HIGH	01	CLSD	0		1			D1	APED	ANN04A533	E A
CIN B573	C1073	AREA MONITOR DOWNSCALE 081412-15	NORM D	02	DNSC	14	CLSD	0		1			D1	APED	ANN04A525	C A
CIN B574	C1074	MS TO HPCI TURB IBVA 081412-16	OPEN D	17	CLSD M-122	16	CLSD	0		1			D1	M133	MO-2238	B A
CIN B575	C1075	MS TO HPCI TURB OBVA 081412-17	OPEN D	17	CLSD M-122	16	CLSD	0		1			D1	M152	MO-2239	B A
CIN B576	C1076	DRYWELL PRESS ECCS ON AB 081412-18	NORM D	02	HIGH M-143	01	CLSD	0		1			D1	APED	PS-43128	E C
CIN B577	C1077	COND STG TK TO RCIC PMP 081412-19	OPEN D	17	CLSD M-125	16	CLSD	0		1			D1	M137	MO-2500	C A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN B578	C1078	DISCH FROM HPCI PMP IBVA 081412-20	CLSD D	16	NOCL M-123	18	CLSD	0		1			D1	M152	MO-2312	E C
CIN B579	C1079	DISCH FROM HPCI PMP OBVA 081412-21	NOCL D	18	CLSD M-123	16	CLSD	0		1			D1	M137	MO-2311	D C
CIN B580	C1080	DISCH FROM RCIC PMP OBVA 081412-22	NOCL D	18	CLSD M-125	16	CLSD	0		1			D1	M133	MO-2511	D A
CIN B581	C1081	DISCH FROM RCIC PMP IBVA 081413-00	CLSD D	16	NOCL M-125	18	CLSD	0		1			D1	M133	MO-2512	D A
CIN B582	C1082	COND STG TK TO HPCI PMP 081413-01	NOCL D	18	CLSD M-123	16	CLSD	0		1			D1	M137	MO-2300	C C
CIN B583	C1083	SPARE 081413-02	D										D1			D B
CIN B584	C1084	STEAM TO RCIC TURB IBVA 081413-03	NOCL D	18	CLSD M-124	16	CLSD	0		1			D1	M133	MO-2400	D A
CIN B585	C1085	STEAM TO RCIC TURB OBVA 081413-04	NOCL D	18	CLSD M-124	16	CLSD	0		1			D1	M133	MO-2401	D A
CIN B586	C1086	REACTOR WTR CLEANUP IBVA ~~RCT RECIRC SYS HDR IBVA~~ 081413-05	NOCL D	18	CLSD M-127	16	CLSD	0		1			D1	M134	MO-2700	D A
CIN B587	C1087	REACTOR WTR CLEANUP OBVA ~~RCT RECIRC SYS HDR OBVA~~ 081413-06	NOCL D	18	CLSD M-127	16	CLSD	0		1			D1	M134	MO-2701	D A
CIN B588	C1088	HPCI STM SUPPLY FLOW HI 081413-07	NORM D	02	HIGH M-114	01	CLSD	0		1			D1	APED	ANN03A118	E A
CIN B589	C1089	CORE SPRAY DIFF PRESS B 081413-08	NORM D	02	HIGH M-121	01	CLSD	0		1			D1	APED	ANN03A128	F B
CIN B590	C1090	CORE SPRAY DIFF PRESS A 081413-09	NORM D	02	HIGH M-121	01	CLSD	0		1			D1	APED	ANN03A309	F B

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TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	NORMAL PRINT / SCAN CLASS	NT	ALARM PRINT / REFERENCE DRAWING	AT	ALARM STATUS / LOG SA	CS / NOTE NO.	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV / REV
CIN B591	C1091	DRYWELL PRESS RHR ON AB 081413-10	NORM D	02	HIGH M-143	01	CLSD	0	1				D1	APED	PS-4312C	D C
CIN B592	C1092	DRYWELL PRESS ADS ON BB 081413-11	NORM D	02	HIGH M-143	01	CLSD	0	1				D1	APED	PS-4313A	D D
CIN B593	C1093	DRYWELL PRESS ECCS ON BB 081413-12	NORM D	02	HIGH M-143	01	CLSD	0	1				D1	APED	PS-4313B	D D
CIN B594	C1094	DRYWELL PRESS RHR ON BB 081413-13	NORM D	02	HIGH M-143	01	CLSD	0	1				D1	APED	PS-4313C	D D
CIN B595	C1095	HPCI EQUIP AREA A LEAK 081413-14	RSET D	12	HIGH M-122	01	CLSD	0	1				D1	APED	KS-2266A	C C
CIN B596	C1096	HPCI EQUIP AREA B LEAK 081413-15	RSET D	12	HIGH M-122	01	CLSD	0	1				D1	APED	KS-2266B	C C
CIN B597	C1097	RCIC EQUIP AREA A LEAK 081413-16	RSET D	12	HIGH M-124	01	CLSD	0	1				D1	APED	KS-2448A	C C
CIN B598	C1098	RCIC EQUIP AREA B LEAK 081413-17	RSET D	12	HIGH M-124	01	CLSD	0	1				D1	APED	KS-2448B	C C
CIN B599	C1099	SUPPRES POOL AREA A LEAK 081413-18	RSET D	12	HIGH M-125	01	CLSD	0	1				D1	APED	24A,25A	C C
CIN B600	C1100	SUPPRES POOL AREA B LEAK 081413-19	RSET D	12	HIGH M-125	01	CLSD	0	1				D1	APED	24B,25B	C C
CIN B601	C1101	~~SPARE~~ 081413-20 Recirc Pump Trip	D		Sys A DEV 3-19-80								D1			D A
CIN B602	C1102	~~SPARE~~ 081413-21 " " " D			SysB DCR 700C Don West								D1			D A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CSA 0500	C1501	DISCH VOL LVL CHANNEL A1 08l424-00	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	LS-1861A X1	C B
CSA 0501	C1502	DISCH VOL LVL CHANNEL B1 08l424-01	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	LS-1861B X1	C B
CSA 0502	C1503	DISCH VOL LVL CHANNEL A2 08l424-02	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	LS-1861C X1	C B
CSA 0503	C1504	DISCH VOL LVL CHANNEL B2 08l424-03	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	LS-1861D X1	C B
		REACTOR HI WTR LEVEL CHAN A NORM TRIP														
CSA 0504	C1505	NSS SPARE 08l424-04 Reserved for Rx Hi wtr Level 12-1-77 JAB DV	S										D2		X1	B
CSA 0505	C1506	NSS SPARE 08l424-05	S										D2		X1	B
CSA 0506	C1507	NSS SPARE 08l424-06	S										D2		X1	B
CSA 0507	C1508	NSS SPARE 08l424-07	S										D2		X1	B
CSA 0508	C1509	MS ISOL VLV A1 <90% OPEN 08l424-08	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	X1	B B
CSA 0509	C1510	MS ISOL VLV B1 <90% OPEN 08l424-09	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	X1	B B
CSA 0510	C1511	MS ISOL VLV A2 <90% OPEN 08l424-10	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	X1	B B
CSA 0511	C1512	MS ISOL VLV B2 <90% OPEN 08l424-11	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	X1	B B
CSA 0512	C1513	CONTMT HIGH PRESS CH A1 08l424-12	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	PS-4315A X1	D B

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TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	NORMAL PRINT / SCAN CLASS	NT	ALARM PRINT / REFERENCE DRAWING	AT	ALARM STATUS / LOG SA	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV / REV
CSA 0513	C1514	CONTMT HIGH PRESS CH B1 081424-13	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	PS-4315B X1	D B
CSA 0514	C1515	CONTMT HIGH PRESS CH A2 081424-14	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	PS-4315C X1	D B
CSA 0515	C1516	CONTMT HIGH PRESS CH B2 081424-15	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	PS-4315D X1	D B
CSA 0516	C1517	REACTOR CHNL A1 HI PRESS 081424-16	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	PS-4549 X1	A B
CSA 0517	C1518	REACTOR CHNL B1 HI PRESS 081424-17	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	PS-4551 X1	A B
CSA 0518	C1519	REACTOR CHNL A2 HI PRESS 081424-18	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	PS-4550 X1	A B
CSA 0519	C1520	REACTOR CHNL B2 HI PRESS 081424-19	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	PS-4552 X1	A B
CSA 0520	C1521	REACTOR LO WTR LVL CH A1 081424-20	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	LIS-4535 X1	C B
CSA 0521	C1522	REACTOR LO WTR LVL CH B1 081424-21	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	LIS-4537 X1	C B
CSA 0522	C1523	REACTOR LO WTR LVL CH A2 081424-22	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	LIS-4536 X1	C B
CSA 0523	C1524	REACTOR LO WTR LVL CH B2 081426-00	NORM S	02	TRIP RPS IED	19	CLSD	0	1				D2	C71	LIS-4538 X1	C B
CSA 0524	C1525	MSL A1 HIGH RADIATION 081426-01	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	RSS-4448A X1	E B
CSA 0525	C1526	MSL B1 HIGH RADIATION 081426-02	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	RSS-4448B X1	E B

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	NORMAL PRINT / SCAN CLASS	NT	ALARM PRINT / REFERENCE DRAWING	AT	ALARM STATUS / LOG SA	CS / NOTE NO.	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV / REV
CSA D526	C1527	MSL A2 HIGH RADIATION 081426-03	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	RSS-4448C X1	E B
CSA D527	C1528	MSL B2 HIGH RADIATION 081426-04	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	RSS-4448D X1	E B
CSA D528	C1529	NEUT MON SYSTEM CHNL A1 081426-05	RSET S	12	TRIP NM FCD	19	CLSD	0	1				D2	B21	X1	A B
CSA D529	C1530	NEUT MON SYSTEM CHNL B1 081426-06	RSET S	12	TRIP NM FCD	19	CLSD	0	1				D2	B21	X1	A B
CSA D530	C1531	NEUT MON SYSTEM CHNL A2 081426-07	RSET S	12	TRIP NM FCD	19	CLSD	0	1				D2	B21	X1	A B
CSA D531	C1532	NEUT MON SYSTEM CHNL B2 081426-08	RSET S	12	TRIP NM FCD	19	CLSD	0	1				D2	B21	X1	A B
CSA D532	C1533	~~NSS SPARE~~ 081426-09 SCRAM DISCH VOL VENT CV1859A OPEN	S										D2		X1	B
CSA D533	C1534	~~NSS SPARE~~ 081426-10 SCRAM DISCH VOL VENT CV1859A SHUT	S										D2		X1	B
CSA D534	C1535	~~NSS SPARE~~ 081426-11 SCRAM DISCH VOL ~~VENT~~ DRN CV1859B 67A OPEN	S										D2		X1	B
CSA D535	C1536	~~NSS SPARE~~ 081426-12 SCRAM DISCH VOL ~~VENT~~ DRN CV1859B 67A SHUT	S										D2		X1	B
CSA D536	C1537	MANUAL SCRAM CHANNEL A 081426-13	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	X1	A B
CSA D537	C1538	MANUAL SCRAM CHANNEL B 081426-14	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	X1	A B
CSA D538	C1539	REACTOR SCRAM CHANNEL A 081426-15	RSET S	12	TRIP RPS IED	19	CLSD	0	1		1		D2	C71	X1	A B

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	NORMAL PRINT / SCAN CLASS	NT	ALARM PRINT / REFERENCE DRAWING	AT	ALARM STATUS / LOG SA	CS / NOTE NO.	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
CSA 0539	C1540	REACTOR SCRAM CHANNEL B 081426-16	RSET S	12	TRIP RPS IED	19	CLSD	0	1		1		D2	C71	X1	A B
CSA 0540	C1549	~~NSS SPARE~~ SCRAM DISCH VOL DRN CV1867A OPEN 081426-17	S										D2		X1	B
CSA 0541	C1550	~~NSS SPARE~~ SCRAM DISCH VOL DRN CV1867A SHUT 081426-18	S										D2		X1	B
CSA 0542	C1551	~~NSS SPARE~~ SCRAM DISCH VOL DRN CV1867B OPEN 081426-19	S										D2		X1	B
CSA 0543	C1552	~~NSS SPARE~~ SCRAM DISCH VOL DRN CV1867B SHUT 081426-20	S										D2		X1	B
CSA 0544	C1553	TSV FAST CLOSURE CHNL A1 081426-21	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	SV-1/SV-2 X1	A B
CSA 0545	C1554	TSV FAST CLOSURE CHNL B1 081426-22	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	SV-1/SV-3 X1	A B
CSA 0546	C1555	TSV FAST CLOSURE CHNL A2 081430-00	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	SV-3/SV-4 X1	A B
CSA 0547	C1556	TSV FAST CLOSURE CHNL B2 081430-01	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	SV-2/SV-4 X1	A B
CSA 0548	C1557	TCV FAST CLOSURE CHNL A1 081430-02	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	ZS-9185A X1	B B
CSA 0549	C1558	TCV FAST CLOSURE CHNL B1 081430-03	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	ZS-9185B X1	B B
CSA 0550	C1559	TCV FAST CLOSURE CHNL A2 081430-04	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	ZS-9185C X1	B B
CSA 0551	C1560	TCV FAST CLOSURE CHNL B2 081430-05	RSET S	12	TRIP RPS IED	19	CLSD	0	1				D2	C71	ZS-9185D X1	B B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CSA 0552	C1561	APRM CHANNEL A UPSCALE T 081430-06	RSET S	12	NM TRIP FCD	19	CLSD	0	1				D2	C51	X1	B B
CSA 0553	C1562	APRM CHANNEL B UPSCALE T 081430-07	RSET S	12	NM TRIP FCD	19	CLSD	0	1				D2	C51	X1	B B
CSA 0554	C1563	APRM CHANNEL C UPSCALE T 081430-08	RSET S	12	NM TRIP FCD	19	CLSD	0	1				D2	C51	X1	B B
CSA 0555	C1564	APRM CHANNEL D UPSCALE T 081430-09	RSET S	12	NM TRIP FCD	19	CLDS	0	1				D2	C51	X1	B B
CSA 0556	C1565	APRM CHANNEL E UPSCALE T 081430-10	RSET S	12	NM TRIP FCD	19	CLSD	0	1				D2	C51	X1	B B
CSA 0557	C1566	APRM CHANNEL F UPSCALE T 081430-11	RSET S	12	NM TRIP FCD	19	CLSD	0	1				D2	C51	X1	B B
CSA 0558	C1567	NSS SPARE 081430-12	S										D2		X1	B
CSA 0559	C1568	NSS SPARE 081430-13	S										D2		X1	B
CSA 0560	C1569	IRM CHNL A UPSCALE TRIP 081430-14	RSET S	12	NM TRIP FCD	19	CLSD	0	1				D2	C51	X1	A B
CSA 0561	C1570	IRM CHNL B UPSCALE TRIP 081430-15	RSET S	12	NM TRIP FCD	19	CLSD	0	1				D2	C51	X1	A B
CSA 0562	C1571	IRM CHNL C UPSCALE TRIP 081430-16	RSET S	12	NM TRIP FCD	19	CLSD	0	1				D2	C51	X1	A B
CSA 0563	C1572	IRM CHNL D UPSCALE TRIP 081430-17	RSET S	12	NM TRIP FCD	19	CLSD	0	1				D2	C51	X1	A B
CSA 0564	C1573	IRM CHNL E UPSCALE TRIP 081430-18	RSET S	12	NM TRIP FCD	19	CLSD	0	1				D2	C51	X1	A B

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TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CSA 0565	C1574	IPM CHNL F UPSCALE TRIP 081430-19	RSET S	12 NM	TRIP FCD	19	CLSD	0	1				D2	C51	X1	A B
CSA 0566	C1575	~~NSS SPARE~~ 081430-20 125 VDC BATT IDI DISCONN	S										D2		X1	B
CSA 0567	C1576	~~NSS SPARE~~ 081430-21 125 VDC BATT ID2 DISCONN 3/83 DCR1113	S										D2		X1	B
CSA 0568	C1577	~~NSS SPARE~~ 081430-22 250 VDC BATT ID4 DISCONN	D										D2		X1	B
CSA 0569	C1578	ROD 1 SCRAM TIME 081432-00	RSET S		TRIP		CLSD						D2		X1	A B
CSA 0570	C1579	ROD 2 SCRAM TIME 081432-01	RSET S		TRIP		CLSD						D2		X1	A B
CSA 0571	C1580	ROD 3 SCRAM TIME 081432-02	RSET S		TRIP		CLSD						D2		X1	A B
CSA 0572	C1581	ROD 4 SCRAM TIME 081432-03	RSET S		TRIP		CLSD						D2		X1	A B
CSA 0573	C1582	ROD 5 SCRAM TIME 081432-04	RSET S		TRIP		CLSD						D2		X1	A B
CSA 0574	C1583	ROD 6 SCRAM TIME 081432-05	RSET S		TRIP		CLSD						D2		X1	A B
CSA 0575	C1584	ROD 7 SCRAM TIME 081432-06	RSET S		TRIP		CLSD						D2		X1	A B
CSA 0576	C1585	ROD 8 SCRAM TIME 081432-07	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0577	C1586	ROD 9 SCRAM TIME 081432-08	RSET S		TRIP		CLSD						D2		X1	C B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CSA 0578	C1587	ROD 10 SCRAM TIME 081432-09	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0579	C1588	ROD 11 SCRAM TIME 081432-10	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0580	C1589	ROD 12 SCRAM TIME 081432-11	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0581	C1590	ROD 13 SCRAM TIME 081432-12	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0582	C1591	ROD 14 SCRAM TIME 081432-13	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0583	C1592	ROD 15 SCRAM TIME 081432-14	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0584	C1593	ROD 16 SCRAM TIME 081432-15	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0585	C1594	ROD 17 SCRAM TIME 081432-16	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0586	C1595	ROD 18 SCRAM TIME 081432-17	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0587	C1596	ROD 19 SCRAM TIME 081432-18	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0588	C1597	ROD 20 SCRAM TIME 081432-19	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0589	C1598	ROD SPARE SCRAM TIME 081432-20	RSET S		TRIP		CLSD						D2		X1	C B
CSA 0590	C1599	INDIVIDUAL ROD SCRAM 081432-21	OFF S		ON		CLSD						D2		X1	C B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS	REFERENCE DRAWING		LOG SA	NOTE NO.									REV
CSA 0591	C1600	FULL ROD SCRAM 081432-22	OFF S		ON		CLSD						D2		X1	C B
CSA 0592	C1115	4160V 1A1 L-O RELAY TRP 081434-00	RSET S	12	TRIP E-104	19	CLSD	0	1				D2	E6	186/1 X2	E D
CSA 0593	C1116	4160V 1A2 L-O RELAY TRP 081434-01	RSET S	12	TRIP E-104	19	CLSD	0	1				D2	E6	186/2 X2	E D
CSA 0594	C1117	4160V 1A3 L-O RELAY TRP 081434-02	RSET S	12	TRIP E-104	19	CLSD	0	1				D2	E6	186/3 X2	E D
CSA 0595	C1118	4160V 1A4 L-O RELAY TRP 081434-03	RSET S	12	TRIP E-104	19	CLSD	0	1				D2	E6	186/4 X2	E D
CSA 0596	C1119	RFP A LOW SUCT PRESS TRP 081434-04	NORM S	02	TRIP M-107	19	CLSD	0	1				D2	M155	KY-1574 X2	C A
CSA 0597	C1120	RFP B LOW SUCT PRESS TRP 081434-05	NORM S	02	TRIP M-107	19	CLSD	0	1				D2	M155	KY-1616 X2	C A
CSA 0598	C1121	1G-31 LOCKOUT RELAY TRP 081434-06	RSET S	12	TRIP E-106	19	CLSD	0	1				D2	E6	186/DG1 X2	E D
CSA 0599	C1122	1G-21 LOCKOUT RELAY TRP 081434-07	RSET S	12	TRIP E-106	19	CLSD	0	1				D2	E6	186/DG2 X2	E D
CSA 0600	C1123	GEN PRI L-O RELAY TRP 081434-08	RSET S	12	TRIP E-4	19	CLSD	0	1		1		D2	M155	286/P X2	A A
CSA 0601	C1124	GEN BACKUP L-O RELAY TRP 081434-09	RSET S	12	TRIP E-4	19	CLSD	0	1		1		D2	M155	286/B X2	C A
CSA 0602	C1125	STARTUP XFMR L-O RELAY 081434-10	RSET S	12	TRIP E-4	19	CLSD	0	1				D2	M155	386/ST X2	A A
CSA 0603	C1126	STANDBY XFMR L-O RELAY 081434-11	RSET S	12	TRIP E-5	19	CLSD	0	1				D2	M155	186/SB X2	A A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CSA 0604	C1127	TURB MSR A HI LVL TRIP 081434-12	NORM S		02 TRIP M-103	19	CLSD	0	1				D2	LSTG	LS-1066C X2	C A
CSA 0605	C1128	LOSS OF EHC DC POWER 081434-13	NORM S		02 TRBL N32-10	0	CLSD	0	1				D2	LSTG	XK64-1 X2	C D
CSA 0606	C1129	EHC PRESS LOSS EM TRIP 081434-14	NORM S		02 TRIP N32-10	19	CLSD	0	1				D2	LSTG	XK102-1 X2	C D
CSA 0607	C1130	TURB VIBRATION TRIP 081434-15	NORM S		02 TRIP N32-10	19	CLSD	0	1				D2	LSTG	XK100-1 X2	A D
CSA 0608	C1131	HI EXH HOOD TEMP TRIP 081434-16	NORM S		02 TRIP N32-10	19	CLSD	0	1				D2	LSTG	EHT 1234 X2	A D
CSA 0609	C1132	LOSS STATOR COOLANT TRIP 081434-17	NORM S		02 TRIP N32-10	19	CLSD	0	1				D2	LSTG	62-C1/C2 X2	A D
CSA 0610	C1133	SHAFT PMP DISCH LP TRIP 081434-18	NORM S		02 TRIP N32-10	19	CLSD	0	1				D2	LSTG	PS-109 X2	A D
CSA 0611	C1134	TURB TRST BRG WEAR TRIP 081434-19	NORM S		02 TRIP N32-10	19	CLSD	0	1				D2	LSTG	PS-11/12 X2	B D
CSA 0612	C1135	TURB LOW HYD PRESS TRIP 081434-20	NORM S		02 TRIP N32-10	19	CLSD	0	1				D2	LSTG	PS-101 X2	A D
CSA 0613	C1136	TURB ~~ELEC PROT RLY~~ CUSTOMER TRIP 081434-21	NORM S		02 TRIP N32-10	19	CLSD	0	1				D2	LSTG	286/P X2	A D
CSA 0614	C1137	TURB B-U OVERSPEED TRIP 081434-22	NORM S		02 TRIP N32-10	19	CLSD	0	1				D2	LSTG	VCS-840 X2	A D
CSA 0615	C1138	TURB SPEED SIG LOSS TRIP 081436-00	NORM S		02 TRIP N32-10	19	CLSD	0	1				D2	LSTG	KM405/406 X2	A D
CSA 0616	C1139	TURB VAC TRIP 081436-01	NORM S		02 TRIP M-103	19	CLSD	0	1				D2	LSTG	PS104/105 X2	A A

286B 267 Gen Feed level Rev P

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
CSA 0617	C1140	TURB MSR B HI LVL TRIP 081436-02	NORM S	02	TRIP M-103	19	CLSD	0	1				D2	LSTG	LS-1078C X2	C C
CSA 0618	C1141	TURB MASTER TRIP 081436-03	NORM S	02	TRIP N32-10	19	CLSD	0	1		1	1	D2	LSTG	XK89-1MRB X2	C D
CSA 0619	C1142	TURB ~~OVERSPEED TRIP~~ OVRSPD MAN. MASTER TRIP 081436-04	RSET S	12	TRIP N32-10	19	CLSD	0	1				D2	LSTG	XK51-1MTV X2	A D
CSA 0620	C1143	TSV&TCV FAST CLOS BYP A1 081436-05	NORM S	02	LOW M-103	06	CLSD	0	1				D2	APED	PS-1005A X2	D A
CSA 0621	C1144	TSV&TCV FAST CLOS BYP B1 081436-06	NORM S	02	LOW M-103	06	CLSD	0	1				D2	APED	PS-1005B X2	D A
CSA 0622	C1145	TSV&TCV FAST CLOS BYP A2 081436-07	NORM S	02	LOW M-103	06	CLSD	0	1				D2	APED	PS-1005C X2	D A
CSA 0623	C1146	TSV&TCV FAST CLOS BYP B2 081436-08	NORM S	02	LOW M-103	06	CLSD	0	1				D2	APED	PS-1005D X2	D A
CSA 0624	C1147	SPARE 081436-09	S										D2			E B
CSA 0625	C1148	SPARE 081436-10	S										D2			E B
CSA 0626	C1149	GEN & XFMR DIFF TRIP 081436-11	NORM S	02	TRIP E-101	19	CLSD	0	1				D2	M155	387MT&ST2 287187XAT&SB2	C D
CSA 0627	C1150	PLANT UNIT&XFMR DIF TRIP 081436-12	NORM S	02	TRIP E-101	19	CLSD	0	1				D2	M155	387/U&ST1 187X/SB1	C D
CSA 0628	C1151	59 HERTZ ALARM 081436-13	NORM S	02	ALRM E-101	07	CLSD	0	1				D2	M155	281-1X X2	E D
CSA 0629	C1152	58 HERTZ INSTANT TRIP 081436-14	NORM S	02	TRIP E-101	19	CLSD	0	1				D2	M155	281-2X X2	D D

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CSA 0630	C1153	58.5 HERTZ TIME DEL TRIP 081436-15	NORM S	02	TRIP E-101	19	CLSD	0	1				D2	M155	281-3Y X2	D D
CSA 0631	C1154	LOW VOLT STANDBY XFMR 081436-16	NORM S	02	LOW E-104	06	CLSD	0	1				D2	M155	127/SB11 X2	C D
CSA 0632	C1155	LOW VOLT STARTUP XFMR 081436-17	NORM S	02	LOW E-104	06	CLSD	0	1				D2	M155	127/ST11 X2	C D
CSA 0633	C1156	LOW VOLTAGE BUS 1A3 081436-18	NORM S	02	LOW E-104	06	CLSD	0	1				D2	M155	127-31X X2	C D
CSA 0634	C1157	LOW VOLTAGE BUS 1A4 081436-19	NORM S	02	LOW E-104	06	CLSD	0	1				D2	M155	127-41X X2	C D
CSA 0635	C1158	RCT LOLO WTR LVL CH A1 081436-20	RSET S	12	TRIP M-115	11	CLSD	0	1				D2	APED	LIS-4535 X2	E C
CSA 0636	C1159	RCT LOLO WTR LVL CH B1 081436-21	RSET S	12	TRIP M-115	11	CLSD	0	1				D2	APED	LIS-4537 X2	E C
CSA 0637	C1160	RCT LOLO WTR LVL CH A2 081436-22	RSET S	12	TRIP M-115	11	CLSD	0	1				D2	APED	LIS-4536 X2	E C
CSA 0638	C1161	RCT LOLO WTR LVL CH B2 081440-00	RSET S	12	TRIP M-115	11	CLSD	0	1				D2	APED	LIS-4538 X2	E C
CSA 0639	C1162	DIESEL 1G-31 CRANKING 081440-01	NORM S	02	INTD E-36	11	CLSD	0	1				D2	M15	74-DG1 X2	D B
CSA 0640	C1163	DIESEL 1G-21 CRANKING 081440-02	NORM S	02	INTD E-36	11	CLSD	0	1				D2	M15	74-DG2 X2	D B
CSA 0641	C1164	DIESEL 1G-31 BKR 311 081440-03	CLSD S	16	TRIP E-106	19	OPEN	1	1				D2	E6	152-311/A X2	F D
CSA 0642	C1165	DIESEL 1G-21 BKR 411 081440-04	CLSD S	16	TRIP E-106	19	OPEN	1	1				D2	E6	152-411/A X2	E D

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CSA 0643	C1166	AUX XFMR TO 4160V BKR101 081440-05	CLSD S	16	TRIP E-104	19	OPEN	1	1				D2	E6	152-101/A X2	E D
CSA 0644	C1167	SU XFMR TO 4160V BKR 102 081440-06	CLSD S	16	TRIP E-104	19	OPEN	1	1				D2	E6	152-102/A X2	E D
CSA 0645	C1168	AUX XFMR TO 4160V BKR201 081440-07	CLSD S	16	TRIP E-104	19	OPEN	1	1				D2	E6	152-201/A X2	E D
CSA 0646	C1169	SU XFMR TO 4160V BKR 202 081440-08	CLSD S	16	TRIP E-104	19	OPEN	1	1				D2	E6	152-202/A X2	E D
CSA 0647	C1170	SB XFMR TO 4160V BKR 301 081440-09	CLSD S	16	TRIP E-104	19	OPEN	1	1				D2	E6	152-301/A X2	E D
CSA 0648	C1171	SU XFMR TO 4160V BKR 302 081440-10	CLSD S	16	TRIP E-104	19	OPEN	1	1				D2	E6	152-302/A X2	E D
CSA 0649	C1172	SB XFMR TO 4160V BKR 401 081440-11	CLSD S	16	TRIP E-104	19	OPEN	1	1				D2	E6	152-401/A X2	E D
CSA 0650	C1173	SU XFMR TO 4160V BKR 402 081440-12	CLSD S	16	TRIP E-104	19	OPEN	1	1				D2	E6	152-402/A X2	E D
CSA 0651	C1174	GEN 161KV OCB 0220 TRP 081440-13	CLSD S	16	TRIP E-101	19	OPEN	1	1				D2	IELP	352-H/AX X2	D D
CSA 0652	C1175	GEN 161KV OCB 4290 TRP 081440-14	CLSD S	16	TRIP E-101	19	OPEN	1	1				D2	IELP	352-I/AX X2	D D
CSA 0653	C1176	GEN HYDRO SYS PWR FAIL 081440-15	NORM S	02	OFF E-102	22	CLSD	0	1				D2	LSTG	74-C15 X2	A D
CSA 0654	C1177	GEN LOAD RUNBACK 081440-16	RSET S	12	NGZD E-102	09	CLSD	0	1				D2	LSTG	63-X13A X2	A D
CSA 0655	C1178	GEN EXCITER FIELD BREAKER 081440-17	CLSD S	16	TRIP E-101	19	OPEN	1	1				D2	LSTG	2416/A X2	B D

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CSA 0656	C1179	HPCI, RCIC SYS INIT B 081440-18	RSET S	12	INTO M-115	11	CLSD	0	1				D2	APED	LIS-4532 X2	D C
CSA 0657	C1180	TURB BYPASS VA 1 OPEN 081440-19	NOOP S	23	OPEN M-103	17	CLSD	0	1				D2	LSTG	ANN070A16 X2	A A
CSA 0658	C1181	TURB BYPASS VA 1 CLOSED 081440-20	NOCL S	18	CLSD M-103	16	CLSD	0	1				D2	LSTG	ZS-9117 X2	A A
CSA 0659	C1182	TURB BYPASS VA 2 OPEN 081440-21	NOOP S	23	OPEN M-103	17	CLSD	0	1				D2	LSTG	ZS-9118 X2	A A
CSA 0660	C1183	TURB BYPASS VA 2 CLOSED 081440-22	NOCL S	18	CLSD M-103	16	CLSD	0	1				D2	LSTG	ZS-9119 X2	A A
CSA 0661	C1184	RCIC TURBINE TRIP 081442-00	RSET S	12	TRIP M-124	19	CLSD	0	1				D2	APED	ANN04A425 X2	C C
CSA 0662	C1185	SUBSTATION TIME SYNCRO 081442-01	NORM S	02	TEST	36	CLSD	0	1				D2	IELP	X2	D C
CSA 0663	C1186	GENERATOR NEUT OV TRIP 081442-02	NORM S	02	TRIP	19	CLSD	0	1				D2	M155	259X/N1	C A
CSA 0664	C1187	VOLTS PER HERTZ ACTUATE 081442-03	NORM S	02	TRIP	19	CLSD	0	1				D2	M155	ANN080C11	D A
CSA 0665	C1188	GEN NEGATIVE SEQ TRIP 081442-04	NORM S	02	TRIP	19	CLSD	0	1				D2	M155	246X	C A
CSA 0666	C1189	GEN LOSS OF FIELD TRIP 081442-05	NORM S	02	TRIP	19	CLSD	0	1				D2	M155	240X	C A
CSA 0667	C1190	GEN REVERSE POWER ALARM 081442-06	NORM S	02	ALRM	07	CLSD	0	1				D2	M155	ANN080C02	D A
CSA 0668	C1191	~~SPARE~~ DISCH VOL LVL CHANNEL A1 081442-07	S										D2			D A

TYPE / SCAN ADPS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	NORMAL PRINT / SCAN CLASS	NT	ALARM PRINT / REFERENCE DRAWING	AT	ALARM STATUS / LOG SA	CS	SA	AL	PL	TL	BD TYPE / NOTE NO.	MPL NO	INSTRUMENT NO.	REV
CSA 0669	C1192	~~SPARE~~ DISCH VOL LVL CHANNEL B1 081442-08	S										D2			D A
CSA 0670	C1193	~~SPARE~~ DISCH VOL LVL CHANNEL A2 081442-09	S										D2			D A
CSA 0671	C1194	~~SPARE~~ DISCH VOL LVL CHANNEL B2 081442-10	S										D2			D A
CSA 0672	C1103	HPCI, RCIC SYS INIT C 081442-11	RSET S	12	INTD M-115	11	CLSD	0	1			/	D2	APED	LIS-4533 X2	D C
CSA 0673	C1104	HPCI TURBINE TRIP 081442-12	RSET S	12	TRIP M-122	19	CLSD	0	1				D2	APED	ANN03A125 X2	C A
CSA 0674	C1105	MS HPCI TURB PRE STOP VA 081442-13	CLSD S	16	NOCL M-122	18	CLSD	0	1				D2	M133	MO-2202 X2	C A
CSA 0675	C1106	MS HPCI TURB STOP VA 081442-14	NOOP S	23	OPEN M-122	17	CLSD	0	1				D2	APED	E41A-K/3 X2	E A
CSA 0676	C1107	MS HPCI TURB CONT VA 081442-15	NOOP S	23	OPEN M-122	17	CLSD	0	1				D2	APED	E41A-K/55 X2	E A
CSA 0677	C1108	MS PCIC TURB STOP VA 081442-16	NOCL S	16	CLSD M-124	18	CLSD	0	1				D2	M133	MO-2404 X2	D A
CSA 0678	C1109	HPCI, RCIC SYS INIT A 081442-17	RSET S	12	INTD M-115	11	CLSD	0	1				D2	APED	LIS-4531 X2	D A
CSA 0679	C1110	HPCI, RCIC SYS INIT D 081442-18	RSET S	12	INTD M-115	11	CLSD	0	1				D2	APED	LIS-4534 X2	D A
CSA 0680	C1111	~~SPARE~~ DISCH VOL HI WTR LVL 081442-19	S										D2		X2	D C
CSA 0681	C1112	SPARE 081442-20	S										D2		X2	D C

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
CSA 0682	C1113	SPARE 081442-21	S										D2		X2	D C
CSA 0683	C1114	SPARE 081442-22	S										D2		X2	D C

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN E500	C1199	COND PUMP 1P-8A BKR 106 081413-22	CLSD D	16	TRIP E-110	19	OPEN	1		1			D1	E6	152-106/A	E E
CIN E501	C1200	CW PUMP 1P-4A BKR 105 081414-00	CLSD D	16	TRIP E-110	19	OPEN	1		1			D1	E6	152-105/A	E D
CIN E502	C1201	COND PUMP 1P-8B BKR 206 081414-01	CLSD D	16	TRIP E-108	19	OPEN	1		1			D1	E6	152-206/A	F D
CIN E503	C1202	CW PUMP 1P-4B BKR 205 081414-02	CLSD D	16	TRIP E-110	19	OPEN	1		1			D1	E6	152-205/A	E D
CIN E504	C1203	RHR PUMP 1P-229D BKR 406 081414-03	CLSD D	16	TRIP E-121	19	OPEN	1		1			D1	E6	152-406/A	E D
CIN E505	C1204	RHR PUMP 1P-229B BKR 405 081414-04	CLSD D	16	TRIP E-121	19	OPEN	1		1			D1	E6	152-405/A	E D
CIN E506	C1205	RHR PUMP 1P-229C BKR 306 081414-05	CLSD D	16	TRIP E-121	19	OPEN	1		1			D1	E6	152-306/A	E D
CIN E507	C1206	RHR PUMP 1P-229A BKR 305 081414-06	CLSD D	16	TRIP E-121	19	OPEN	1		1			D1	E6	152-305/A	E D
CIN E508	C1207	CS PUMP 1P-211B BKR 404 081414-07	CLSD D	16	TRIP E-121	19	OPEN	1		1			D1	E6	152-404/A	D D
CIN E509	C1208	CS PUMP 1P-211A BKR 304 081414-08	CLSD D	16	TRIP E-121	19	OPEN	1		1			D1	E6	152-304/A	E D
CIN E510	C1209	CRD PUMP 1P-209B BKR 410 081414-09	CLSD D	16	TRIP E-120	19	OPEN	1		1			D1	E6	152-410/A	E D
CIN E511	C1210	RHR SWP 1P-220 BKR 408 081414-10	CLSD D	16	TRIP E-121	19	OPEN	1		1			D1	E6	152-408/A	E D
CIN E512	C1211	RHR SWP 1P-228 BKR 407 081414-11	CLSD D	16	TRIP E-121	19	OPEN	1		1			D1	E6	152-407/A	E D

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TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN F513	C1212	CRD PUMP 1P-209A BKR 310 081414-12	CLSD D	16	TRIP E-121	19	OPEN	1		1			D1	E6	152-310/A	E D
CIN F514	C1213	RHR SWP 1P-22C BKR 308 081414-13	CLSD D	16	TRIP E-121	19	OPEN	1		1			D1	E6	152-308/A	E D
CIN F515	C1214	RHR SWP 1P-22A BKR 307 081414-14	CLSD D	16	TRIP E-121	19	OPEN	1		1			D1	E6	152-307/A	E D
CIN F516	C1215	RFP 1P-1B BKR 203 081414-15	CLSD D	16	TRIP E-109	19	OPEN	1		1			D1	E6	152-203/A	E D
CIN F517	C1216	RFP 1P-1A BKR 103 081414-16	CLSD D	16	TRIP E-109	19	OPEN	1		1			D1	E6	152-103/A	E D
CIN F518	C1217	RRP MG 1G-201A BKR 104 081414-17	CLSD D	16	TRIP E-120	19	OPEN	1		1			D1	E6	152-104/A	E D
CIN F519	C1218	RRP MG-1G-201B BKP 204 081414-18	CLSD D	16	TRIP E-120	19	OPEN	1		1			D1	E6	152-204/A	E D
CIN F520	C1219	SW YD LC BKR 110 081414-19	CLSD D	16	TRIP E-104	19	OPEN	1		1			D1	E6	152-110/A	E D
CIN F521	C1220	480V LC 1B1 BKR 107 081414-20	CLSD D	16	TRIP E-104	19	OPEN	1		1			D1	E6	152-107/A	E D
CIN F522	C1221	COOL TWR A LC 187 BKR 108 081414-21	CLSD D	16	TRIP E-104	19	OPEN	1		1			D1	E6	152-108/A	E D
CIN F523	C1222	480V LC 1B5 BKR 109 081414-22	CLSD D	16	TRIP E-104	19	OPEN	1		1			D1	E6	152-109/A	E D
CIN F524	C1223	480V LC 1B2 BKR 207 081415-00	CLSD D	16	TRIP E-104	19	OPEN	1		1			D1	E6	152-207/A	E D
CIN F525	C1224	COOL TWR B LC 1B8 BKR208 081415-01	CLSD D	16	TRIP E-104	19	OPEN	1		1			D1	E6	152-208/A	E D

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN F526	C1225	480V LC 186 BKR 209 081415-02	CLSD D	16	TRIP E-104	19	OPEN	1		1			D1	E6	152-209/A	E D
CIN F527	C1226	ESSENTIAL LC 183 BKR 303 081415-03	CLSD D	16	TRIP E-104	19	OPEN	1		1			D1	E6	152-303/A	E D
CIN F528	C1227	GEN SWP 1P-89C BKR 210 081415-04	CLSD D	16	TRIP E-111	19	OPEN	1		1			D1	E6	152-210/A	E D
CIN F529	C1228	GEN SWP 1P-89A BKR 309 081415-05	CLSD D	16	TRIP E-111	19	OPEN	1		1			D1	E6	152-309/A	E D
CIN F530	C1229	ESSENTIAL LC 184 BKR 403 081415-06	CLSD D	16	TRIP E-104	19	OPEN	1		1			D1	E6	152-403/A	E D
CIN F531	C1230	GEN SWP 1P-89B BKR 409 081415-07	CLSD D	16	TRIP E-111	19	OPEN	1		1			D1	E6	152-409/A	E D
CIN F532	C1231	ANY BKR TRIP OF LC 181 081415-08	CLSD D	16	TRIP E-104	19	CLSD	0		1			D1	E8		E D
CIN F533	C1232	ANY BKR TRIP OF LC 182 081415-09	CLSD D	16	TRIP E-104	19	CLSD	0		1			D1	E8		E D
CIN F534	C1233	ANY BKR TRIP ESS LC 183 081415-10	CLSD D	16	TRIP E-104	19	CLSD	0		1			D1	E8		E D
CIN F535	C1234	ANY BKR TRIP ESS LC 184 081415-11	CLSD D	16	TRIP E-104	19	CLSD	0		1			D1	E8		E D
CIN F536	C1235	ANY BKR TRIP OF LC 185 081415-12	CLSD D	16	TRIP E-104	19	CLSD	0		1			D1	E8		E D
CIN F537	C1236	ANY BKR TRIP OF LC 186 081415-13	CLSD D	16	TRIP E-104	19	CLSD	0		1			D1	E8		E D
CIN F538	C1237	MAIN XFMR TROUBLE 081415-14	NORM D	02	TRBL	08	CLSD	0		1			D1	E2	ANN0808 12	A A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
CIN F539	C1238	AUX XFMR TROUBLE 081415-15	NORM D	02	TRBL	08	CLSD	0		1			D1	E3	ANN080829	D A
CIN F540	C1239	STARTUP XFMR TROUBLE 081415-16	NORM D	02	TRBL	08	CLSD	0		1			D1	E4	ANN080A07	D A
CIN F541	C1240	STANDBY XFMR TROUBLE 081415-17	NORM D	02	TRBL	08	CLSD	0		1			D1	E7	ANN080835	D A
CIN F542	C1241	GEN XFMR DISCONNECT SW 081415-18	CLSD D	16	OPEN E-101	17	OPEN	1		1			D1	IELP	389H/I	D D
CIN F543	C1242	INTAKE ESS LC 189 BKR312 081415-19	CLSD D	16	TRIP E-101	19	OPEN	1		1			D1	E6	152-312/A	E D
CIN F544	C1243	INTAKE ESS LC 18208KR412 081415-20	CLSD D	16	TRIP E-101	19	OPEN	1		1			D1	E6	152-412/A	E D
CIN F545	C1244	125V DC SYSTEM 1 TRBL 081415-21	NORM D	02	TRBL E-27	08	CLSD	0		1			D1	M155	ANN080A09 74/27	E C
CIN F546	C1245	115V AC UNINTER TRBL 081415-22	NORM D	02	TRBL E-29	08	CLSD	0		1			D1	M155	27/Y23	E C
CIN F547	C1246	250V DC SYSTEM TRBL 081416-00	NORM D	02	TRBL E-28	08	CLSD	0		1			D1	M155	ANN080840 74/27	F C
CIN F548	C1247	+,- 24V DC SYSTEM A/B TR 081416-01	NORM D	02	TRBL E-28	08	CLSD	0		1			D1	M155	ANN05A801 ANN05A809	C
CIN F549	C1248	250V DC CHGR 1D43 TRBL 081416-02	NORM D	02	TRBL	08	CLSD	0		1			D1		ANN080841	E A
CIN F550	C1249	250V DC CHGR 1D44 TRBL 081416-03	NORM D	02	TRBL	08	CLSD	0		1			D1		ANN080828	E A
CIN F551	C1250	125V DC SYSTEM 2 TRBL 081416-04	NORM D	02	TRBL	08	CLSD	0		1			D1		ANN080804	E A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN F500	C1251	1P-1A RCT FD PMP VIBR 081416-05	NORM D	02	HIGH M-107	01	CLSD	0		1			D1	M159	ANN060812	E A
CIN F501	C1252	1P-1B RCT FD PMP VIBR 081416-06	NORM D	02	HIGH M-107	01	CLSD	0		1			D1	M159	ANN060813	E A
CIN F502	C1253	1P-8A COND PMP VIBR 081416-07	NORM D	02	HIGH M-106	01	CLSD	0		1			D1	M159	ANN060A25	E A
CIN F503	C1254	1P-8B COND PMP VIBR 081416-08	NORM D	02	HIGH M-106	01	CLSD	0		1			D1	M159	ANN060A26	E A
CIN F504	C1255	COND DEM SYS TROUBLE 081416-09	OK D	05	TRBL M-108	08	CLSD	0		1			D1	M20	ANN060801	C A
CIN F505	C1256	MAKE UP DEM SYS ALARM 081416-10	OK D	05	TRBL M-110	08	CLSD	0		1			D1	M38	ANN	C A
CIN F506	C1257	CONDENSER A&B CONDUCT HI 081416-11	NORM D	02	HIGH M-106	01	CLSD	0		1			D1	M155	CR-1514	F A
CIN F507	C1258	1E-1A LP HTR LVL HIGH 081416-12	NORM D	02	HIGH M-104	01	CLSD	0		1			D1	M172	ANN060815	E A
CIN F508	C1259	1E-1B LP HTR LVL HIGH 081416-13	NORM D	02	HIGH M-105	01	CLSD	0		1			D1	M172	ANN060825	E A
CIN F509	C1260	1E-2A LP HTR LVL HIGH 081416-14	NORM D	02	HIGH M-104	01	CLSD	0		1			D1	M172	ANN060816	E A
CIN F510	C1261	1E-2B LP HTR LVL HIGH 081416-15	NORM D	02	HIGH M-105	01	CLSD	0		1			D1	M172	ANN060826	E A
CIN F511	C1262	1E-3A LP HTR LVL HIGH 081416-16	NORM D	02	HIGH M-104	01	CLSD	0		1			D1	M172	ANN060817	E A
CIN F512	C1263	1E-3B LP HTR LVL HIGH 081416-17	NORM D	02	HIGH M-105	01	CLSD	0		1			D1	M172	ANN060827	E A

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TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN FS13	C1264	1E-4A LP HTR LVL HIGH 081416-18	NORM D	02	M-104 HIGH	01	CLSD	0		1			D1	M172	ANN060818	E A
CIN FS14	C1265	1E-4B LP HTR LVL HIGH 081416-19	NORM D	02	M-105 HIGH	01	CLSD	0		1			D1	M172	ANN060828	E A
CIN FS15	C1266	1E-5A LP HTR LVL HIGH 081416-20	NORM D	02	M-104 HIGH	01	CLSD	0		1			D1	M172	ANN060819	E A
CIN FS16	C1267	1E-5B LP HTR LVL HIGH 081416-21	NORM D	02	M-105 HIGH	01	CLSD	0		1			D1	M172	ANN060829	E A
CIN FS17	C1268	1E-6A LP HTR LVL HIGH 081416-22	NORM D	02	M-104 HIGH	01	CLSD	0		1			D1	M172	ANN060820	E A
CIN FS18	C1269	1E-6B LP HTR LVL HIGH 081417-00	NORM D	02	M-105 HIGH	01	CLSD	0		1			D1	M172	ANN060830	E A
CIN FS19	C1270	FEEDWTR ACTIVE BRANCH A 081417-01	NORM D	02	M-107 CLSD	16	CLSD	0		1			D1		MO-1592	G B
CIN FS20	C1271	FEEDWTR ACTIVE BRANCH B 081417-02	NORM D	02	M-107 CLSD	16	CLSD	0		1			D1		MO-1636	G B
CIN FS21	C1272	SPARE 081417-03	D										D1			D A
CIN FS22	C1273	SPARE 081417-04	D										D1			D A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALAPM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS	REFERENCE DRAWING		LOG SA		NOTE NO.								REV
CIN G500	C1274	1G-31 TROUBLE 081417-05	NORM D	02	TRBL	08	CLSD	0		1			D1	M15		B A
CIN G501	C1275	1G-21 TROUBLE 081417-06	NORM D	02	TRBL	08	CLSD	0		1			D1	M15		B A
CIN G502	C1276	GEN EXCITATION AT MAX 081417-07	NORM D	02	HIGH	01	OPEN	1		1			D1	M155	ANN080C10 74/J2KX	C A
CIN G503	C1277	STAT COOL WATER FLOW LOLO ~~GEN H2 & STR GLC TROUBLE~~ 081417-08	NORM D	02 E-102	TRBL	08	CLSD	0		1			D1	LSTG	ANN080C22 74/X14	D D
CIN G504	C1278	MAIN GEN 1G1 POT XFMR FA 081417-09	NORM D	02 E-101	TRBL	08	OPEN	1		1			D1	M155	ANN080C05 260-1	D D
CIN G505	C1279	MAIN GEN 1G1 FIELD GRND 081417-10	NORM D	02	TRBL	08	CLSD	0		1			D1	M155	ANN080C08 74X/264	C A
CIN G506	C1280	SPARE 081417-11	D										D1			E A
CIN G507	C1281	SPARE 081417-12	D										D1			D A

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G

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN M500	C1282	CIRC WTR PMP A VIBR 081417-13	NORM D	02	HIGH M-142	01	CLSD	0		1			D1		ANN060A23	D A
CIN M501	C1283	CIRC WTR PMP B VIBR 081417-14	NORM D	02	HIGH M-142	01	CLSD	0		1			D1		ANN060A24	D A
CIN M502	C1284	SERV WTR HDR PRESS 081417-15	NORM D	02	LOW M-146	06	CLSD	0		1			D1		ANN060A16 PS-49030	D A
CIN M503	C1285	CLG TWR A FAN TROUBLE 081417-16	NORM D	02	TRBL M-142	08	CLSD	0		1			D1		ANN060A05	D A
CIN M504	C1286	CLG TWR B FAN TROUBLE 081417-17	NORM D	02	TRBL M-142	08	CLSD	0		1			D1		ANN060A06	D A
CIN M505	C1287	INST AIR HDR PRESS LOW 081417-18	NORM D	02	LOW M-130	06	CLSD	0		1			D1		PS-3030	B A
CIN M506	C1288	125V DC CHGR 1D12 TRBL 081417-19	NORM D	02	LOW	06	CLSD	0		1			D1		ANN080A21	D C
CIN M507	C1289	125V DC CHGR 1D22 TRBL 081417-20	NORM D	02	LOW	06	CLSD	0		1			D1		ANN080B16	D C
CIN M508	C1290	RB CLG WTR HDR PRESS 081417-21	NORM D	02	LOW M-112	06	CLSD	0		1			D1	M155	ANN060B33	D A
CIN M509	C1291	SERV AIR HDR PRESS 081417-22	NORM D	02	LOW M-130	06	CLSD	0		1			D1	M174	PS-3033	D A
CIN M510	C1292	EMERG SW PIT A LEVEL 081420-00	NORM D	02	LOW M-146	06	CLSD	0		1			D1		ANN060A40	F A
CIN M511	C1293	EMERG SW PIT B LEVEL 081420-01	NORM D	02	LOW M-146	06	CLSD	0		1			D1		ANN060A41	F A
CIN M512	C1294	ALTERNATE SOURCE TIMER 081420-02	ON D		OFF M-160		OPEN	0	1				D1			G A

M

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN M513	C1295	PUMP HOUSE DRN SUMP LVL 081420-03	NORM D	02	HIGH M-146	01	CLSD	0		1			D1	M177	LS4936A/B	E B
CIN M514	C1296	125V DC CHGR 10120 TRBL 081420-04	D										D1		ANN080A33	E A
CIN M515	C1297	~~SPARE~~ 081420-05	D										D1			D A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
OPT 0500	L1500	TIP POSITION ENABLE CH A 094205-08			NM FCD								01	CS1		A B
OPT 0501	L1501	TIP POSITION ENABLE CH B 094205-09			NM FCD								01	CS1		A B
OPT 0502	L1502	TIP POSITION ENABLE CH C 094205-10			NM FCD								01	CS1		A B
OPT 0503	L1503	NSS SPARE 094205-11			NM FCD								01			C B
OPT 0504	L1504	NSS SPARE 094205-12											01			B B
OPT 0505	L1505	NSS SPARE 094205-13											01			B B
OPT 0506	L1506	NSS SPARE 094205-14											01			B B
OPT 0507	L1507	NSS SPARE 094205-15											01			B B
OPT 0508	L1508	NSS SPARE 094205-16											01			B B
OPT 0509	L1509	RWM OUT OF SEQUENCE 094205-17			RWM ELEM								01			A B
OPT 0510	L1510	RWM SELECT ERROR 094205-18			RWM ELEM								01			A B
OPT 0511	L1511	RWM PROGRAM OPERATING 094205-19			RWM ELEM								01			B B
OPT 0512	L1512	SPARE 094205-20			RWM ELEM											

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADPS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
OPT 0513	L1513	RWM INSERT BLOCK A 094205-21			RWM ELEM								01			A B
OPT 0514	L1514	RWM WITHDRAW BLOCK A 094205-22			RWM ELEM								01			A D
OPT 0515	L1515	RWM NOTCH ERROR 094205-23			RWM ELEM								01			B D
OPT 0516	L1516	TIP CORE TOP ENABLE CH A 094206-08			NM ELEM								01	CS1		A B
OPT 0517	L1517	TIP CORE TOP ENABLE CH B 094206-09			NM ELEM								01	CS1		A B
OPT 0518	L1518	TIP CORE TOP ENABLE CH C 094206-10			NM ELEM								01	CS1		A B
OPT 0519	L1519	NSS SPARE 094206-11											01			B C
OPT 0520	L1520	NSS SPARE 094206-12											01			B B
OPT 0521	L1521	NSS SPARE 094206-13											01			B B
OPT 0522	L1522	NSS SPARE 094206-14											01			B B
OPT 0523	L1523	NSS SPARE 094206-15											01			B B
OPT 0524	L1524	NSS SPARE 094206-16											01			B B
OPT 0525	L1525	NSS SPARE 094206-17											01			B B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
OPT 0526	L1526	RPIS SCAN MODE ENABLE 094206-18			RPIS ELEM								01			A B
OPT 0527	L1527	RPIS NEXT ROD ENABLE 094206-19			RPIS ELEM								01			A B
OPT 0528	L1528	RWM INSERT BLOCK B 094206-20			RWM ELEM								01			A B
OPT 0529	L1529	RWM WITHDRAW BLOCK B 094206-21			RWM ELEM								01			A B
OPT 0530	L1530	NSS SPARE 094206-22			RWM ELEM								01			B B
OPT 0531	L1531	RWM GROUP OUT OF SERVICE 094206-23			RWM ELEM								01			B B
OPT 0532	L1532	TIP SCAN LIGHT CHAN A 094207-08			NM ELEM								01	C51		A B
OPT 0533	L1533	TIP SCAN LIGHT CHAN B 094207-09			NM ELEM								01	C51		A B
OPT 0534	L1534	TIP SCAN LIGHT CHAN C 094207-10			NM ELEM								01	C51		A B
OPT 0535	L1535	NSS SPARE 094207-11											01			B C
OPT 0536	L1536	NSS SPARE 094207-12											01			B B
OPT 0537	L1537	NSS SPARE 094207-13											01			B B
OPT 0538	L1538	NSS SPARE 094207-14											01			B B

Reserved
Scram
Disch
Vol

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
OPT Q539	L1539	NSS SPARE 094207-15											01			B B
OPT Q540	L1540	NSS SPARE 094207-16											01			B B
OPT Q541	L1541	NSS SPARE 094207-17											01			B B
OPT Q542	L1542	NSS SPARE 094207-18											01			B B
OPT Q543	L1543	NSS SPARE 094207-19											01			B B
OPT Q544	L1544	RWM WITHDRAW BLOCK C 094207-20			NM ELEM								01			A B
OPT Q545	L1545	NSS SPARE 094207-21			NM ELEM								01			B B
OPT Q546	L1546	RWM INSERT BLOCK C 094207-22			RWM ELEM								01			A B
OPT Q547	L1547	ROD TEST SEQUENCE SELECT 094207-23			RWM ELEM								01			B B
DPLY Q700	D1500	RWM INSERT ERROR 1 X0 094214-A*			RWM ELEM								028			A B
DPLY Q701	D1501	RWM INSERT ERROR 1 X1 094214-A*			RWM ELEM								028			A B
DPLY Q702	D1502	RWM INSERT ERROR 1 X2 094214-A*			RWM ELEM								028			A B
DPLY Q703	D1503	RWM INSERT ERROR 1 X3 094214-A*			RWM ELEM								028			A B

Reserved SCRAM DISC VOL

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
DPLY 0704	D1504	RWM INSERT ERROR 1 0X 094214-B*			RWM ELEM								028			A B
DPLY 0705	D1505	RWM INSERT ERROR 1 1X 094214-B*			RWM ELEM								028			A B
DPLY 0706	D1506	RWM INSERT ERROR 1 2X 094214-B*			RWM ELEM								028			A B
DPLY 0707	D1507	RWM INSERT ERROR 1 3X 094214-B*			RWM ELEM								028			A B
DPLY 0708	D1508	RWM INSERT ERROR 1 Y0 094214-C*			RWM ELEM								028			A B
DPLY 0709	D1509	RWM INSERT ERROR 1 Y1 094214-C*			RWM ELEM								028			A B
DPLY 0710	D1510	RWM INSERT ERROR 1 Y2 094214-C*			RWM ELEM								028			A B
DPLY 0711	D1511	RWM INSERT ERROR 1 Y3 094214-C*			RWM ELEM								028			A B
DPLY 0712	D1512	RWM INSERT ERROR 1 0Y 094214-D*			RWM ELEM								028			A B
DPLY 0713	D1513	RWM INSERT ERROR 1 1Y 094214-D*			RWM ELEM								028			A B
DPLY 0714	D1514	RWM INSERT ERROR 1 2Y 094214-D*			RWM ELEM								028			A B
DPLY 0715	D1515	RWM INSERT ERROR 1 3Y 094214-D*			RWM ELEM								028			A B
DPLY 0716	D1516	RWM INSERT ERROR 2 X0 094215-A*			RWM ELEM								028			A B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV.
DPLY Q717	D1517	RWM INSERT ERROR 2 X1 094215-A*			RWM ELEM								028			A B
DPLY Q718	D1518	RWM INSERT ERROR 2 X2 094215-A*			RWM ELEM								028			A B
DPLY Q719	D1519	RWM INSERT ERROR 2 X3 094215-A*			RWM ELEM								028			A B
DPLY Q720	D1520	RWM INSERT ERROR 2 0X 094215-B*			RWM ELEM								028			A B
DPLY Q721	D1521	RWM INSERT ERROR 2 1X 094215-B*			RWM ELEM								028			A B
DPLY Q722	D1522	RWM INSERT ERROR 2 2X 094215-B*			RWM ELEM								028			A B
DPLY Q723	D1523	RWM INSERT ERROR 2 3X 094215-B*			RWM ELEM								028			A B
DPLY Q724	D1524	RWM INSERT ERROR 2 Y0 094215-C*			RWM ELEM								028			A B
DPLY Q725	D1525	RWM INSERT ERROR 2 Y1 094215-C*			RWM ELEM								028			A B
DPLY Q726	D1526	RWM INSERT ERROR 2 Y2 094215-C*			RWM ELEM								028			A B
DPLY Q727	D1527	RWM INSERT ERROR 2 Y3 094215-C*			RWM ELEM								028			A B
DPLY Q728	D1528	RWM INSERT ERROR 2 0Y 094215-D*			RWM ELEM								028			A B
DPLY Q729	D1529	RWM INSERT ERROR 2 1Y 094215-D*			RWM ELEM								028			A B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
DPLY 0730	D1530	RWM INSERT ERROR 2 2Y 094215-D*			RWM ELEM								028			A B
DPLY 0731	D1531	RWM INSERT ERROR 2 3Y 094215-D*			RWM ELEM								028			A B
DPLY 0732	D1532	RWM WITHDRAW ERROR 1 X0 094216-A*			RWM ELEM								028			A B
DPLY 0733	D1533	RWM WITHDRAW ERROR 1 X1 094216-A*			RWM ELEM								028			A B
DPLY 0734	D1534	RWM WITHDRAW ERROR 1 X2 094216-A*			RWM ELEM								028			A B
DPLY 0735	D1535	RWM WITHDRAW ERROR 1 X3 094216-A*			RWM ELEM								028			A B
DPLY 0736	D1536	RWM WITHDRAW ERROR 1 0X 094216-B*			RWM ELEM								028			A B
DPLY 0737	D1537	RWM WITHDRAW ERROR 1 1X 094216-B*			RWM ELEM								028			A B
DPLY 0738	D1538	RWM WITHDRAW ERROR 1 2X 094216-B*			RWM ELEM								028			A B
DPLY 0739	D1539	RWM WITHDRAW ERROR 1 3X 094216-B*			RWM ELEM								028			A B
DPLY 0740	D1540	RWM WITHDRAW ERROR 1 Y0 094216-C*			RWM ELEM								028			A B
DPLY 0741	D1541	RWM WITHDRAW ERROR 1 Y1 094216-C*			RWM ELEM								028			A B
DPLY 0742	D1542	RWM WITHDRAW ERROR 1 Y2 094216-C*			RWM ELEM								028			A B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
DPLY 0743	D1543	RWM WITHDRAW ERROR 1 Y3 094216-C*			RWM ELEM								028			A B
DPLY 0744	D1544	RWM WITHDRAW ERROR 1 0Y 094216-D*			RWM ELEM								028			A B
DPLY 0745	D1545	RWM WITHDRAW ERROR 1 1Y 094216-D*			RWM ELEM								028			A B
DPLY 0746	D1546	RWM WITHDRAW ERROR 1 2Y 094216-D*			RWM ELEM								028			A B
DPLY 0747	D1547	RWM WITHDRAW ERROR 1 3Y 094216-D*			RWM ELEM								028			A B
DPLY 0748	D1548	RWM SEQUENCE GROUP 0 094217-A*			RWM ELEM								028			A B
DPLY 0749	D1549	RWM SEQUENCE GROUP 1 094217-A*			RWM ELEM								028			A B
DPLY 0750	D1550	RWM SEQUENCE GROUP 2 094217-A*			RWM ELEM								028			A B
DPLY 0751	D1551	RWM SEQUENCE GROUP 3 094217-A*			RWM ELEM								028			A B
DPLY 0752	D1552	RWM SEQUENCE GROUP 4 094217-B*			RWM ELEM								028			A B
DPLY 0753	D1553	RWM SEQUENCE GROUP 5 094217-B*			RWM ELEM								028			A B
DPLY 0754	D1554	RWM SEQUENCE GROUP 6 094217-B*			RWM ELEM								028			A B
DPLY 0755	D1555	RWM SEQUENCE GROUP 7 094217-B*			RWM ELEM								028			A B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
DPLY 0756	D1556	NSS SPARE 094217-C*											028			B B
DPLY 0757	D1557	NSS SPARE 094217-C*											028			B B
DPLY 0758	D1558	NSS SPARE 094217-C*											028			B B
DPLY 0759	D1559	NSS SPARE 094217-C*											028			B B
DPLY 0760	D1560	NSS SPARE 094217-D*											028			B B
DPLY 0761	D1561	NSS SPARE 094217-D*											028			B B
DPLY 0762	D1562	NSS SPARE 094217-D*											028			B B
DPLY 0763	D1563	NSS SPARE 094217-D*											028			B B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
R500	C1800	CONT ROD SELECT DATA S0 081444-00	C		CRD FCD		CLSD	0					D2	C11		A B
R501	C1801	CONT ROD SELECT DATA S1 081444-01	C		CRD FCD		CLSD	0					D2	C11		A B
R502	C1802	CONT ROD SELECT DATA S2 081444-02	C		CRD FCD		CLSD	0					D2	C11		A B
R503	C1803	CONT ROD SELECT DATA S3 081444-03	C		CRD FCD		CLSD	0					D2	C11		A B
R504	C1804	CONT ROD SELECT DATA S4 081444-04	C		CRD FCD		CLSD	0					D2	C11		A B
R505	C1805	CONT ROD SELECT DATA S5 081444-05	C		CRD FCD		CLSD	0					D2	C11		A B
R506	C1806	CONT ROD SELECT DATA S6 081444-06	C		CRD FCD		CLSD	0					D2	C11		A B
R507	C1807	CONT ROD SELECT DATA S7 081444-07	C		CRD FCD		CLSD	0					D2	C11		A B
R508	C1808	CONTROL ROD POSITION X0 081444-08	C		CRD FCD		CLSD	0					D2	C11		A B
R509	C1809	CONTROL ROD POSITION X2 081444-09	C		CRD FCD		CLSD	0					D2	C11		A B
R510	C1810	CONTROL ROD POSITION X4 081444-10	C		CRD FCD		CLSD	0					D2	C11		A B
R511	C1811	CONTROL ROD POSITION X6 081444-11	C		CRD FCD		CLSD	0					D2	C11		A B
R512	C1812	CONTROL ROD POSITION X8 081444-12	C		CRD FCD		CLSD	0					D2	C11		A B

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TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADPS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
P513	C1813	CONTROL ROD POSITION 0X 081444-13	C		CRD FCD		CLSD	0					D2	C11		A B
P514	C1814	CONTROL ROD POSITION 1X 081444-14	C		CRD FCD		CLSD	0					D2	C11		A B
P515	C1815	CONTROL ROD POSITION 2X 081444-15	C		CRD FCD		CLSD	0					D2	C11		A B
P516	C1816	CONTROL ROD POSITION 3X 081444-16	C		CRD FCD		CLSD	0					D2	C11		A B
P517	C1817	CONTROL ROD POSITION 4X 081444-17	C		CRD FCD		CLSD	0					D2	C11		A B
P518	C1818	CONTROL ROD SPARE 081444-18	C										D2			B B
P519	C1819	CONTROL ROD SPARE 081444-19	C										D2			B B
P520	C1820	CONTROL ROD SPARE 081444-20	C										D2			B B
P521	C1821	CONTROL ROD SPARE 081444-21	C										D2			B B
P522	C1822	CONTROL ROD SPARE 081444-22	C										D2			B B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADDS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
CIN T500	C1298	MS LINE A LOW PRESS 081420-06	NORM D	02	LOW M-103	06	CLSD	0		1			D1	APED	PS-1014	C A
CIN T501	C1299	TURB STOP VA 3 OPEN 081420-07	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9112	A A
CIN T502	C1300	TURB STOP VA 3 CLOSED 081420-08	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9113	A A
CIN T503	C1301	TURB CONT VA 3 OPEN 081420-09	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9104	B A
CIN T504	C1302	TURB CONT VA 3 CLOSED 081420-10	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9105A	B A
CIN T505	C1303	MS LINE B LOW PRESS 081420-11	NORM D	02	LOW M-103	06	CLSD	0		1			D1	APED	PS-1015	C A
CIN T506	C1304	TURB STOP VA 4 OPEN 081420-12	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9114	A A
CIN T507	C1305	TURB STOP VA 4 CLOSED 081420-13	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9115	A A
CIN T508	C1306	TURB CONT VA 4 OPEN 081420-14	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9106	B A
CIN T509	C1307	TURB CONT VA 4 CLOSED 081420-15	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9107	A A
CIN T510	C1308	MS LINE C LOW PRESS 081420-16	NORM D	02	LOW M-103	06	CLSD	0		1			D1	APED	PS-1016	C A
CIN T511	C1309	TURB STOP VA 1 OPEN 081420-17	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9108	A A
CIN T512	C1310	TURB STOP VA 1 CLOSED 081420-18	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9109	A A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN T513	C1311	TURB CONT VA 1 OPEN 081420-19	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9100	E A
CIN T514	C1312	TURB CONT VA 1 CLOSED 081420-20	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9101A	D A
CIN T515	C1313	MS LINE D LOW PRESS 081420-21	NORM D	02	LOW M-103	06	CLSD	0		1			D1	APED	PS-1017	C A
CIN T516	C1314	TURB STOP VA 2 OPEN 081420-22	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9110	A A
CIN T517	C1315	TURB STOP VA 2 CLOSED 081421-00	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9111	A A
CIN T518	C1316	TURB CONT VA 2 OPEN 081421-01	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9102	B A
CIN T519	C1317	TURB CONT VA 2 CLOSED 081421-02	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9103A	B A
CIN T520	C1318	TURNING GEAR ENGAGED 081421-03	ON D	25	OFF E-102	22	CLSD	0	1	1			D1	LSTG	TDR-TSS	F D
CIN T521	C1319	MS LINE A IB ISOLA VA CL 081421-04	NOCL D	18	CLSD M-114	16	CLSD	0		1			D1	APED	ZS-4412	D C
CIN T522	C1320	MS LINE A OB ISOLA VA CL 081421-05	NOCL D	18	CLSD M-114	16	CLSD	0		1			D1	APED	ZS-4413	D C
CIN T523	C1321	MS LINE B IB ISOLA VA CL 081421-06	NOCL D	18	CLSD M-114	16	CLSD	0		1			D1	APED	ZS-4415	D C
CIN T524	C1322	MS LINE B OB ISOLA VA CL 081421-07	NOCL D	18	CLSD M-114	16	CLSD	0		1			D1	APED	ZS-4416	D C
CIN T525	C1323	MS LINE C IB ISOLA VA CL 081421-08	NOCL D	18	CLSD M-114	16	CLSD	0		1			D1	APED	ZS-4418	D C

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN T526	C1324	MS LINE C OB ISOLA VA CL 081421-09	NOCL D	18	CLSD M-114	16	CLSD	0		1			D1	APED	ZS-4419	D C
CIN T527	C1325	MS LINE D IB ISOLA VA CL 081421-10	NOCL D	18	CLSD M-114	16	CLSD	0		1			D1	APED	ZS-4420	D C
CIN T528	C1326	MS LINE D OB ISOLA VA CL 081421-11	NOCL D	18	CLSD M-114	16	CLSD	0		1			D1	APED	ZS-4421	D C
CIN T529	C1327	MS DRN IB ISOLA VA CLSD 081421-12	CLSD D	18	NOCL M-114	16	CLSD	0		1			D1	M133	ZS-4423	E C
CIN T530	C1328	MS DRN OB ISOLA VA CLSD 081421-13	CLSD D	18	NOCL M-114	16	CLSD	0		1			D1	M133	ZS-4424	E C
CIN T531	C1329	~~SPARE~~ PSV 4400 OPEN OR LEAKING OPEN 081421-14	D										D1			C C
CIN T532	C1330	~~SPARE~~ PSV 4401 081421-15	D										D1			C C
CIN T533	C1331	~~SPARE~~ PSV 4402 081421-16	D										D1			C C
CIN T534	C1332	~~SPARE~~ PSV 4405 081421-17	D										D1			C C
CIN T535	C1333	~~SPARE~~ PSV 4406 081421-18	D										D1			C C
CIN T536	C1334	~~SPARE~~ PSV 4407 081421-19	D										D1			C C
CIN T537	C1335	~~SPARE~~ PSV 4403 081421-20	D										D1			C C
CIN T538	C1336	~~SPARE~~ PSV 4404 081421-21	D										D1			C C

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN T539	C1337	SPARE 081421-22	D										D1			C C
CIN T540	C1338	SPARE 081422-00	D										D1			C C
CIN T541	C1339	TURB INTERMED SV2 OPEN 081422-01	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9124	C A
CIN T542	C1340	TURB INTERMED SV2 CLSD 081422-02	NOCL D	18	CLSD M-103	16	CLSD	0	1				D1	LSTG	ZS-9125	C A
CIN T543	C1341	TURB INTERCEPT VA 2 OPEN 081422-03	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9126	C A
CIN T544	C1342	TURB INTERCEPT VA 2 CLSD 081422-04	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9127	C A
CIN T545	C1343	TURB INTERMED SV4 OPEN 081422-05	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9132	C A
CIN T546	C1344	TURB INTERMED SV4 CLSD 081422-06	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9133	C A
CIN T547	C1345	TURB INTERCEPT VA 4 OPEN 081422-07	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9134	C A
CIN T548	C1346	TURB INTERCEPT VA 4 CLSD 081422-08	NOCL D	18	CLSD M-103	16	DLSD	0	1				D1	LSTG	ZS-9135	C A
CIN T549	C1347	TURB INTERMED SV3 OPEN 081422-09	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9128	C A
CIN T550	C1348	TURB INTERMED SV3 CLSD 081422-10	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9129	C A
CIN T551	C1349	TURB INTERCEPT VA 3 OPEN 081422-11	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9130	B A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN T552	C1350	TURB INTERCEPT VA 3 CLSD 081422-12	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9131	C A
CIN T553	C1351	TURB INTERMED SV 1 OPEN 081422-13	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9120	C A
CIN T554	C1352	TURB INTERMED SV 1 CLSD 081422-14	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9121	C A
CIN T555	C1353	TURB INTERCEPT VA 1 OPEN 081422-15	OPEN D	23	NOOP M-103	17	OPEN	0	1				D1	LSTG	ZS-9122	C A
CIN T556	C1354	TURB INTERCEPT VA 1 CLSD 081422-16	NOCL D	18	CLSD M-103	16	CLSD	0		1			D1	LSTG	ZS-9123	C A
CIN T557	C1355	TURB STM PKG EXH LVL HI 081422-17	NORM D	02	HIGH M-104	01	OPEN	1	1				D1	LSTG	ANN070807	E A
CIN T558	C1356	TURB STM PKG EXH VAC LOW 081422-18	NORM D	02	LOW M-104	06	CLSD	0	1				D1	LSTG	ANN070829	E A
CIN T559	C1357	CONDR 1E-7A PRESS LOW 081422-19	NORM D	02	LOW M-106	06	CLSD	0		1			D1	M155	PS-1476	D A
CIN T560	C1358	CONDR 1E-7B PRESS LOW 081422-20	NORM D	02	LOW M-106	06	CLSD	0		1			D1	M155	PS-1477	D A
CIN T561	C1359	SPARE 081422-21	D										D1			A A
CIN T562	C1360	SPARE 081422-22	D										D1			A A
CIN T563	C1361	EXH HOOD 1B TEMP HIGH 081423-00	NORM D	02	HIGH M-106	01	CLSD	0		1			D1	LSTG	ANN070808 74/EHT12	D C
CIN T564	C1362	EXH HOOD 1C TEMP HIGH 081423-01	NORM D	02	HIGH M-106	01	CLSD	0	1				D1	LSTG	ANN070819 74/EHT34	D C

TYPE / SCAN ADRS	NID NO.	PRINTED DESCRIPTION / COMPUTER TERMINAL NO CABLE NO WP	NORMAL PRINT / SCAN CLASS	NT	ALARM PRINT / REFERENCE DRAWING	AT	ALARM STATUS / LOG SA	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV / REV
							NOTE NO.									
CIN T565	C1363	TURB EXH HOOD SPRAY ON 081423-02	OFF D	22	ON M-106	25	OPEN	1		1			D1	LSTG	PS-1488	A A
CIN T566	C1364	TURB LOW SPEED SW 081423-03	NORM D	02	NGZD	09	CLSD	0		1			D1	LSTG	TSS	A A
CIN T567	C1365	TURNING GEAR OIL PMP RUN 081423-04	STOP D	24	RUN	26	CLSD	0		1			D1	M155	ANN070A20 74/XPS8	A A
CIN T568	C1366	TURB EMERG OIL PMP RUN 081423-05	STOP D	24	RUN	26	CLSD	0		1			D1	M155	ANN070A18 74/XPS9	A A
CIN T569	C1367	SPARE 081423-06	D										D1			B B
CIN T570	C1368	TURB LUBE OIL TK LVL LO 081423-07	NORM D	02	LOW M-131	06	CLSD	0		1			D1	LSTG	LS-3100B	A A
CIN T571	C1369	TURB LUBE OIL TK LVL HI 081423-08	NORM D	02	HIGH M-131	01	CLSD	0		1			D1	LSTG	LS-3100A	A A
CIN T572	C1370	SPARE 081423-09	D										D1			D A
CIN T573	C1371	SPARE 081423-10	D										D1			D A
CIN T574	C1372	SPARE 081423-11	D										D1			D A
CIN T575	C1373	SPARE 081423-12	D										D1			D A
CIN T576	C1374	SPARE 081423-13	D										D1			D A
CIN T577	C1375	SPARE 081423-14	D										D1			D A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN T578	C1376	SPARE 081423-15	D										D1			D A
CIN T579	C1377	SPARE 081423-16	D										D1			D A
CIN T580	C1378	SPARE 081423-17	D										D1			D A
CIN T581	C1379	SPARE 081423-18	D										D1			D A
CIN T582	C1380	SPARE 081423-19	D										D1			D A
CIN T583	C1381	SPARE 081423-20	D										D1			D A
CIN T584	C1382	SPARE 081423-21	D										D1			D A
CIN T585	C1383	SPARE 081423-22	D										D1			D A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
API Y500	P1500	TIP PROBE AT TOP OF CORE 10-ND-E11	A		NM FCD								API	C51	252	D C
API Y501	P1501	TIP PROBE POSITION 10-ND-E11	A		NM FCD								API	C51	212	D C
API Y502	P1502	NSS SPARE 10-ND-E03	A										API		214	A C
API Y503	P1503	ROD SCRAM TIMING PULSE 10-ND-E04	A										API		215	B C
API Y504	P1504	GEN GROSS ENERGY 10-ND-E05	A										API	WH/G	216	D C
API Y505	P1505	AUX XFMR ENERGY 10-ND-E06	A										API	WH/AT	217	D C
API Y506	P1506	STARTUP XFMR ENERGY 10-ND-E07	A										API	WH/ST	220	D C
API Y507	P1507	STANDBY XFMR ENERGY 10-ND-E10	A										API	WH/SB	221	D C
API Y508	P1508	RAIN GAUGE 10-ND-E02	A										API		213	D C
API Y509	P1509	NSS SPARE 10-ND-E12	A										API		270	C C

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA		NOTE NO.							REV
OPT 7000	L1000	RECORDER 1 CHART DRV MTR 094210-08											01			C A
OPT 7001	L1001	RECORDER 2 CHART DRV MTR 094210-09											01			C A
OPT 7002	L1002	BOP SPARE 094210-10											01			A A
OPT 7003	L1003	BOP SPARE 094210-11											01			A A
OPT 7004	L1004	BOP SPARE 094210-12											01			A A
OPT 7005	L1005	BOP SPARE 094210-13											01			A A
OPT 7006	L1006	BOP SPARE 094210-14											01			A A
OPT 7007	L1007	BOP SPARE 094210-15											01			A A
OPT 7008	L1008	BOP SPARE 094210-16											01			A A
OPT 7009	L1009	BOP SPARE 094210-17											01			A A
OPT 7010	L1010	BOP SPARE 094210-18											01			A A
OPT 7011	L1011	BOP SPARE 094210-19											01			A A
OPT 7012	L1012	BOP SPARE 094210-20											01			A A

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	ALARM AT STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING	LOG SA	NOTE NO.								REV
OPT Z013	L1013	BOP SPARE 094210-21										01			A A
OPT Z014	L1014	BOP SPARE 094210-22										01			A A
OPT Z015	L1015	BOP SPARE 094210-23										01			A A
CIN Z500	C1823	TIP MACH A GUIDE DIGIT 1 081404-00	D		NM FCD	CLSD	0					D1	C51		A B
CIN Z501	C1824	TIP MACH A GUIDE DIGIT 2 081404-01	D		NM FCD	CLSD	0					D1	C51		A B
CIN Z502	C1825	TIP MACH A GUIDE DIGIT 3 081404-02	D		NM FCD	CLSD	0					D1	C51		A B
CIN Z503	C1826	TIP MACH A GUIDE DIGIT 4 081404-03	D		NM FCD	CLSD	0					D1	C51		A B
CIN Z504	C1827	TIP MACH B GUIDE DIGIT 1 081404-04	D		NM FCD	CLSD	0					D1	C51		A B
CIN Z505	C1828	TIP MACH B GUIDE DIGIT 2 081404-05	D		NM FCD	CLSD	0					D1	C51		A B
CIN Z506	C1829	TIP MACH B GUIDE DIGIT 3 081404-06	D		NM FCD	CLSD	0					D1	C51		A B
CIN Z507	C1830	TIP MACH B GUIDE DIGIT 4 081404-07	D		NM FCD	CLSD	0					D1	C51		A B
CIN Z508	C1831	TIP MACH C GUIDE DIGIT 1 081404-08	D		NM FCD	CLSD	0					D1	C51		A B
CIN Z509	C1832	TIP MACH C GUIDE DIGIT 2 081404-09	D		NM FCD	CLSD	0					D1	C51		A B

TYPE	NID NO.	PRINTED DESCRIPTION	NORMAL PRINT	NT	ALARM PRINT	AT	ALARM STATUS	CS	SA	AL	PL	TL	BD TYPE	MPL NO	INSTRUMENT NO.	REV
SCAN ADRS		COMPUTER TERMINAL NO CABLE NO WP	SCAN CLASS		REFERENCE DRAWING		LOG SA	NOTE NO.								REV
CIN 7510	C1833	TIP MACH C GUIDE DIGIT 3 081404-10	D		NM FCD		CLSD	0					D1	C51		A B
CIN 7511	C1834	TIP MACH C GUIDE DIGIT 4 081404-11	D		NM FCD		CLSD	0					D1	C51		A B
CIN 7512	C1835	TIP SPARE 081404-12	D										D1			B B
CIN 7513	C1836	TIP SPARE 081404-13	D										D1			B B
CIN 7514	C1837	TIP SPARE 081404-14	D										D1			B B
CIN 7515	C1838	TIP SPARE 081404-15	D										D1			B B
CIN 7516	C1839	TIP SPARE 081404-16	D										D1			B B
CIN 7517	C1840	TIP SPARE 081404-17	D										D1			B B
CIN 7518	C1841	TIP SPARE 081404-18	D										D1			B B
CIN 7519	C1842	TIP SPARE 091404-19	D										D1			B B
CIN 7520	C1843	TIP SPARE 081404-20	D										D1			B B
CIN 7521	C1844	TIP SPARE 081404-21	D										D1			B B
CIN 7522	C1845	TIP SPARE 081404-22	D										D1			B B