NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

April 15, 1986
(NMP2L 0687)

Ms. Elinor G. Adensam, Director
BWR Project Directorate No. 3
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Washington, DC 20555

Dear Ms. Adensam:

Re: Nine Mile Point Unit 2
Docket No. 50-410

Attached is the Niagara Mohawk Power Corporation's Nine Mile Point Unit 2 response to Generic Letter 83-28 which concerns the "Required Actions Based on Generic Implications of Salem ATWS Events." This letter supersedes the previous responses sent to the Nuclear Regulatory Commission on April 10, 1984 (G. K. Rhode (NMPC) to A. Schwencer (NRC)), and on December 20, 1985 (T. E. Lempges to you). This response does not contradict the previous responses, but does augment previous statements. It is presented here in total for our mutual convenience.

This response also addresses the letter from M. Haughey (NRC) to B. G. Hooten (NMPC) dated March 20, 1986, concerning a request for additional information on this subject.

Very truly yours,

T. E. Lempges
Vice President
Nuclear Generation

Attachments

xc: R. A. Gramm, NRC Resident Inspector
Project File (2)

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Enclosures #1	AP-1.1	Composition and Responsibility of Site Organization
Enclosures #2	AP-1.2	Composition and Responsibility of Unit Organization
Enclosures #3	AP-1.3	Personnel Responsibilities and Authority
Enclosures #4	AP-2	Production and Control of Procedures
Enclosures #5	AP-3 4.3	Administration of Technical and Safety Reviews - Site Operations Review Committee
Enclosures #5	AP-3 4.2	Operations Excellence Assessment [illegible]
Enclosures #7	AP-4 [illegible]	Administration of Operations [illegible]
Enclosures #8	AP-5	[illegible] Procedure for Reporting [illegible] NRC [illegible]
Enclosures #9	AP-6 [illegible]	Procedure for Modification and Addition Unit 2 (Draft)
Enclosures #10	AP-10.1	Management of Station Records
Enclosures #11	TDP-5	Administration of Corrective Engineering Assessment Item
[illegible]	[illegible]	[illegible]
Enclosures #13	TDP-8	[illegible] Criteria
Enclosures #14	TDP-6	[illegible] Group
Enclosures #15	NT-10	Candidates
Enclosures #16	NTP-11	
Enclosures #17	N2-EOP-10	
Enclosures #18	N2-RAP-6	[illegible] Analysis and Evaluation

Preface

Throughout this document are references to NMPC or SWEC procedures. Except as specified in the response, these procedures are attached to this letter (listed below) and are included to facilitate NRC's review of this document. These procedures are, and must be "living documents" that will undoubtedly be revised in the future. Their inclusion here does not constitute any commitment by NMPC or SWEC to maintain these procedures verbatim as presented here. However, NMPC does commit to maintaining compliance with the intent of Generic Letter 83-28 as specified herein.

Enclosures #1	AP-1.1	Composition and Responsibility of Site Organization
Enclosures #2	AP-1.2	Composition and Responsibility of Unit Organization
Enclosures #3	AP-1.3	Personnel Responsibilities and Authority
Enclosures #4	AP-2	Production and Control of Procedures
Enclosures #5	AP-3.4.1	Administration of Technical and Safety Reviews - Site Operations Review Committee
Enclosures #6	AP-3.4.2	Operations Experience Assessment
Enclosures #7	AP-4.0	Administration of Operations
Enclosures #8	AP-5.0	Procedure for Repair
Enclosures #9	AP-6.1	Procedure for Modification and Addition-Unit 2 (Draft)
Enclosures #10	AP-10.1	Management of Station Records
Enclosures #11	TDP-5	Administration of Operational Engineering Assessment Items
Enclosures #12	TDP-6	Nuclear Plant Reliability Data System (NPRDS) Failure Reporting
Enclosures #13	TDP-8	Post-Maintenance Testing Criteria
Enclosures #14	TDP-9	Independent Safety Engineering Group
Enclosures #15	NTP-10	Training & Licensed Operator Candidates
Enclosures #16	NTP-11	Licensed Operator Retraining
Enclosures #17	N2-IOP-101A	Plant Startup
Enclosures #18	N2-RAP-6	Post Reactor Scram Analysis and Evaluation

Figure 4-1	Engineering Drawing Practices	Engineering Drawing Practices
Figure 4-2	Engineering Drawing Practices	Engineering Drawing Practices
Figure 4-3	Engineering Drawing Practices	Engineering Drawing Practices
Figure 4-4	Engineering Drawing Practices	Engineering Drawing Practices
Figure 4-5	Engineering Drawing Practices	Engineering Drawing Practices
Figure 4-6	Engineering Drawing Practices	Engineering Drawing Practices
Figure 4-7	Engineering Drawing Practices	Engineering Drawing Practices
Figure 4-8	Engineering Drawing Practices	Engineering Drawing Practices
Figure 4-9	Engineering Drawing Practices	Engineering Drawing Practices
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Figure 4-96	Engineering Drawing Practices	Engineering Drawing Practices
Figure 4-97	Engineering Drawing Practices	Engineering Drawing Practices
Figure 4-98	Engineering Drawing Practices	Engineering Drawing Practices
Figure 4-99	Engineering Drawing Practices	Engineering Drawing Practices
Figure 4-100	Engineering Drawing Practices	Engineering Drawing Practices

Enclosures #19	SWEC Procedure PP-81	Method for Handling Supplier Technical Documents
Enclosures #20	NEL-014.G	Control and Distribution of Vendors Documents
Enclosures #21	SWEC Procedure C-3	Equipment Identification Codes
Enclosures #22	SWEC Procedure PP-3	Project Specification and Procurement Procedures
Enclosures #23	SWEC Procedure PP-94	Review of changes and their effect on Environmental/Mechanical/Seismic/Hydrodnamic Qualification of Equipment
Enclosures #24	S-MI-GEN-002	Maintenance Instructions for Writing Procedures
Enclosures #25	MI-4.0	Maintenance Instructions for Review and Implementation of Technical Requirements in Maintenance Procedures
Enclosures #26	S-IDP-PO	Outline for I&C Procedures
Enclosures #27	Engineering Assurance Procedure 3.1	Verification of Nuclear Power Plant Designs
Enclosures #28	INPO Letter on NUTAC Recommended Enhancements	

Section 1.1

Generic Letter 83-28

Post-Trip Review (Program Description and Procedure)

REQUIRED ACTIONS BASED ON GENERIC IMPLICATIONS OF SALEM ATWS EVENTS

POST-TRIP REVIEW (PROGRAM DESCRIPTION AND PROCEDURE)

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:

The criteria for determining the acceptability of restart.

NMP2 Response

Nine Mile Point Unit 2 [illegible] criteria for determining the acceptability of restart are [illegible] N2-RAP-6, Post Reactor Scram [illegible] and [illegible] Operating Procedure [illegible] approved as OP [illegible] review and evaluation [illegible] associated with a Reactor Scram from [illegible] completion of this procedure. [illegible] fully understood. The Site [illegible] (SORC) must review this report before the [illegible] restart. In the operating [illegible] instrumentation, system and component [illegible] must be completed prior to reactor startup. These [illegible] are used to ensure that all equipment [illegible] is operable in accordance with plant Technical Specifications. This procedure also states that N2-RAP-6 must be completed [illegible] a Scram [illegible] restart [illegible] with plant [illegible] states that N2-RAP-6 [illegible] Scram.

The [illegible] procedure which identifies the criteria that the [illegible] for determining the acceptability of [illegible] Station of Operations. Section 7.4 of this [illegible] as follows.

[illegible] notification [illegible] determination will [illegible] acceptability of restart, [illegible] shutdown, shall be as follows:

[illegible] safe condition

[illegible] understood or SORC

REQUIRED ACTIONS BASED ON GENERIC IMPLICATIONS OF SALEM ATWS EVENTS

1.1 POST-TRIP REVIEW (PROGRAM DESCRIPTION AND PROCEDURE)

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:

1.1.1 The criteria for determining the acceptability of restart.

NMP2 Response

Nine Mile Point Unit 2's criteria for determining the acceptability of restart are contained in Procedure N2-RAP-6, Post Reactor Scram Analysis and Evaluation, and in (Interim) Operating Procedure N2-IOP-101A, Plant Startup (IOP-101A will be approved as OP-101A prior to startup). N2-RAP-6 provides a review and evaluation of specific parameters associated with a Reactor Scram from all operating conditions. If after the completion of this procedure, there is a condition which is not fully understood, The Site Operations Review Committee (SORC) must review this report before the Station Superintendent can authorize a restart. In the operating procedure N2-IOP-101A, valve instrumentation, system and component checkoff sheets must be completed prior to reactor startup. These pre-startup checkoff sheets are used to ensure that all equipment, necessary for safe operation is operable in accordance with plant Technical Specifications. This procedure also states that N2-RAP-6 must be completed (following a Scram) prior to restart.

The Administrative Procedure which identifies the criteria that the Station Superintendent will use for determining the acceptability of restart is, AP-4, Administration of Operations. Section 7.4 of this procedure will be changed to state as follows:

7.4 The criteria in which the Station Superintendent will use for determining the acceptability of restart, after an unscheduled shutdown, shall be as follows:

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

7.4.2 The cause of the event is either understood or SORC has reviewed and authorized a restart.

7.4.3 ... action has been determined and ... implemented.

7.4.4 ... excessive economic operation of plant is ... safety significance has been verified.

... in compliance with the intent of ...

The responsibilities and authorities of personnel who will perform the review and ... of these ...

NMPC Response

The ... Shift Supervisor, Shift ... Technical Department personnel will perform the ... The duties are specifically stated ... AP-1.3, Composition and ... and Personnel Responsibilities ... Reactor Analyst Department ... Nine Mile Point ... Procedure. This procedure ... Reactor Analyst Department will be ... data gathering and process evaluation. The ... Reactor Analyst or Site ... event that those individuals are ... will be contacted by a senior member of ... Their duties are also ... Administrative Procedure AP-1.1, Composition and ... Organization.

... which regulate the ... evaluating the ... 1.1.2.

... are responsible

Nine Mile Point Unit 2 will ... qualified individuals. ... of Superintendent ... Analyst, and the ... at the operating ... A. Fitzpatrick ... qualifications ... recommendation.

1.1.1 (Cont'd)

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

7.4.4 The expected automatic operation of plant safety related systems has been verified.

Therefore, Unit 2 is currently in compliance with the intent of Section 1.1.1.

1.1.2 The responsibilities and authorities of personnel who will perform the review and analysis of these events.

NMP2 Response

The Superintendent Operations, Station Shift Supervisor, Shift Technical Advisor, and Technical Department personnel will perform the Post-Trip Review analysis. Their duties are specifically stated in Administrative Procedures AP-1.2 and AP-1.3, Composition and Responsibility of Unit Organization and Personnel Responsibilities and Authority. They are assisted by the Reactor Analyst Department which is directly responsible for the completion of N2-RAP-6, Post Reactor Scram Analysis and Evaluation Procedure. This procedure states specifically that "the Reactor Analyst Department will be directly responsible for data gathering and process evaluation. The analysis will be completed by the Unit Reactor Analyst or Site Reactor Analyst. In the event that those individuals are unavailable, the analysis will be conducted by a senior member of Technical Services and/or operations". Their duties are also supported by Site Administrative Procedure AP-1.1, Composition and Responsibility of Site Organization.

Therefore, administrative controls which regulate the responsibilities and authorities of personnel evaluating the Post-Trip Review meet the intent of Section 1.1.2.

1.1.3 The necessary qualifications and training for the responsible personnel.

NMP2 Response:

The analysis of unscheduled shutdowns at Nine Mile Point Unit 2 will be performed by a select group of trained and qualified individuals. The individuals currently in the positions of Superintendent Operations, Site Reactor Analyst, Unit Reactor Analyst, and the Station Shift Supervisors all have experience at the operating facilities at Nine Mile Point Unit 1 and/or James A. Fitzpatrick. The education, training, and job related experience qualify these people to make the Post-Trip Review and restart recommendation.

1.1.3 (Cont'd)

The qualifications and training for the positions of Station Superintendent, Superintendent Operations, Site Reactor Analyst Supervisor and Unit Reactor Analyst Supervisor comply with the requirements of ANSI/ANS 3.1-1978. Additionally, the current site Reactor Analyst Supervisor and the Unit Reactor Analyst Supervisor both hold Senior Reactor Operator licenses at Unit 2. The Station Shift Supervisors and Shift Technical Advisors also will meet the qualification requirements of ANSI/ANS 3.1-1978. The Shift Technical Advisor meets the Commission's Policy Statement on engineering expertise described in 50FR43621.

The training procedures which Unit 2 utilizes are NTP-10, Training of Licensed Operator Candidates and NTP-11, Licensed Operator Retraining. These procedures formally establish the procedures, programs, responsibilities and requirements necessary for the qualifications of NRC Licensed Reactor Operators and Senior Operators at Nine Mile Point 2.

Therefore, the existing Nine Mile Point Unit 2 administrative controls currently meet the intent of Section 1.1.3.

1.1.4 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)

NMP2 Response

Information necessary to conduct the review and analysis is available, to the responsible personnel, through a number of different sources. The main source of data will come from N2-RAP-6, Post Reactor Scram Analysis and Evaluation Procedure. This procedure is designed to evaluate system performance from an initiation or isolation standpoint. The determination of safety system initiation, proper flow paths and system operation will be done using post trip logs, control room instrumentation, recorders, alarms, indicating lights, and the General Electric Transient Analysis Recording System (GETARS), as well as the Unit 2 Process Computer System. These systems provide Operators with essential plant performance information through a variety of logs, trends, summaries, and data displays. More information on these systems is provided in section 1.2 (Post-Trip Review - Data and Information Capability).

1.1.5 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).

1.1.5 (Cont'd)

NMP2 Response

As stated in Section 1.1.3, the individuals responsible for the event analysis are qualified per ANSI/ANS 3.1-1978 and currently hold Senior Reactor Operator licenses (both Unit and Site Reactor Analysts). At their disposal are records of previous reactor trips (when history records exist), Technical Specifications, Final Safety Analysis Report data, and reload licensing analyses which are used at their discretion for comparing the transient to expected responses.

1.1.6 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 Site 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.

NMP2 Response

Unit 2's criteria for determining the need for independent assessment is contained in Reactor Analysis Procedure N2-RAP-6, Post Reactor Scram Analysis and Evaluation. This procedure specifically states (on the Final Assessment Sheet) that "If there is a condition not fully understood, the Station Superintendent should be so notified and the appropriate staff members called in to assist in the evaluation. If after further evaluation the scram is still not understood, SORC must review this report before authorization to restart". Also, AP-3.4.1, Administration of Technical and Safety Reviews, (SORC) states: "Scram reports need not be reviewed by SORC prior to restart unless the cause of the scram or the plant transient response is not fully understood. Under these conditions SORC will provide the independent assessment per generic letter 83-28 Section 1.1.6, and SORC approval is required prior to restart". Section 1.1.1 (of this response) states specific criteria contained in Administrative Procedure AP-4 which the Station Superintendent must follow prior to authorizing a restart.

Unit 2's procedure established to assure that all physical evidence (necessary for an independent assessment) is preserved is AP-10.1, Management of Station Records. This procedure provides an outline for the collection, storage and maintenance of site records and technical information. This procedure states that all Scram Reports and Scram Analysis data (N2-RAP-6) remain in plant archives for the life of the plant. This enables operating personnel to compare event information with known or expected plant behavior at any time.

Therefore, the Administrative Controls provide a systematic method to determine the need for independent assessment and NMP2 meets the intent of Section 1.1.6.

1.1.7 Our systematic safety assessment procedures which addresses Section 1.1 Post-Trip Review, are as follows:

Site Administrative Procedures

AP-1.1 Composition and Responsibility of Site Organization
AP-1.2 Composition and Responsibility of Unit Organization
AP-1.3 Personnel Responsibilities and Authority
AP-3.4.1 Administration of Technical and Safety Reviews (SORC)
AP-4.0 Administration of Operations
AP-10.1 Management of Station Records

Nuclear Training Procedures

NTP-10 Training of Licensed Operator Candidates
NTP-11 Licensed Operator Retraining

Reactor Analyst Procedure

N2-RAP-6 Post Reactor Scram Analysis and Evaluation

Operating Procedure

N2-IOP-101A Plant Startup

The administrative controls currently being implemented at Nine Mile Point Unit 2 contain procedures and data collection requirements related to Post-Trip Review. These requirements provide assurance that the cause for unscheduled reactor shutdown is analyzed and a determination made as to the cause prior to plant restart. In addition, the general response of safety related equipment is reviewed prior to plant restart.

Nine Mile Point Unit 2's Administrative Controls adequately addresses Sections 1.1 on Post-Trip Review.

Section 1.2

Generic Letter 83-28

Post-Trip Review (Data and Information Capability)

Section 1.2

Post-Trip Review - Data and Information Capability

Unit 2's Computer equipment which is capable of recording, recalling and displaying data and information necessary to diagnose the cause of unscheduled reactor shutdowns, is comprised of three different systems: The Process Computer System, General Electric's Transient Analysis Recording System, and the Safety Parameter Display System. Each system works independent of one another, but has many redundant data ID points which provide crucial information during a system failure.

The following three sections discuss each system in detail and anser the questions generated in Generic Letter 83-28.

Section 1.2A

Generic Letter 83-28

Post-Trip Review - Data and Information Capability

Process Computer System (PCS)

1.2.1 Capability for assessing sequency of events (on-off indications).

1.2.1.1 Brief description of equipment (e.g., plant computer, dedicated computer, strip chart).

NMP2 Response

The Process Computer installed at Nine Mile Point Unit 2 consists of dual Honeywell 4500 C.P.U.'s with the General Electric Process Management System (PMS) software package. Each processor contains 128K word memory for core storage and dual ported Ampex large core stores for bulk devices. In addition, the system utilizes an 80MB disk drive for additional storage capacity, and for back-up capability. Two magnetic tape units are utilized for either historical recording retention or for back-up capabilities.

For peripherals, the computer room is equipped with two color graphic videos, two input keyboards, two input/output terminets, one output only terminet, a cardreader, and a high speed line printer.

The control room is equipped with four color graphic videos, two input keyboards, one input/output terminet, two output terminets, six trend recorders, and five digital displays. Attachment A contains a list of all the main control room dedicated strip charts.

Additionally, the remote shutdown room is equipped with one color graphic video and one keyboard.

1.2.1.2 Parameters monitored.

NMP2 Response

Niagara Mohawk has reviewed the Technical Evaluation Report of October 18, 1985 (from W.R. Butler to B.G. Hooten) pertaining to Post-Trip Review Criteria. Nine Mile Point 2 has investigated its Sequence of Events and Historical Recording parameters and determined that Unit 2 adequately addresses the digital and analog parameters specified in the report (Table 1.2-2).

Attachment 1 is a copy of all the sequence of event points that exist on the system to date. There has been a considerable amount of spares created so that points may be added in the future. These points reflect trip points associated with electrical breaker status, water levels, relief valve positions, IRM and APRM upscale levels, and the Neutron Monitoring System.

1.2.1.3 Time discrimination between events.

NMP2 Response

SOE (sequence of event) points are alarmed and recorded on an automatic interrupt driven basis on a change of state. Temporal resolution is 4 milliseconds between events. Events occurring within this time period may not be recorded in sequence.

1.2.1.4 Format for displaying data and information.

NMP2 Response

Attachment 2 is a copy of the format used when a sequence of event (SOE) log is printed out to a terminet. The log will print after recording 64 contact changes or 30 seconds after first contact change. Each change of state will also be alarmed to the alarm terminet in the Control Room. The time period to printout can be changed from 1-60 seconds.

1.2.1.5 Capability for retention of data and information.

NMP2 Response

Retention of all sequence of event (SOE) data is controlled by the Historical Recording System. The HRR (Historical Recording Retention) system will record all changes of state including SOE points. This data can then be retrieved at any time from either the disk drive or from magnetic tape depending on the time frame. Attachment 3 contains the data format viewed by the user. The distance back in time a user may go depends on the retention cycle of magnetic tapes used. The data can be printed to a terminet or viewed on the CRT screen.

Niagara Mohawk has revised Administrative Procedure AP-10.1, Management of Station Records to meet the commitment of Generic Letter 83-28 that Scram Reports and Scram Analysis Data will remain on site (Plant Archives) for the life of the plant.

1.2.1.6 Power source(s) (e.g., Class 1E, non-Class 1E, noninterruptible).

NMP2 Response

Power to the Unit 2 Process Computer is provided by an Uninterruptible Power Supply 2VBB-UPS1G Non-Class 1E. This supply is fed from a 600V power panel 2VBB-PNL301, which is supplied by either the Station Generator 13.8KV line, (2NJS-US3, during normal operation) or from an off-site Scriba 115KV line (2NJS-US4, during a shutdown condition). The process computer is also supplied by an alternate 600V bus 2NJS-US6. In the condition which all power is lost, backup power is supplied by a 125V DC battery supply, 2BYS-SWG001C.

In summary, upon loss of normal power, a static transfer switch transfers power from the normal source to the alternative source. If both normal and alternate sources are lost, the DC source will automatically pickup the loads by means of a DC auctioneering circuit.

1.2.2 Capability for assessing the time history of analog variables needed to determine the cause of unscheduled 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).

NMP2 Response

A brief description of the equipment comprising the Unit 2 Process Computer was given in Section 1.2.1.1.

In addition, the Post Trip data can be obtained in the Control Room on two of three terminets, or in computer room on the line printer or on either teriminet.

Historical data may be obtained on either the color video or the terminet. Also, historical data can be obtained from the list of dedicated strip charts which are located in the control room (see Section 1.2.1.1).

1.2.2.2 Parameters monitored, sampling rate and basis for selecting parameters and sampling rate.

NMP2 Response

The parameters monitored by the Process Monitoring System (PMS) are located on Attachments 4 "NSSS Post Trip Log" and 5 "BOP Post Trip log".

These NSSS points provide information to enable the system to calculate and display or printout, a variety of nuclear system data arrays (LPRM readings, sensitivities, and calibration constants; APRM gain adjustment factors and trip levels; control rod positions; fuel bundle isotopic compositions, etc.).

The BOP points provide data to enable the system to perform calculations, evaluations of the status and efficiency of various plant systems not directly related to the nuclear steam supply. The calculations include turbine cycle performance, condenser performance, unit electric performance, and feedwater heater performance.

Selected Nuclear Steam Supply System and Balance of Plant digital signals are scanned once each second for the purposes of monitoring process variable alarms. The sampling rate for the analog variables are in the process of being reviewed to determine what scan rate would be most effective. They can presently be varied (to scan) every 1, 5, 15, 30, or 60 seconds. The system is capable of scanning 100 points per second. Each time an input is scanned, it is compared to its previous state and if it is different, the program will determine the nature of the change, (e.g., alarm or return-to-normal) and a descriptive message will be logged.

1.2.2.3 Duration of time history (minutes before trip and minutes after trip).

NMP2 Response

Two Post-Trip Logs are used at Nine Mile Unit 2. The first log is an accumulation of points associated with the Nuclear Steam Supply System, and the second is an accumulation of Balance of Plant points. The NSSS log data interval is undergoing software changes and will be completed prior to startup. These changes will allow the log to record data 5 minutes before a trip until 10 minutes after the event. The BOP log is made up of a maximum of 48 predetermined points. The data collection period ranges from 30 minutes before the trip until 30 minutes after the event. Each point is scanned every 15 seconds. Both logs will be initiated upon completion of their recording constraints. Recording and scan rate times are changeable via software change routines to allow plant operations to vary the process monitoring function.

1.2.2.4 Format for displaying data including scale (readability) of time histories.

NMP2 Response

Attachment 6 is a representation of the NSSS and BOP Post-Trip logs. This attachment is self-explanatory as to the data that is contained on these logs.

1.2.2.5 Capability for retention of data, information and physical evidence (both hardware and software).

NMP2 Response

Post-Trip logs can be recovered in the same manner as discussed in Section 1.2.1.5. The only difference being that the logs can be recovered and reprinted exactly as the original log. Post-Trip logs can be demanded at a later time if no other event has generated another new Post-Trip log to overlay existing data.

As stated in Section 1.2.1.5, AP-10.1 commits Unit 2 to maintain hard copies of Scram Reports and Scram Analysis Data for the life of the plant.

1.2.2.6 Power source(s) (e.g., Class 1E, non-Class 1E, noninterruptible).

NMP2 Response

Power sources are the same sources discussed in Section 1.2.1.6.

1.2.3 Other data and information provided to assess the cause of unscheduled reactor shutdowns.

NMP2 Response

Other data and information available to assess the cause of unscheduled reactor shutdowns include operator logs, trend recorders,

1.2.3 NMP2 Response (Cont'd)

meter indications, surveillance test data sheets, seismic recording equipment, operator interviews, and occurrence reports. Other computer systems available to assist in the evaluation of unscheduled shutdowns are the Safety Parameter Display System (Attachment 1.2 B), and the General Electric's Transient Analysis Recording System (Attachment 1.2 C). In addition, previous scram report data and information is available at the operator's disposal enabling them to compare event information with known or expected plant behavior.

1.2.4 Schedule for any planned changes to existing data and information capability.

NMP2 Response

The SOE printout will be changed from 30 to 5 seconds to be more consistent with timelines of plant data for operator response. Also, points will be added to SOE & Alarm displays as required for more effective plant operations.

In addition, the duration of time history associated with the NSSS log is undergoing software changes so that it will be capable of recording data 5 minutes before a trip until 10 minutes after the event.

ATTACHMENT A (to Section 1.2)

Main Control Room Pen Recorders (strip charts)

- Reactor Vessel Level-Fuel Zone
- Post Accident Monitor, channels (A&B) Rx level, Rx Pressure
- Reactor Water Cleanup F/D Inc. Conductivity & Oxygen sample
- Service Water/RHR Temperature
- RECIRC Pumps Suction Temperature
- Total RECIRC Flow
- Reactor Pressure; Turbine Steam Flow
- Core Pressure Drop; Total Flow
- Reactor Steam Flow; Feedwater Flow
- Reactor Water Level
- Condensate Demineralized Conductivity in/out & oxygen out
- Inlet Conductivity High; out Conductivity High
- 6th Point Heater Outlet Conductivity & Oxygen/PG
- Generator Turbine Component Position
- Core Monitoring
- Bearing Metal Temperatures
- Turbine Temperatures
- Turbine Vibration
- Bearing Drain & Thrust Bearing Temperatures
- CRD Pump Discharge Conductivity and Oxygen
- IRM/APRM Recorders (4 units)
- SRM channel (records two of 4 channels)
- Main Steam Reheater Reheating Steam Supply Temperature 1A & 1B
- Circulating Water System Return Water Conductivity & PH
- Main Generator Frequency
- 345KV Line Main Generator Volts

ATTACHMENT 1 (to Section 1.2)

03/08/85

NINE MILE POINT - UNIT 2
COMPUTER POINTS I/O LIST
SOE REPORT
COMPUTER SHEETS FOR LOOP DIAGRAM 21HC- 6
CONTROLLED ISSUE - REVISION 9

RV	PT ID	POINT DESCRIPTION	PR-0	AS	CO USED	CUT-OUT POINT ID	COI IS	SI IS	SOURCE	TROUBLE CONTACT
	ESH	LSH	VENDOR REF DWG	PT II	PR-1	SE	ALM NO	ALM MSG	VO LT	DESTINATION	
	10 H1SUC15	TB STOP V FAST CLOS CH B			ALMCLR	1	0		1	H13-P630-B	3A-0931
	N/A	N/A	7.225-001-014	0 0	TRIP	1	0931	CEC603406	1	C91-P623-4-12-3,4	
	10 H1SUC16	TB STOP V FAST CLOS CH D			ALMCLR	1	0		1	H13-P630-B	3A-0932
	N/A	N/A	7.225-001-014	0 0	TRIP	1	0932	CEC603406	1	C91-P623-4-12-5,6	
	10 H1EUC01	NEUT MON SYS CH A TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0437
	N/A	N/A	7.225-001-015	0 0	TRIP	1	0437	CEC603102	1	C91-P623-4-12-7,8	
	15 H1EUC02	NEUT MON SYS CH C TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0438
	N/A	N/A	7.225-001-015	0 0	TRIP	1	0438	CEC603102	1	C91-P623-4-12-9,10	
	15 H1EUC03	NEUT MON SYS CH B TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0439
	N/A	N/A	7.225-001-015	0 0	TRIP	1	0439	CEC603402	1	C91-P623-4-12-11,12	
	10 H1EUC04	NEUT MON SYS CH D TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0440
	N/A	N/A	7.225-001-015	0 0	TRIP	1	0440	CEC603402	1	C91-P623-4-12-13,14	
	13 H1IUC01	IRM CHAN A UPSC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0298
	N/A	N/A	7.224-001-028	0 0	TRIP	1	0298	CEC603201	1	C91-P623-4-01-1,2	
	12 H1IUC02	IRM CHAN B UPSC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0302
	N/A	N/A	7.224-001-028	0 0	TRIP	1	0302	CEC603301	1	C91-P623-4-01-3,4	
	07 H1IUC03	IRM CHAN C UPSC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0711
	N/A	N/A	7.224-001-028	0 0	TRIP	1	0711	CEC603201	1	C91-P623-4-01-5,6	
	07 H1IUC04	IRM CHAN D UPSC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0712
	N/A	N/A	7.224-001-028	0 0	TRIP	1	0712	CEC603301	1	C91-P623-4-01-7,8	
	07 H1IUC05	IRM CHAN E UPSC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0713
	N/A	N/A	7.224-001-028	0 0	TRIP	1	0713	CEC603201	1	C91-P623-4-01-9,10	
	07 H1IUC06	IRM CHAN F UPSC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0714
	N/A	N/A	7.224-001-028	0 0	TRIP	1	0714	CEC603301	1	C91-P623-4-01-11,12	
	07 H1IUC07	IRM CHAN G UPSC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0715
	N/A	N/A	7.224-001-028	0 0	TRIP	1	0715	CEC603201	1	C91-P623-4-01-13,14	
	07 H1IUC08	IRM CHAN H UPSC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0716
	N/A	N/A	7.224-001-028	0 0	TRIP	1	0716	CEC603301	1	C91-P623-4-01-15,16	
	10 H1PUC01	APRM CH A USPC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0307
	N/A	N/A	7.224-001-078	0 0	TRIP	1	0307	CEC603202	1	C91-P623-4-03-1,2	
	10 H1PUC02	APRM CH B USPC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0308
	N/A	N/A	7.224-001-078	0 0	TRIP	1	0308	CEC603302	1	C91-P623-4-03-3,4	
	10 H1PUC03	APRM CH C USPC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0717
	N/A	N/A	7.224-001-078	0 0	TRIP	1	0717	CEC603202	1	C91-P623-4-03-5,6	
	10 H1PUC04	APRM CH D USPC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0718
	N/A	N/A	7.224-001-078	0 0	TRIP	1	0718	CEC603302	1	C91-P623-4-03-7,8	
	10 H1PUC05	APRM CH E USPC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0719
	N/A	N/A	7.224-001-078	0 0	TRIP	1	0719	CEC603202	1	C91-P623-4-03-9,10	
	10 H1PUC06	APRM CH F USPC LVL TRIP			ALMCLR	1	0		1	H13-P630-B	3A-0720
	N/A	N/A	7.224-001-078	0 0	TRIP	1	0720	CEC603302	1	C91-P623-4-03-11,12	

ATTACHMENT 1E (to Section 1.2)

03/08/85

NINE MILE POINT - UNIT 2
COMPUTER POINTS I/O LIST
SOE REPORT
COMPUTER SHEETS FOR LOOP DIAGRAM 21HC- 4
CONTROLLED ISSUE - REVISION 9

R V	PT ID	POINT DESCRIPTION	PR-0	A S	CO USED	CUT-OUT POINT ID	CO1 IS	S1 IS	SOURCE	TROUBLE CONTACT
	ESK	LSK / VENDOR REF DWG	P T H T	PR-1	S E	ALM NO	ALM MSG	VO LT	DESTINATION	
	11 CSHLC10	HPCS LO RX H20 LVL CH A		NORMAL	1	0		1	H13-P630-C	3A-0100
	N/A	N/A 7.243-001-012	0 0	LOW	1	0100	CEC601708	1	C91-P623-4-04-5,6	
	11 CSHLC11	HPCS LO RX H20 LVL CH B		NORMAL	1	0		1	H13-P630-C	3A-0101
	N/A	N/A 7.243-001-012	0 0	LOW	1	0101	CEC601708	1	C91-P623-4-04-7,8	
	11 CSHLC12	HPCS LO RX H20 LVL CH C		NORMAL	1	0		1	H13-P630-C	3A-0102
	N/A	N/A 7.243-001-012	0 0	LOW	1	0102	CEC601708	1	C91-P623-4-04-9,10	
	11 CSHLC13	HPCS LO RX H20 LVL CH D		NORMAL	1	0		1	H13-P630-C	3A-0103
	N/A	N/A 7.243-001-012	0 0	LOW	1	0103	CEC601708	1	C91-P623-4-04-11,12	
	10 CSHPC06	HPCS DH PRESS CHAN A		NORMAL	1	0		1	H13-P630-C	3A-0175
	N/A	N/A 7.243-001-012	0 0	HIGH	1	0175	CEC601707	1	C91-P623-4-02-13,14	
	10 CSHPC07	HPCS DH PRESS CHAN B		NORMAL	1	0		1	H13-P630-C	3A-0176
	N/A	N/A 7.243-001-012	0 0	HIGH	1	0176	CEC601707	1	C91-P623-4-02-15,16	
	10 CSHPC08	HPCS DH PRESS CHAN C		NORMAL	1	0		1	H13-P630-C	3A-0177
	N/A	N/A 7.243-001-012	0 0	HIGH	1	0177	CEC601707	1	C91-P623-4-04-1,2	
	10 CSHPC09	HPCS DH PRESS CHAN D		NORMAL	1	0		1	H13-P630-C	3A-0178
	N/A	N/A 7.243-001-012	0 0	HIGH	1	0178	CEC601707	1	C91-P623-4-04-3,4	
	15 CSLBC10	LPCS PUMP BREAKER		OPEN	1	0		1	H13-P630-B	52-2CSLN01
	5CSL01	N/A 7.242-001-009	0 0	CLOSED	1			1	C91-P623-4-00-7,8C	
	14 CSLBC11	LPCS SYSTEM PRESSURE		NORMAL	1	0		1	H13-P630-B	B22-K13A
	N/A	N/A 7.242-001-009	0 0	HIGH	1			1	C91-P623-4-00-9,10	
	15 CSLBC12	LPCS INJECTION FLOW		NORMAL	1	0		1	H13-P630-B	E21A-K51
	N/A	N/A 7.242-001-009	0 0	LOW	1			1	C91-P623-4-00-11,8C	
	10 CSLLC01	LPCS/RHR/ADS HTR LVL C-A		NORMAL	1	0		1	H13-P630-C	3A-0070
	N/A	N/A 7.242-001-009	0 0	LOW	1	0070	CEC601403	1	C91-P623-4-00-13,14	
	11 CSLLC02	LPCS/RHR/ADS HTR LVL C-E		NORMAL	1	0		1	H13-P630-C	3A-0071
	N/A	N/A 7.242-001-009	0 0	LOW	1	0071	CEC601403	1	C91-P623-4-00-15,16	
	10 CSLPC07	LPCS/RHR/ADS DH PR CH A		NORMAL	1	0		1	H13-P630-C	3A-0068
	N/A	N/A 7.242-001-009	0 0	HIGH	1	0068	CEC601402	1	C91-P623-4-02-5,6	
	11 CSLPC08	LPCS/RHR/ADS DH PR CH E		NORMAL	1	0		1	H13-P630-C	3A-0069
	N/A	N/A 7.242-001-009	0 0	HIGH	1	0069	CEC601402	1	C91-P623-4-02-7,8	
	15 EGPIC15	SPARE			1		CEC052502	1	H13-P650-B C91-P626-2-03-1,2	
	101HA408								H13-P650-B	
	15 EGPIC16	SPARE			1		CEC052502	1	C91-P626-4-05-3,4	
	101HA403								H13-P650	
	15 EHSDC25	LOAD SHED SIGNAL BUS 101		ALMCLR	1	0		2	C91-P623-3-12-1,2	3A-EHSDC25
	101HA103A	29-9.9A	0 0	ALARM	1			1	H13-P650	
	15 EHSDC26	LOAD SEQ SIG BUS 101		ALMCLR	1	0		2	C91-P623-3-12-3,4	3A-EHSDC26
	101HA103A	29-9.4B	0 0	ALARM	1			1	H13-P650	
	15 EHSDC27	LOAD SEQ SIG BUS 101		ALMCLR	1	0		2	C91-P623-3-12-5,6	3A-EHSDC27
	101HA103B	29-9.9B	0 0	ALARM	1					

ATTACHMENT 1B (to Section 1.2)

03/08/85

NINE MILE POINT - UNIT 2
COMPUTER POINTS I/O LIST
SOE REPORT
COMPUTER SHEETS FOR LOOP DIAGRAM 21HC- 6
CONTROLLED ISSUE - REVISION 9

R V	PT ID	POINT DESCRIPTION	PR-0	A S	CO USED	CUT-OUT 1 POINT ID	CUT IS	SI IS	SOURCE	TROUBLE CONTACT
	ESK	LSK / VENDOR REF DWG	P T H T	PR-1	S E	ALM NO	ANN MSG	VO LT	DESTINATION	
	10 NMPUC07	APRM CH A USPC THRM STAT		NORMAL	1	0		1	H13-P630-D	3A-0756
	N/A	N/A 7.224-001-078	0 0	TRIP	1	0756 CEC603202		1	C91-P623-4-14-1,2	
	10 NMPUC08	APRM CH B USPC THRM STAT		NORMAL	1	0		1	H13-P630-D	3A-0757
	N/A	N/A 7.224-001-078	0 0	TRIP	1	0757 CEC603302		1	C91-P623-4-14-3,4	
	10 NMPUC09	APRM CH C USPC THRM STAT		NORMAL	1	0		1	H13-P630-D	3A-0758
	N/A	N/A 7.224-001-078	0 0	TRIP	1	0758 CEC603202		1	C91-P623-4-14-5,6	
	10 NMPUC10	APRM CH D USPC THRM STAT		NORMAL	1	0		1	H13-P630-D	3A-0759
	N/A	N/A 7.224-001-078	0 0	TRIP	1	0759 CEC603302		1	C91-P623-4-14-7,8	
	10 NMPUC11	APRM CH E USPC THRM STAT		NORMAL	1	0		1	H13-P630-D	3A-0760
	N/A	N/A 7.224-001-078	0 0	TRIP	1	0760 CEC603202		1	C91-P623-4-14-9,10	
	10 NMPUC12	APRM CH F USPC THRM STAT		NORMAL	1	0		1	H13-P630-D	3A-0761
	N/A	N/A 7.224-001-078	0 0	TRIP	1	0761 CEC603302		1	C91-P623-4-14-11,12	
	12 RDSUC05	DISCH VOL H HIR LVL CH A		ALMCLR	1	0		1	H13-P630-C	3A-0397
	N/A	N/A 7.225-001-014	0 0	TRIP	1	0397 CEC603109		1	C91-P623-4-05-1,2	
	12 RDSUC06	DISCH VOL H HIR LVL CH C		ALMCLR	1	0		1	H13-P630-C	3A-0398
	N/A	N/A 7.225-001-014	0 0	TRIP	1	0398 CEC603109		1	C91-P623-4-05-3,4	
	12 RDSUC07	DISCH VOL H HIR LVL CH B		ALMCLR	1	0		1	H13-P630-C	3A-0399
	N/A	N/A 7.225-001-014	0 0	TRIP	1	0399 CEC603409		1	C91-P623-4-05-5,6	
	12 RDSUC08	DISCH VOL H HIR LVL CH D		ALMCLR	1	0		1	H13-P630-D	3A-0400
	N/A	N/A 7.225-001-014	0 0	TRIP	1	0400 CEC603409		1	C91-P623-4-05-7,8	
	12 RHSOC20	RHR PUMP 1A STATUS		STOP	1	0		1	H13-P630-D	52-2RHSA01
	SRHS04	N/A 7.241-001-021	0 0	RUN	1			1	C91-P623-4-07-1,2	
	12 RHSOC21	RHR PUMP 1B STATUS		STOP	1	0		1	H13-P630-D	52-2RHSB01
	SRHS05	N/A 7.241-001-021	0 0	RUN	1			1	C91-P623-4-07-3,4	
	12 RHSOC22	RHR PUMP 1C STATUS		STOP	1	0		1	H13-P630-D	52-2RHSC01
	SRHS03	N/A 7.241-001-021	0 0	RUN	1			1	C91-P623-4-07-5,6	
	12 RHSOC23	RHR LOOP A PIP DISH PRES		NORMAL	1	0		1	H13-P630-D	B22C-H14A
	N/A	N/A 7.241-001-032	0 0	HIGH	1			1	C91-P623-4-07-7,8	
	13 RHSBC24	RHR LOOP B PIP DISH PRES		NORMAL	1	0		1	H13-P630-D	B22C-H13B
	N/A	N/A 7.212-001-032	0 0	HIGH	1			1	C91-P623-4-07-9,10	
	13 RHSBC25	RHR LOOP C PIP DISH PRES		NORMAL	1	0		1	H13-P630-D	B22C-H14B
	N/A	N/A 7.212-001-032	0 0	HIGH	1			1	C91-P623-4-07-11,12	
	12 RHSBC26	RHR INJECT FLOW LOOP A		OFF	1	0		1	H13-P630-D	E12-H112A
	N/A	N/A 7.241-001-021	0 0	ON	1			1	C91-P623-4-07-13,14	
	12 RHSOC27	RHR INJECT FLOW LOOP B		OFF	1	0		1	H13-P630-D	E12-H112B
	N/A	N/A 7.241-001-021	0 0	ON	1			1	C91-P623-4-07-15,16	
	12 RHSBC28	RHR INJECT FLOW LOOP C		OFF	1	0		1	H13-P630-D	E12-H112C
	N/A	N/A 7.241-001-021	0 0	ON	1			1	C91-P623-4-09-1,2	
	15 RPSUC01	MANUAL SCRAM DIV 1		ALMCLR	1	0		1	H13-P630-D	3A-0445
	N/A	N/A 7.225-001-015	0 0	TRIP	1	0445 CEC603111		1	C91-P623-4-05-9,10	

ATTACHMENT 1D (to Section 1.2)

03/08/85

NINE MILE POINT - UNIT 2
COMPUTER POINTS I/O LIST
SOE REPORT
COMPUTER SHEETS FOR LOOP DIAGRAM 210C- 4
CONTROLLED ISSUE - REVISION 9

R V	PT ID	POINT DESCRIPTION	PR-0	A S	CO USLO	CUT-OUT POINT ID	CUT IS	SI IS	SOURCE	INCABLE CONTACT
	ESH	LSH VENDOR REF DWG	P T H T	PR-1	S E	ALM NO	ALM MSG	VU LT	DESTINATION	
	1S SVVBC10	RLF VLV PILOT SOL NO H		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P623-4-11-5,6	
	1S SVVBC11	RLF VLV PILOT SOL NO L		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P623-4-11-7,8	
	1S SVVBC12	RLF VLV PILOT SOL NO M		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P623-4-11-9,10	
	1S SVVBC13	RLF VLV PILOT SOL NO N		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P623-4-11-11,12	
	1S SVVBC14	RLF VLV PILOT SOL NO P		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P623-4-11-13,14	
	1S SVVBC15	RLF VLV PILOT SOL NO R		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P623-4-11-15,16	
	1S SVVBC16	RLF VLV PILOT SOL NO S		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P623-4-11-1,2	
	1S SVVBC17	RLF VLV PILOT SOL NO U		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P623-4-11-3,4	
	1S SVVBC18	RLF VLV PILOT SOL NO V		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P623-4-11-5,6	
	1S TIIAUC03	BACKUP OVERSPEED TRIP		ALMCLR	1	0		1	H13-P650-A	3A-3981
	10IHA939	1-4B 7.330-002-019	0 0	TRIP	1	3981	CLC051109	1	C91-P623-1-00-1,2	
	1S TIIAUC05	LOSS OF STAT COOL TRIP		RESET	1	0		1	H13-P650-A	1DF13-819
	10IHA939	N/A 7.330-002-017	0 0	TRIP	1			1	C91-P623-1-00-3,4	
	1S TIIAUC07	VACUUM TRIP		ALMCLR	1	0		1	H13-P650-A	3A-3985
	10IHA939	1-4C 7.330-002-018	0 0	TRIP	1	3985	CLC051109	1	C91-P623-1-00-5,6	
	1S TIIAUC09	OVERSPEED TRIP		RESET	1	0		1	H13-P650-A	1DF17-819
	10IHA940	N/A 7.330-002-020	0 0	TRIP	1			1	C91-P623-1-00-7,8	
	1S TIIAUC11	CUST TRIP		ALMCLR	1	0		1	H13-P650-A	3A-3989
	10IHA940	1-4D 7.330-002-017	0 0	TRIP	1	3989	CLC051109	1	C91-P623-1-00-9,10	
	1S TIIAUC12	TSI VIBRATION HIGH TRIP		ALMCLR	1	0		1	H13-P650-A	3A-4001
	10IHA940	1-4A 7.330-002-017	0 0	TRIP	1	4001	CLC051109	1	C91-P623-1-00-11,12	
	1S TIIAUC14	TURB ENERG MANUAL TRIP		ALMCLR	1	0		1	H13-P650-A	1DF21-9810
	10IHA940	1-4C 7.330-002-019	0 0	TRIP	1			1	C91-P623-1-00-13,14	
	1S TIIAUC31	MASTER TRIP TRIPPED		ALMCLR	1	0		1	H13-P650-A	1DF17-1,2
	10IHA939	7.330-002-019	0 0	TRIP	1			1	C91-P623-1-00-15,16	

ATTACHMENT 1C (to Section 1.2)

03/08/05

NINE MILE POINT -UNIT 2
COMPUTER POINTS I/O LIST
SDE REPORT
COMPUTER SHEETS FOR LOOP DIAGRAM 2IHC- 4
CONTROLLED ISSUE - REVISION 9

R V	PT ID	POINT DESCRIPTION	PR-0	A S	CO USED	CUT-OUT POINT ID	CUI IS	SI TS	SOURCE	TROUBLE CONTACT
	ESH	LSH / VENDOR REF DWG	P T I T	PR-1	S E	ALM NO	ALM MSG	VU LT	DESTINATION	
	15 RPSUC02	MANUAL SCRAM DIV 2		ALMCLR	1	0		1	H13-P630-B	3A-0447
	N/A	N/A 7.225-001-015	0 0	TRIP	1	0447	CEC603411	1	C91-P603-4-05-11,12	
	15 RPSUC03	REACTOR SCRAM DIV 1		ALMCLR	1	0		1	H13-P630-B	3A-0441
	N/A	N/A 7.225-001-015	0 0	TRIP	1	0441	CEC603110	1	C91-P603-4-05-13,14	
	15 RPSUC04	REACTOR SCRAM DIV 2		ALMCLR	1	0		1	H13-P630-B	3A-0442
	N/A	N/A 7.225-001-015	0 0	TRIP	1	0442	CEC603410	1	C91-P603-4-05-15,16	
	15 RPSUC05	MANUAL SCRAM DIV 3		ALMCLR	1	0		1	H13-P630-B	3A-0446
	N/A	N/A 7.225-001-015	0 0	TRIP	1	0446	CEC603111	1	C91-P603-4-11-7,8	
	15 RPSUC06	MANUAL SCRAM DIV 4		ALMCLR	1	0		1	H13-P630-B	3A-0440
	N/A	N/A 7.225-001-015	0 0	TRIP	1	0440	CEC603411	1	C91-P603-4-11-9,10	
	15 RPSUC07	REACTOR SCRAM DIV 3		ALMCLR	1	0		1	H13-P630-B	3A-0443
	N/A	N/A 7.225-001-015	0 0	TRIP	1	0443	CEC603110	1	C91-P603-4-11-11,12	
	15 RPSUC08	REACTOR SCRAM DIV 4		ALMCLR	1	0		1	H13-P630-B	3A-0449
	N/A	N/A 7.225-001-015	0 0	TRIP	1	0449	CEC603410	1	C91-P603-4-11-13,14	
	13 RRSBC09	RRCS CONFIRMED ATHS DIV1		ALMCLR	1			1	H13-P630-B	3A-0850
	N/A	N/A 7.226-001-029	0 0	ALARM	1	0850	CEC603939	1	C91-P603-4-15-5,6	
	13 RRSBC10	RRCS CONFIRMED ATHS DIV2		ALMCLR	1			1	H13-P630-B	3A-0865
	N/A	N/A 7.226-001-031	0 0	ALARM	1	0865	CEC603939	1	C91-P603-4-15-7,8	
	13 RRSBC13	RRCS MAN INITATED DIV 1		ALMCLR	1			1	H13-P630-B	3A-0854
	N/A	N/A 7.226-001-030	0 0	ALARM	1	0854	CEC603932	1	C91-P603-4-15-1,2	
	13 RRSBC14	RRCS MAN INITATED DIV 2		ALMCLR	1			1	H13-P630-B	3A-0869
	N/A	N/A 7.226-001-032	0 0	ALARM	1	0869	CEC603932	1	C91-P603-4-15 3,4	
	15 SVVBC01	RLF VLV PILOT SOL NO A		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P603-4-09-3,4	
	15 SVVBC02	RLF VLV PILOT SOL NO B		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P603-4-09-5,6	
	15 SVVBC03	RLF VLV PILOT SOL NO C		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P603-4-09-7,8	
	15 SVVBC04	RLF VLV PILOT SOL NO D		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P603-4-09-9,10	
	15 SVVBC05	RLF VLV PILOT SOL NO E		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P603-4-09-11,12	
	15 SVVBC06	RLF VLV PILOT SOL NO F		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P603-4-09-13,14	
	15 SVVBC07	RLF VLV PILOT SOL NO G		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P603-4-09-15,16	
	15 SVVBC08	RLF VLV PILOT SOL NO H		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P603-4-11-1,2	
	15 SVVBC09	RLF VLV PILOT SOL NO J		CLOSED	1			1	H13-P630-C	
	N/A	N/A 7.412-001-032	0 0	OPEN	1			1	C91-P603-4-11-3,4	

ATTACHMENT 1F (to Section 1.2)

03/08/85

NINE MILE POINT - UNIT 2
COMPUTER POINTS I/O LIST
SOE REPORT
COMPUTER SHEETS FOR LOOP DIAGRAM 21HC- 6
CONTROLLED ISSUE - REVISION 9

R V	PT ID	POINT DESCRIPTION	PR-0	A S	CO USED	CUT-OUT 1 POINT ID	CO1 IS	SI IS	SOURCE	TROUBLE CONTACT
	ESH	LSH / VENDOR REF DWG	P T H T	PR-1	S E	ALM NO	ALM MSG	VO I I	DESTINATION	
	15 ENSOC29	G1 ACB101-1 TR SIGNAL		ALMCLR	1	0		1	H13 P650D	JA-ENSOC29
	10IHA103A	24-9.4A	0 0	ALARM	1			2	C91-P623-3-12-7.8	
	15 ENSOC30	DIV 1 LOCA SIGNAL		ALMCLR	1	0		1	H13-P650D	JA-ENSOC30
	10IHA103A	24-9.4D	0 0	ALARM	1			2	C91-P623-3-12-9.10	
	15 ENSOC32	D1 BLK IRM CLOS SFPC-SHP		AVAIL	1	0		1	H13-P650D	JA-ENSOC32
	10IHA104A	24-9.4B	0 0	NOAVLB	1			2	C91-P623-3-12-11.12	
	15 ENSOC35	LO SEED SIGNAL BUS 103		ALMCLR	1	0		1	H13-P650D	JA-ENSOC35
	10IHA201B	24-9.4A	0 0	ALARM	1			2	C91-P623-3-12-13.14	
	15 ENSOC36	LO SEQ SIG LOCA BUS 103		ALMCLR	1	0		1	H13-P650D	JA-ENSOC36
	10IHA201B	24-9.4D	0 0	ALARM	1			2	C91-P623-3-12-15.16	
	15 ENSOC37	LO SEQ SIG BUS 103		ALMCLR	1	0		1	H13-P650D	JA-ENSOC37
	10IHA203A	24-9.4B	0 0	ALARM	1			2	C91-P623-3-13-1.2	
	15 ENSOC39	G3 ACB103-1 TR SIGNAL		ALMCLR	1	0		1	H13-P650D	JA-ENSOC39
	10IHA203A	24-9.4A	0 0	ALARM	1			2	C91-P623-3-13-3.4	
	15 ENSOC40	DIV 2 LOCA SIGNAL		ALMCLR	1	0		1	H13-P650D	JA-ENSOC40
	10IHA203A	24-9.4D	0 0	ALARM	1			2	C91-P623-3-13-5.6	
	15 ENSOC42	D2 BLK IRM CLOS SFPC-SHP		AVAIL	1	0		1	H13-P650D	JA-ENSOC42
	10IHA203A	24-9.4B	0 0	NOAVLB	1			2	C91-P623-3-13-7.8	
	11 ISCOC03	RHR/ADS HTR LVL CHAN B		NORMAL	1	0		1	H13-P630-C	JA-0115
	N/A	N/A 7.241-001-020	0 0	LOW	1	0115 CEC401406		1	C91-P623-4-02-1.2	
	11 ISCOC04	RHR/ADS HATER LEVELCH F		NORMAL	1	0		1	H13-P630-C	JA-0114
	N/A	N/A 7.241-001-020	0 0	LOW	1	0114 CEC401406		1	C91-P623-4-02-3.4	
	09 ISCOC07	RHR/ADS DW PRESS CHAN B		NORMAL	1	0		1	H13-P630-C	JA-0113
	N/A	N/A 7.241-001-020	0 0	HIGH	1	0113 CEC401405		1	C91-P623-4-02-9.10	
	11 ISCOC08	RHR/ADS DW PRESS CH F		NORMAL	1	0		1	H13-P630-C	JA-0112
	N/A	N/A 7.241-001-020	0 0	HIGH	1	0112 CEC401405		1	C91-P623-4-02-11.12	
	14 ISCUC01	RX LO HATER LEVEL CHAN A		ALMCLR	1	0		1	H13-P630-C	JA-0413
	N/A	N/A 7.225-001-014	0 0	TRIP	1	0413 CEC403105		1	C91-P623-4-04-15.16	
	14 ISCUC02	RX LO HATER LEVEL CHAN C		ALMCLR	1	0		1	H13-P630-C	JA-0414
	N/A	N/A 7.225-001-014	0 0	TRIP	1	0414 CEC403105		1	C91-P623-4-04-15.16	
	14 ISCUC03	REAC LOH HTR LVL CHAN B		ALMCLR	1	0		1	H13-P630-C	JA-0415
	N/A	N/A 7.225-001-014	0 0	TRIP	1	0415 CEC403405		1	C91-P623-4-08-1.2	
	14 ISCUC04	REAC LOH HTR LVL CHAN D		ALMCLR	1	0		1	H13-P630-C	JA-0416
	N/A	N/A 7.225-001-014	0 0	TRIP	1	0416 CEC403405		1	C91-P623-4-08-3.4	
	14 ISCUC05	REAC CHAN A HIGH PRSS TR		ALMCLR	1	0		1	H13-P630-C	JA-0409
	N/A	7.225-001-014	0 0	TRIP	1	0409 CEC403103		1	C91-P623-4-08-5.6	
	14 ISCUC06	REAC CHAN C HI PR TRIP		ALMCLR	1	0		1	H13-P630-C	JA-0410
	N/A	7.225-001-014	0 0	TRIP	1	0410 CEC403103		1	C91-P623-4-08-7.8	
	14 ISCUC07	REAC CHAN D HI PR TRIP		ALMCLR	1	0		1	H13-P630-C	JA-0411
	N/A	7.225-001-014	0 0	TRIP	1	0411 CEC403103		1	C91-P623-4-08-9.10	

ATTACHMENT 16 (to Section 1.2)

03/08/85

NINE MILE POINT - UNIT 2
COMPUTER POINTS I/O:LIST :
SOE,REPORT
COMPUTER SHEETS FOR LOOP DIAGRAM SINC- 6
CONTROLLED ISSUE - REVISION 9

R V	PT ID	POINT DESCRIPTION	PR-0	A S	CO USED	CUT-OUT 1 POINT ID	COI IS	SI TS	SOURCE	TROUBLE CONTACT
	ESK LSK	VENDOR REF DWG	P T H T	PR-1	S E	ALH NO	ANN HIHO	VO LT	DESTINATION	
	14 ISCUC08	REAC CHAN D HIGH PRSS TR		ALHCLR	1	0		1	H13-P630 C	3A-0412
	N/A	7.225-001-014	0 0	TRIP	1	0412	CEC603403	1	C91-P623-4-04-11,12	
	14 ISCUC09	DRYWELL HI PR CHAN A		ALHCLR	1	0		1	H13-P630 C	3A-0405
	N/A	7.225-001-014	0 0	TRIP	1	0405	CEC603101	1	C91-P623-4-03-15,16	
	14 ISCUC10	DRYWELL HI PR CHAN C		ALHCLR	1	0		1	H13-P630 C	3A-0406
	N/A	7.225-001-014	0 0	TRIP	1	0406	CEC603101	1	C91-P623-4-03-15,16	
	14 ISCUC11	DRYWELL HI PR CHAN B		ALHCLR	1	0		1	H13-P630 C	3A-0407
	N/A	7.225-001-014	0 0	TRIP	1	0407	CEC603401	1	C91-P623-4-00-1,2	
	14 ISCUC12	DRYWELL HI PR CHAN D		ALHCLR	1	0		1	H13-P630-C	3A-0408
	N/A	7.225-001-014	0 0	TRIP	1	0408	CEC603401	1	C91-P623-4-00-3,4	
	15 HSSBC20	TURBINE BYPASS VALVE		CLOSED	0	0		1	H13-P630-C	
	N/A	3-1J 1.010-002-072	0 0	OPEN	1			1	C91-P623-4-00-5,6	
	10 HSSUC01	HSL ISOL V CLOS CHAN A		ALHCLR	1	0		1	H13-P630-C	3A-0401
	N/A	7.225-001-014	0 0	TRIP	1	0401	CEC603108	1	C91-P623-4-00-7,8	
	15 HSSUC02	HSL ISOL V CLOS CHAN C		ALHCLR	1	0		1	H13-P630-C	3A-0403
	N/A	7.225-001-014	0 0	TRIP	1	0403	CEC603108	1	C91-P623-4-00-9,10	
	15 HSSUC03	HSL ISOL V CLOS CHAN B		ALHCLR	1	0		1	H13-P630-C	3A-0402
	N/A	7.225-001-014	0 0	TRIP	1	0402	CEC603408	1	C91-P623-4-00-11,12	
	10 HSSUC04	HSL ISOL V CLOS CHAN D		ALHCLR	1	0		1	H13-P630-C	3A-0404
	N/A	7.225-001-014	0 0	TRIP	1	0404	CEC603408	1	C91-P623-4-00-13,14	
	10 HSSUC05	RR STM LN CHAN A RADN H		ALHCLR	1	0		1	H13-P630-B	3A-0417
	N/A	7.225-001-014	0 0	TRIP	1	0417	CEC603107	1	C91-P623-4-00-15,16	
	10 HSSUC06	RR STM LN CHAN C RADN H		ALHCLR	1	0		1	H13-P630-B	3A-0418
	N/A	7.225-001-014	0 0	TRIP	1	0418	CEC603107	1	C91-P623-4-10-1,2	
	10 HSSUC07	RR STM LN CHAN B RADN H		ALHCLR	1	0		1	H13-P630-B	3A-0419
	N/A	7.225-001-014	0 0	TRIP	1	0419	CEC603407	1	C91-P623-4-10-3,4	
	10 HSSUC08	RR STM LN CHAN D RADN H		ALHCLR	1	0		1	H13-P630-B	3A-0420
	N/A	7.225-001-014	0 0	TRIP	1	0420	CEC603407	1	C91-P623-4-10-5,6	
	12 HSSUC09	TB CONT V FAST CLOS CH A		ALHCLR	1	0		1	H13-P630-B	3A-0421
	N/A	7.225-001-014	0 0	TRIP	1	0421	CEC603104	1	C91-P623-4-10-7,8	
	12 HSSUC10	TB CONT V FAST CLOS CH C		ALHCLR	1	0		1	H13-P630-B	3A-0422
	N/A	7.225-001-014	0 0	TRIP	1	0422	CEC603104	1	C91-P623-4-10-9,10	
	10 HSSUC11	TB CONT V FAST CLOS CH B		ALHCLR	1	0		1	H13-P630-B	3A-0423
	N/A	7.225-001-014	0 0	TRIP	1	0423	CEC603404	1	C91-P623-4-10-11,12	
	10 HSSUC12	TB CONT V FAST CLOS CH D		ALHCLR	1	0		1	H13-P630-B	3A-0424
	N/A	7.225-001-014	0 0	TRIP	1	0424	CEC603404	1	C91-P623-4-10-13,14	
	10 HSSUC13	TB STOP V FAST CLOS CH A		ALHCLR	1	0		1	H13-P630-B	3A-0429
	N/A	7.225-001-014	0 0	TRIP	1	0429	CEC603106	1	C91-P623-4-10-15,16	
	10 HSSUC14	TB STOP V FAST CLOS CH C		ALHCLR	1	0		1	H13-P630-B	3A-0430
	N/A	7.225-001-014	0 0	TRIP	1	0430	CEC603106	1	C91-P623-4-12-1,2	

ATTACHMENT 1H (to Section 1.2)

03/08/85

NINE MILE POINT - UNIT 2
COMPUTER POINTS I/O LIST
SOE REPORT
COMPUTER SHEETS FOR LOOP DIAGRAM 21HC- 6
CONTROLLED ISSUE - REVISION 9

RV	PT ID	POINT DESCRIPTION	PR-0	AS	CO USED	CUT-OUT 1 POINT ID	COI IS	SI TS	SOURCE	TROUBLE CONTACT
	ESH LSH	VENDOR REF DWG	PT IT	PR-1	SE	ALM NO	ANN MSG	VO LT	DESTINATION	
	07 AAAXC71	SPARE - SOE			1			1 2	C91-P623-3-11-9,10	
	07 AAAXC72	SPARE - SOE			1			1 2	C91-P623-3-11-11,12	
	07 AAAXC73	SPARE - SOE			1			1 2	C91-P623-3-11-13,14	
	07 AAAXC74	SPARE - SOE			1			1 2	C91-P623-3-11-15,16	
	07 AAAXC87	SPARE - SOE			1			1 2	C91-P623-3-13-9,10	
	07 AAAXC88	SPARE - SOE			1			1 2	C91-P623-3-13-11,12	
	07 AAAXC89	SPARE - SOE			1			1 2	C91-P623-3-13-13,14	
	07 AAAXC90	SPARE - SOE			1			1 2	C91-P623-3-13-15,16	
	07 AAAXC91	SPARE - SOE			1			1 2	C91-P623-3-14-1,2	
	07 AAAXC92	SPARE - SOE			1			1 2	C91-P623-3-14-3,4	
	07 AAAXC93	SPARE - SOE			1			1 2	C91-P623-3-14-5,6	
	07 AAAXC94	SPARE - SOE			1			1 2	C91-P623-3-14-7,8	
	07 AAAXC95	SPARE - SOE			1			1 2	C91-P623-3-14-9,10	
	07 AAAXC96	SPARE - SOE			1			1 2	C91-P623-3-14-11,12	
	07 AAAXC97	SPARE - SOE			1			1 2	C91-P623-3-14-13,14	
	07 AAAXC98	SPARE - SOE			1			1 2	C91-P623-3-14-15,16	
	07 AAAXC99	SPARE - SOE			1			1 2	C91-P623-3-15-1,2	
	12 CSHBC19	HPCS PUMP BREAKER NO 2		OPEN		1	0	1	H13-P630-C	S2/A-2CSH110
	N/A	N/A 7.293-001-011	0 0	CLOSED	1			1	C91-P623-4-00-1,2	
	12 CSHBC15	HPCS PRESSURE		LOW		0	0	1	H13-P630-C	E22A-H51
	N/A	N/A 7.293-001-011	0 0	NORMAL	1			1	C91-P623-4-00-3,4	
	12 CSHBC16	HPCS INJECTION FLOW		NORMAL		1	0	1	H13-P630-C	E22A-H56
	N/A	N/A 7.293-001-011	0 0	HIGH	1			1	C91-P623-4-00-5,6	

ATTACHMENT 11 (to Section 1.2)

NINE MILE POINT - UNIT 2
COMPUTER POINTS I/O LIST
SOE REPORT :
COMPUTER SHEETS FOR LOOP DIAGRAM 21HC- 4
CONTROLLED ISSUE - REVISION 9

R V	PT ID	POINT DESCRIPTION	PR-0	A S	CD USED	CUT-OUT 1 POINT ID	CO1 IS	SI TS	SOURCE	TROUBLE CONTACT
	ESH LSH	VENDOR REF DWG	P T H T	PR-1	S E	ALM NO	ALM MSG		VO LT	DESTINATION
	14 AAABC79	SPARE - SOE			1				1 1	C91-P623-3-07-15,16
	14 AAABC80	SPARE - SOE			1				1 1	C91-P623-3-07-5,6
	14 AAABC81	SPARE - SOE			1				1 1	C91-P623-3-07-7,8
	15 AAABC82	SPARE - SOE			1				1 1	C91-P623-4-15-9,10
	15 AAABC83	SPARE - SOE			1				1 1	C91-P623 4-15-11,12
	15 AAABC84	SPARE - SOE			1				1 1	C91-P623-4-15-13,14
	15 AAABC85	SPARE - SOE			1				1 1	C91-P623-4-15-15,16
	13 AAABC86	SPARE - SOE			1				1 1	C91-P623-3-01-1,2
	13 AAABC87	SPARE - SOE			1				1 1	C91-P623-3-01-3,4
	13 AAABC88	SPARE - SOE			1				1 1	C91-P623-3-01-5,6
	12 AAABC89	SPARE - SOE			1				1 1	C91-P623-3-01-7,8
	09 AAABC90	SPARE - SOE			1				1 1	C91-P623-3-01-9,10
	09 AAABC91	SPARE - SOE			1				1 1	C91-P623-3-01-11,12
	09 AAABC92	SPARE - SOE			1				1 1	C91-P623-3-01-13,14
	09 AAABC93	SPARE - SOE			1				1 1	C91-P623-3-01-15,16
	09 AAABC94	SPARE - SOE			1				1 1	C91-P623-3-02-1,2
	09 AAABC95	SPARE - SOE			1				1 1	C91-P623-3-02-3,4
	09 AAABC96	SPARE - SOE			1				1 1	C91-P623-3-02-5,6
	09 AAABC97	SPARE - SOE			1				1 1	C91-P623-3-02-7,8
	09 AAABC98	SPARE - SOE			1				1 1	C91-P623-3-02-9,10

8/85

NINE MILE POINT - UNIT 2
COMPUTER POINTS I/O LIST
SOE REPORT
COMPUTER SHEETS FOR LOOP DIAGRAM 21HC- 6
CONTROLLED ISSUE - REVISION 9

R V	PT ID	POINT DESCRIPTION	PR-0	A S	CO USED	CUT-OUT POINT ID	COI IS	SI IS	SOURCE	TROUBLE CONTACT
	ESH	LSH	VENDOR REF DWG	P T H T	PR-1	S E	ALM NO	ALM MSG	VO LT	DESTINATION	
	09 AAABC99	SPARE - SOE				1		1	1	C91-P623-3-02-11,12	
	12 AAADC26	SPARE - SOE				1		1	1	C91-P623-9-03-13,14	
	12 AAADC27	SPARE - SOE				1		1	1	C91-P623-9-03-15,16	
	12 AAADC28	SPARE - SOE				1		1	1	C91-P623-9-12-15,16	
	12 AAADC29	SPARE - SOE				1		1	1	C91-P623-9-13-15,16	
	12 AAADC30	SPARE - SOE				1		1	1	C91-P623-9-14-13,14	
	12 AAADC31	SPARE - SOE				1		1	1	C91-P623-9-14-15,16	
	15 AAAUC01	SPARE - SOE				1		2	1	C91-P623-3-15-3,4	
	15 AAAUC02	SPARE - SOE				1		2	1	C91-P623-3-15-5,6	
	15 AAAUC03	SPARE - SOE				1		2	1	C91-P623-3-15-7,8	
	15 AAAUC04	SPARE - SOE				1		2	1	C91-P623-3-15-9,10	
	15 AAAUC05	SPARE - SOE				1		2	1	C91-P623-3-15-11,12	
	15 AAAUC06	SPARE - SOE				1		2	1	C91-P623-3-15-13,14	
	15 AAAUC07	SPARE - SOE				1		2	1	C91-P623-3-15-15,16	
	09 AAAXC01	SPARE - SOE				1		1	1	C91-P623-3-02-13,14	
	09 AAAXC02	SPARE - SOE				1		1	1	C91-P623-3-02-15,16	
	07 AAAXC03	SPARE - SOE				1		1	1	C91-P623-3-03-1,2	
	07 AAAXC04	SPARE - SOE				1		1	1	C91-P623-3-03-3,4	
	07 AAAXC05	SPARE - SOE				1		1	1	C91-P623-3-03-5,6	
	07 AAAXC06	SPARE - SOE				1		1	1	C91-P623-3-03-7,8	

ATTACHMENT 1K (to Section 1.2)

03/08/85

NINE MILE POINT - UNIT 2
COMPUTER POINTS I/O LIST
SOE REPORT
COMPUTER SHEETS FOR LOOP DIAGRAM 21HC- 6
CONTROLLED ISSUE - REVISION 9

R Y	PT ID	POINT DESCRIPTION	PR-0	A S	CO USED	CUT-OUT 1 POINT ID	CO1 IS	SI IS	SOURCE	TROUBLE CONTACT
	ESK LSK	VENDOR REF DWG	P T H T	PR-1	S E	ALM NO	ANN MSG		VO LT	DESTINATION
	12 AAAXC07	SPARE - SOE			1				1	C91-P623-3-03-9.10
	12 AAAXC08	SPARE - SOE			1				1	C91-P623-3-03-11.12
	12 AAAXC09	SPARE - SOE			1				1	C91-P623-3-03-13.14
	12 AAAXC10	SPARE - SOE			1				1	C91-P623-3-03-15.16
	15 AAAXC11	SPARE - SOE			1				1	C91-P623-3-04-1.2
	15 AAAXC12	SPARE - SOE			1				1	C91-P623-3-04-3.4
	15 AAAXC13	SPARE - SOE			1				1	C91-P623-3-04-5.6
	15 AAAXC15	SPARE - SOE			1				1	C91-P623-3-04-9.10
	15 AAAXC16	SPARE - SOE			1				1	C91-P623-3-04-11.12
	15 AAAXC17	SPARE - SOE			1				1	C91-P623-3-04-13.14
	15 AAAXC18	SPARE - SOE			1				1	C91-P623-3-04-15.16
	15 AAAXC19	SPARE - SOE			1				1	C91-P623-3-05-1.2
	15 AAAXC20	SPARE - SOE			1				1	C91-P623-3-05-3.4
	15 AAAXC21	SPARE - SOE			1				1	C91-P623-3-05-5.6
	15 AAAXC22	SPARE - SOE			1				1	C91-P623-3-05-7.8
	15 AAAXC23	SPARE - SOE			1				1	C91-P623-3-05-9.10
	15 AAAXC24	SPARE - SOE			1				1	C91-P623-3-05-11.12
	15 AAAXC25	SPARE - SOE			1				1	C91-P623-3-05-13.14
	15 AAAXC26	SPARE - SOE			1				1	C91-P623-3-05-15.16
	15 AAAXC27	SPARE - SOE			1				1	C91-P623-3-06-1.2

03/08/05

NINE MILE POINT - UNIT 2
COMPUTER POINTS I/O LIST
SOE REPORT
COMPUTER SHEETS FOR LOOP DIAGRAM 21HC- 6
CONTROLLED ISSUE - REVISION 9

R V	PT ID	POINT DESCRIPTION	PR-0	A S	CO USED	CUT-OUT POINT ID	COL IS	SI TS	SOURCE	TROUBLE CONTACT
	ESH LSH	VENDOR REF DWG	P T H T	PR-1	S E	ALM NO	ANN MSG	VO LT	DESTINATION	
	15 AAAXC28	SPARE - SOE			1			1	C91-P623-3-06-3,4	
	13 AAAXC29	SPARE - SOE			1			1	C91-P623-3-06-5,6	
	13 AAAXC30	SPARE - SOE			1			1	C91-P623-3-06-7,8	
	13 AAAXC31	SPARE - SOE			1			1	C91-P623-3-06-9,10	
	13 AAAXC32	SPARE - SOE			1			1	C91-P623-3-06-11,12	
	13 AAAXC33	SPARE - SOE			1			1	C91-P623-3-06-13,14	
	13 AAAXC34	SPARE - SOE			1			1	C91-P623-3-06-15,16	
	14 AAAXC35	SPARE - SOE			1			1	C91-P623-3-07-1,2	
	14 AAAXC36	SPARE - SOE			1			1	C91-P623-3-07-3,4	
	07 AAAXC39	SPARE - SOE			1			1	C91-P623-3-07-9,10	
	07 AAAXC40	SPARE - SOE			1			1	C91-P623-3-07-11,12	
	07 AAAXC41	SPARE - SOE			1			1	C91-P623-3-07-13,14	
	07 AAAXC43	SPARE - SOE			1			2	C91-P623-3-08-1,2	
	07 AAAXC44	SPARE - SOE			1			2	C91-P623-3-08-3,4	
	07 AAAXC45	SPARE - SOE			1			2	C91-P623-3-08-5,6	
	07 AAAXC46	SPARE - SOE			1			2	C91-P623-3-08-7,8	
	07 AAAXC47	SPARE - SOE			1			2	C91-P623-3-08-9,10	
	07 AAAXC48	SPARE - SOE			1			2	C91-P623-3-08-11,12	
	07 AAAXC49	SPARE - SOE			1			2	C91-P623-3-08-13,14	
	07 AAAXC50	SPARE - SOE			1			2	C91-P623-3-08-15,16	

NINE MILE POINT - UNIT 2
COMPUTER POINTS I/O LIST
SOE REPORT
COMPUTER SHEETS FOR LOOP DIAGRAM 21HC- 6
CONTROLLED ISSUE - REVISION 9

R V	PT ID	POINT DESCRIPTION	PR-0	A S	CO USED	CUT-OUT 1 POINT ID	CUI IS	SI TS	SOURCE	TROUBLE CONTACT
	ESK LSK	VENDOR REF DWG	P T H T PR-1	S E	ALM NO	ANN MSG	VO LT		DESTINATION	
	07 AAAXC51	SPARE - SOE		1			2	1	C91-P623-3-09-1,2	
	07 AAAXC52	SPARE - SOE		1			2	1	C91-P623-3-09-3,4	
	07 AAAXC53	SPARE - SOE		1			2	1	C91-P623-3-09-5,6	
	07 AAAXC54	SPARE - SOE		1			2	1	C91-P623-3-09-7,8	
	07 AAAXC55	SPARE - SOE		1			2	1	C91-P623-3-09-9,10	
	07 AAAXC56	SPARE - SOE		1			2	1	C91-P623-3-09-11,12	
	07 AAAXC57	SPARE - SOE		1			2	1	C91-P623-3-09-13,14	
	07 AAAXC58	SPARE - SOE		1			2	1	C91-P623-3-09-15,16	
	07 AAAXC59	SPARE - SOE		1			2	1	C91-P623-3-10-1,2	
	07 AAAXC60	SPARE - SOE		1			2	1	C91-P623-3-10-3,4	
	07 AAAXC61	SPARE - SOE		1			2	1	C91-P623-3-10 5,6	
	07 AAAXC62	SPARE - SOE		1			2	1	C91-P623-3-10 7,8	
	07 AAAXC63	SPARE - SOE		1			2	1	C91-P623-3-10-9,10	
	07 AAAXC64	SPARE - SOE		1			2	1	C91-P623-3-10-11,12	
	07 AAAXC65	SPARE - SOE		1			2	1	C91-P623-3-10-13,14	
	07 AAAXC66	SPARE - SOE		1			2	1	C91-P623-3-10-15,16	
	07 AAAXC67	SPARE - SOE		1			2	1	C91-P623-3-11-1,2	
	07 AAAXC68	SPARE - SOE		1			2	1	C91-P623-3-11-3,4	
	07 AAAXC69	SPARE - SOE		1			2	1	C91-P623-3-11-5,6	
	07 AAAXC70	SPARE - SOE		1			2	1	C91-P623-3-11-7,8	

```
UNIT X, PAGE XX OF XX                                  MO/DA/YR  HR:MN
--------------------------------------------------------------------------
                       SEQUENCE OF EVENTS LOG

--------------------------------------------------------------------------
     TIME               PT ID             NAME                     STATUS

--------------------------------------------------------------------------
  HR:MN:SC.MMM        PPPPPPPP    AAAAAAAAAAAAAAAAAAAAAAAAAA     AAAAAAAA
  HR:MN:SC.MMM        PPPPPPPP    AAAAAAAAAAAAAAAAAAAAAAAAAA     AAAAAAAA
  HR:MN:SC.MMM        PPPPPPPP    AAAAAAAAAAAAAAAAAAAAAAAAAA     AAAAAAAA
--------------------------------------------------------------------------
  HR:MN:SC.MMM        PPPPPPPP    AAAAAAAAAAAAAAAAAAAAAAAAAA     AAAAAAAA
  HR:MN:SC.MMM        PPPPPPPP    AAAAAAAAAAAAAAAAAAAAAAAAAA     AAAAAAAA
  HR:MN:SC.MMM        PPPPPPPP    AAAAAAAAAAAAAAAAAAAAAAAAAA     AAAAAAAA
--------------------------------------------------------------------------


--------------------------------------------------------------------------


--------------------------------------------------------------------------
                    RECORD INITIATED AFTER 64 CONTACT CHANGES FOR 30 SECONDS
                    AFTER FIRST CONTACT CHANGE, WHICHEVER IS FIRST.
```

Figure 3-10. SEQ-1 Sequence of Events Log

NEDO 807A (REV 10/81)

UNIT 1 , PAGE 11 OF 11 MO-DA-YR HR:MN

HISTORICAL DATA RETRIEVAL AND REVIEW SERVICES (ONLINE)

BETWEEN HR:MN ON MM/DD/YY AND HR:MN ON MM/DD/YY

SEQUENCE OF EVENTS LOG

TIME	POINT ID	POINT DESCRIPTION	STATUS
HR:MN:SC	PPPPPPPP	DDDDDDDDDDDDDDDDDDDDDDDD	SSS

TO DISPLAY MORE INFORMATION, PRESS PAGE FORWARD

FILE DHR3-1.BWR/6

DHR3-1 - Historical Data Retrieval and Review Services - SEQUENCE OF EVENTS LOG.

NUCLEAR ENERGY BUSINESS OPERATIONS GENERAL ELECTRIC

23A4198 REV 0 SH NO. B-96

ATTACHMENT 3 (to Section 1.2)

ATTACHMENT 4 (to Section 1.2)

COMPUTER POINTS

For NSSS Post Trip Log

FWSLA101	Reactor Water Level
RCSFB01	Recirc Flow Total
FWSB01	Feedwater Flow Total
FWSFA103	Main Steam Flow Total
FWSFA104	Main Turbine Steam Flow
NSSPB01	Reactor Pressure
FWSPA101	Steam Dome Pressure
CNMFB02	Cond Booster Flow
CNMFB01	Cond Pump Flow
RCSTA103	Recirc Pump Suct Temp A
RCSTA105	Recirc Pump Suct Temp B
CMSPA01	Drywell Pressures
CMSTA01	Drywell Temp
CMSPA02	Drywell High Range Pressure
CMSPA04	Suppression Pool Pressure
CMSTA07	Suppression Pool Temp
CMSAA02	Drywell Oxygen
MSSBC20	Bypass Valve Position
CWSTB10	Avg Cond Temp Rise
SWPTA53	Service Water Inlet °F
SWPTA74	Service Water Disch °F
CNSLA03	Hotwell Level
TMLPA02	Turbing Big Oil Press
CNMPA02	Cond Vac

ATTACHMENT 5 (to Section 1.2)

COMPUTER POINTS

For BOP Post Trip Log

NMP2A273	APRM A
NMP2A274	APRM B
NMP2A275	APRM C
NMP2A276	APRM D
NMP2A277	APRM E
NMP2A278	APRM F
CNMPA04	Condensate Pumps Discharge Header Pressure
FWSPA04	Final Feedwater Pressure To Reactor
CNMPA01	Condenser Vacuum 1A
MSSPA05	Turbine Main Steam Inlet Hdr. Pressure
MSSPA06	Turbine 1st Stage Pressure
SPGQA02	Generator Water
SWPFA08	Service Water Pump Loop B Hdr. Flow
SWPFA09	SWP Loop A Header Flow
SWPFPA15	Service Water Loop A Disch Pressure
SWPFPA16	Service Water Loop B Disch Pressure
TMBPA01	Hydraulic Fluid Pressure
TMEPA01	Gland Seal Steam Supply Pressure
FWSPA100	Reactor Pressure
MSSFA101	Cleanup Flow
NMPFA101	Recirc Loop A1 Drive Flow
NMPFA103	Recirc Loop B1 Drive Flow
NSSFA101	Total Care Flow
RCSTA103	Recirc Loop A1 Inlet Temp
RCSTA105	Recirc Loop B1 Inlet Temp
CCPPA01	RBCLCW Pump Disch Hdr. Press
CCPTA16	RBCLCW Heat Exchange Disch Temp
CCSPA01	TBCLCW Pump Disch Hdr. Press
CNMPA03	Condenser Vacuum 1B
HVRPA01	Reactor Bldg. Differential Pressure
MSSTA03	Turb PSV89A Outlet Temperature
OFGFA01	Offgas System Total Flow
OFGPA01	Offgas System Inlet Pressure
TMEPA03	Clean Steam Reboiler E1A Disch Steam Pressure
TMEPA04	Cleam Steam Reboiler E1B Disch Steam Pressure

UNIT X, PAGE XX OF XX

DATE MA/DY/YR TIME 10:30:10

NSS POST TRIP REVIEW LOG

PRE-TRIP DATA

HR.	PPPPPPPP	PPPPPPPP	PPPPPPPP	PPPPPPPP	PPPPPPPP	PPPPPPPP	PPPPPPPP	PPPPPPPP	PPPPPPPP
10:20:10	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX
10:20:15	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX
10:20:20									
10:20:25									
10:20:30									

POST-TRIP DATA

	PPPPPPPP	PPPPPPPP	PPPPPPPP	PPPPPPPP	PPPPPPPP	PPPPPPPP	PPPPPPPP	PPPPPPPP	PPPPPPPP
10:25:10	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX
10:25:15	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX	SXXXX.XX
10:25:25									
10:25:30									

DATA RECORDED FOR 24 POINTS AT 5-SEC INTERVALS FOR 5 MIN

NOTE: BOP POST TRIP REVIEW LOG IS SAME AS NSS LOG EXCEPT, BOP LOG DATA IS RECORDED FOR ..... 48 POINTS AT 15 SEC INTERVALS FOR 30 MINUTES BEFOR AND 30 MIN AFTER TRIP.

Figure 3-6. PTL-2 NSS Post Trip Review Log

Attachment 1.2 B

Generic Letter 83-28

Post-Trip Review - Data and Information Capability

Safety Parameter Display System (SPDS)

1.2.2 Capability for assessing the time history of analog variables needed to determine the cause of unscheduled 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).

NMP2 Response

The Nine Mile Point 2 Liquid Radwaste System and Emergency Response Facility computer system (LWCS/ERF) consists of dual Honeywell 4500 CPU's on which the standard Honeywell SEER software package has been implemented and modified as needed. Each processor contains 25K of core memory and dual ported Ampex large core stores used for bulk devices. The system also utilizes two 80MB disk drives for additional storage capacity. A magnetic tape unit is used for historical recording and additional back-up capabilities. Video monitors, types/printers and keyboards are located in the computer room, the control room, the Technical Support Center, and the Emergency Operations Facility to enable operators in recording and viewing event data.

1.2.2.2 Parameters monitored, sampling rate, and basis for selecting parameters and sampling rate.

NMP2 Response

There can be up to 690 data points contained on the Event Historical Recording System. These points can be contained in one of 115 groups made up of 6 data points each. Depending on which group the data point is contained in. The sampling rate can be every 1, 5, or 30 seconds. The only exception to these rates is with the two week post event recording. This data is collected every 15 minutes.

1.2.2.3 Duration of time history (minutes before trip and minutes after trip).

NMP2 Response

There are three types of historical event recording on the LWCS/ERF computer system. Two hours of pre-event data is collected on a continuous basis in a circular buffer. When a pre-defined event is detected, the buffer is frozen. Twelve hours of post-event data is collected immediately following the occurrence of a predefined event. This is done by the use of two 1 hour buffers which are used in a switching process for 12 hours. Two weeks of additional data will be collected immediately after the 12 hour collection is completed.

1.2.2.4 Format for displaying data including scale (readability) of time histories.

NMP2 Response

The trend history will consist of five secondary displays which are reactivity control, core cooling, coolant system integrity, containment integrity, (Attachments A-D) and a radioactive release display (future). Each secondary display consists of a number of trend plots covering a 6-minute time span. The reactivity control display consists of trend plots of APRM power, IRM power, and SRM log count rate. The core cooling display consists of a trend plot of RPV water level. The coolant system integrity display consists of trend plots of RPV pressure and drywell pressure. The containment integrity display consists of trend plots for drywell pressure, drywell oxygen concentration, suppression pool temperature, and suppression pool water level, as well as the containment isolation valve groups. The radioactive release display is a composite of stack, off-gas and containment rad monitor parameters. Although the final design is not complete, we anticipate that the radioactive release display will be a composite of off-gas and containment rad monitor parameters.

All displays contain safety function blocks at the bottom, which may be green or red depending upon whether the function is considered "normal" or "in alarm/unknown." The color of the safety functions is determined by the status of the variables associated with those safety functions.

Attachments (E-H) are the formats used for viewing the Event Historical data. This data can be accessed by a display or a printer. The operator can view the data based on time for each sample taken. This display/printout can be based on any of the groups and ranged over all or any of the time period of the event recording. The operator can also display a trend of the various groups. This trend can also be based by group and consist of data over a specified period of the data recording.

1.2.2.5 Capability for retention of data, information, and physical evidence (both hardware and software).

NMP2 Response

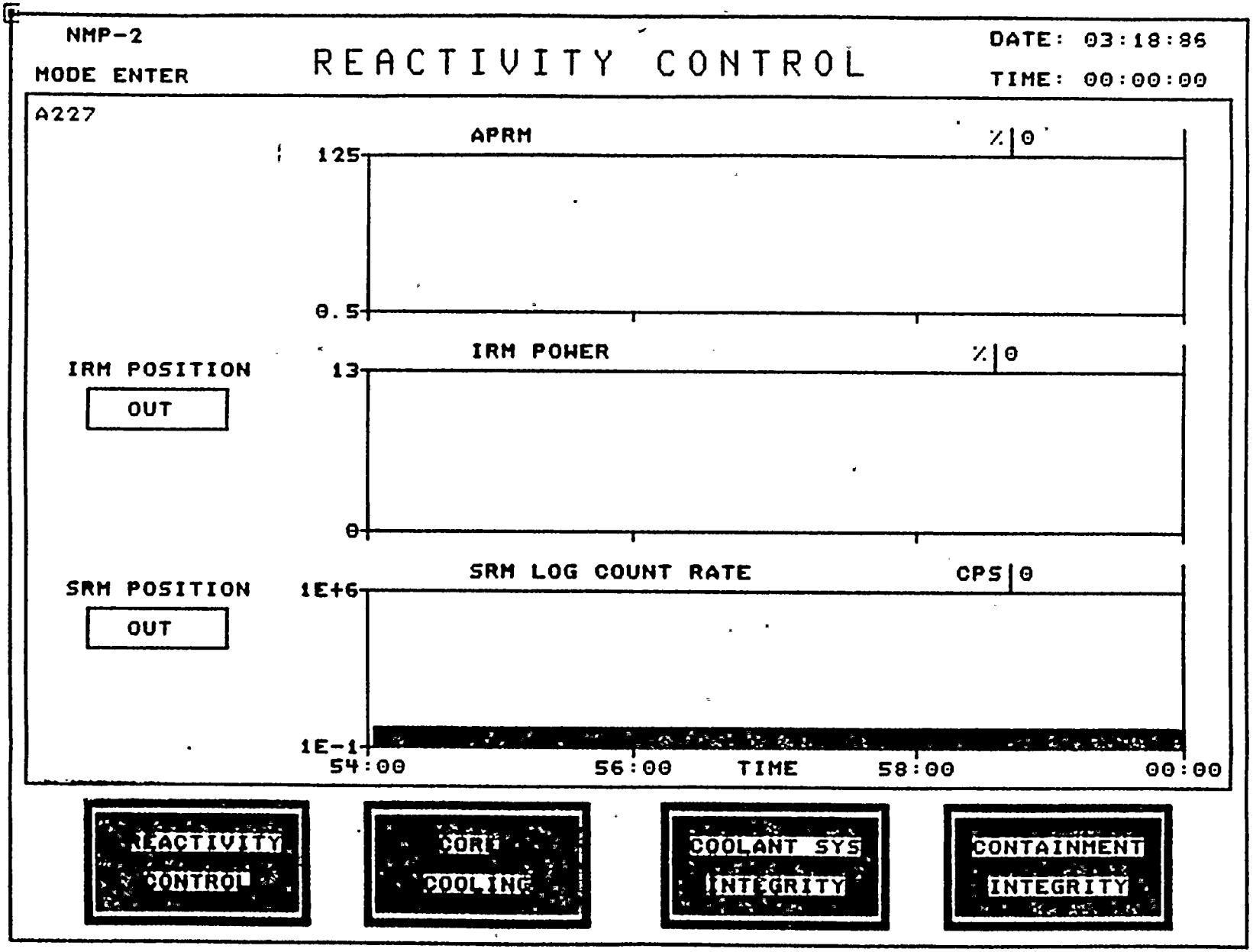
Primary retention of data is done on disk buffers for all three types of historical recording. Two buffers are used for the pre-event recording, which is able to hold 1 hour of data. Upon the detection of an event, the pre-event buffers will be frozen and can be saved to magnetic tape by a programmer. The 12 hour post-event data is collected with the use of two, 1 hour buffers on disk. These buffers are used in a switching mode, and are dumped to magnetic tape when they become full. The 14 day post event collection also uses two buffers on the disk. These buffers are dumped to magnetic tape daily, by the programmer. The programmer has the option of dumping the data to tape manually or initiating an automatic mode. The data can be restored from tape to a review buffer on the disk to allow a programmer to view or trend the data.

1.2.2.6 Power source(s) (e.g., Class IE, non-Class IE, non-interruptable).

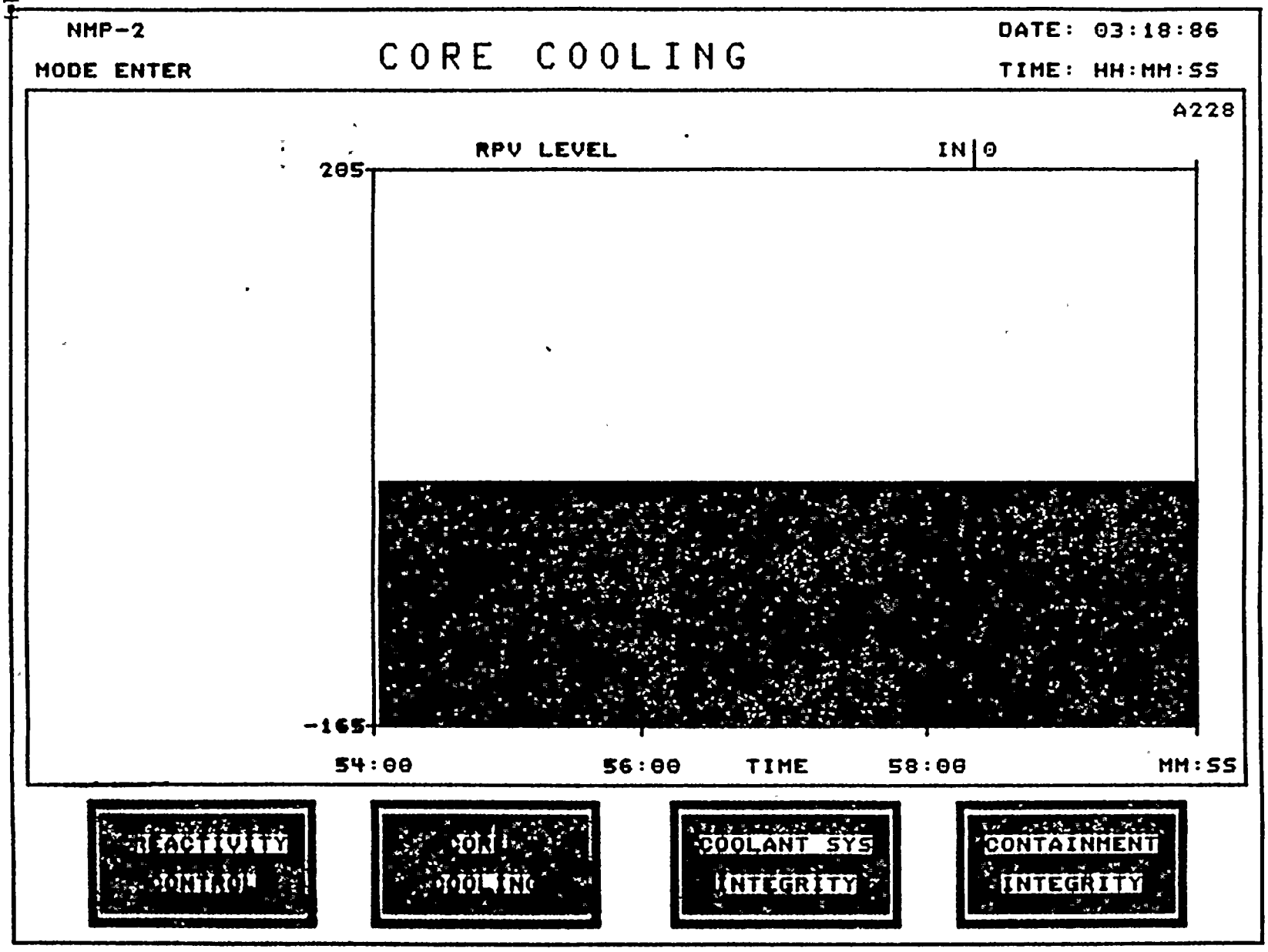
NMP2 Response

Power to the Unit 2 LWCS/ERF computer is provided by an uninterruptible power supply 2VBB-UPS1A non class 1E. This supply is fed from a 600V power panel 2VBB-PNL301, which is supplied by either the station generator 13.8kv line (2WJS-US3, during normal operation) or from an off-site Scriba 115kv line (2NJS-US4, during a shutdown condition). Back-up power is supplied by a 125v DC battery supply, 2BYS-SWG001A.

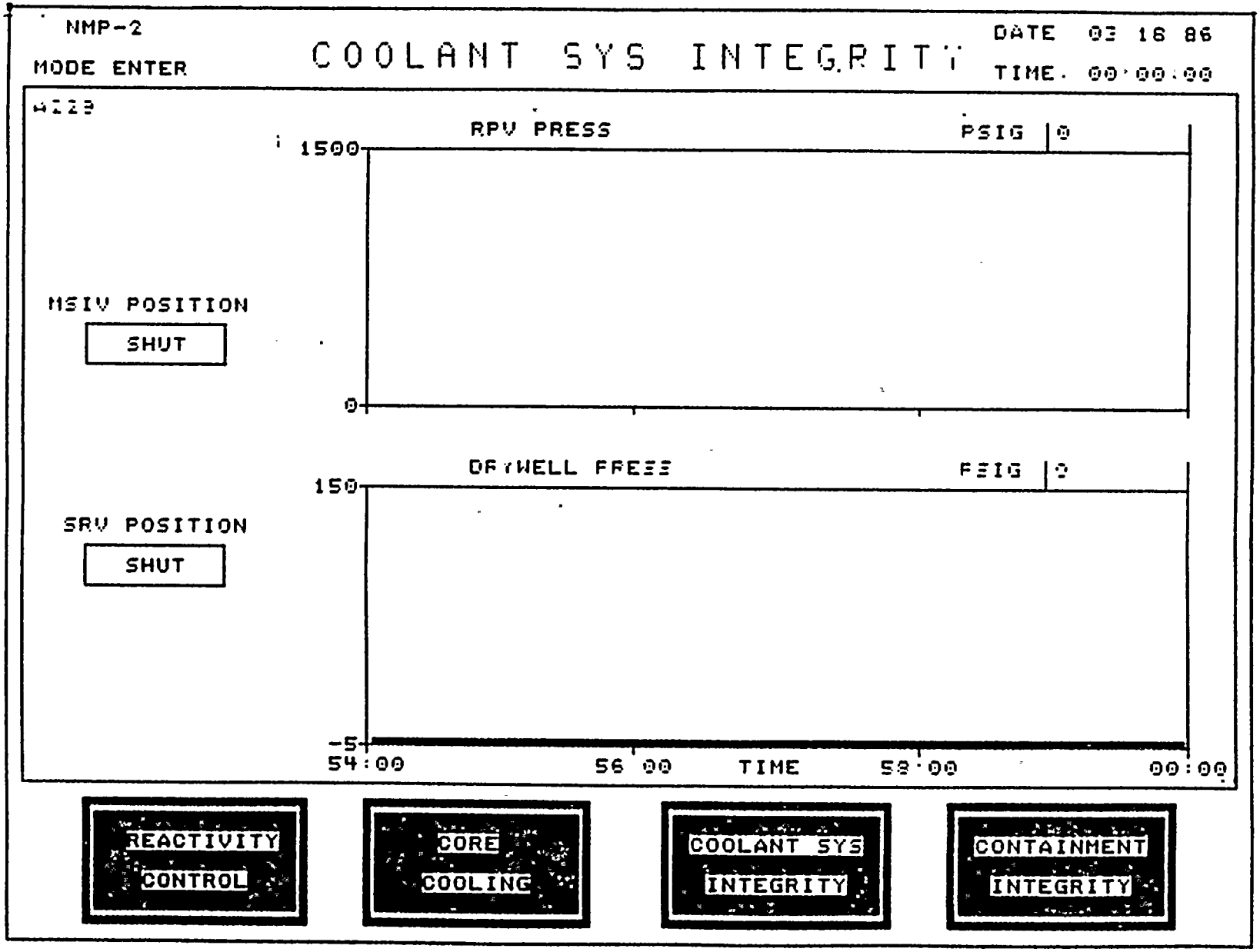
In summary, upon loss of normal power, a static transfer switch transfers power from the normal source to the alternative source. If both normal and alternate sources are lost, the DC source will automatically pickup the loads by means of a DC auctioneering circuit.


NMP-2
MODE ENTER
REACTIVITY CONTROL
DATE: 03:18:86
TIME: 00:00:00
A227
APRM
%|0
125
0.5
IRM POWER
%|0
13
0
IRM POSITION
OUT
SRM LOG COUNT RATE
CPS|0
1E+6
1E-1
SRM POSITION
OUT
54:00
56:00
TIME
58:00
00:00
REACTIVITY CONTROL
CORE COOLING
COOLANT SYS INTEGRITY
CONTAINMENT INTEGRITY

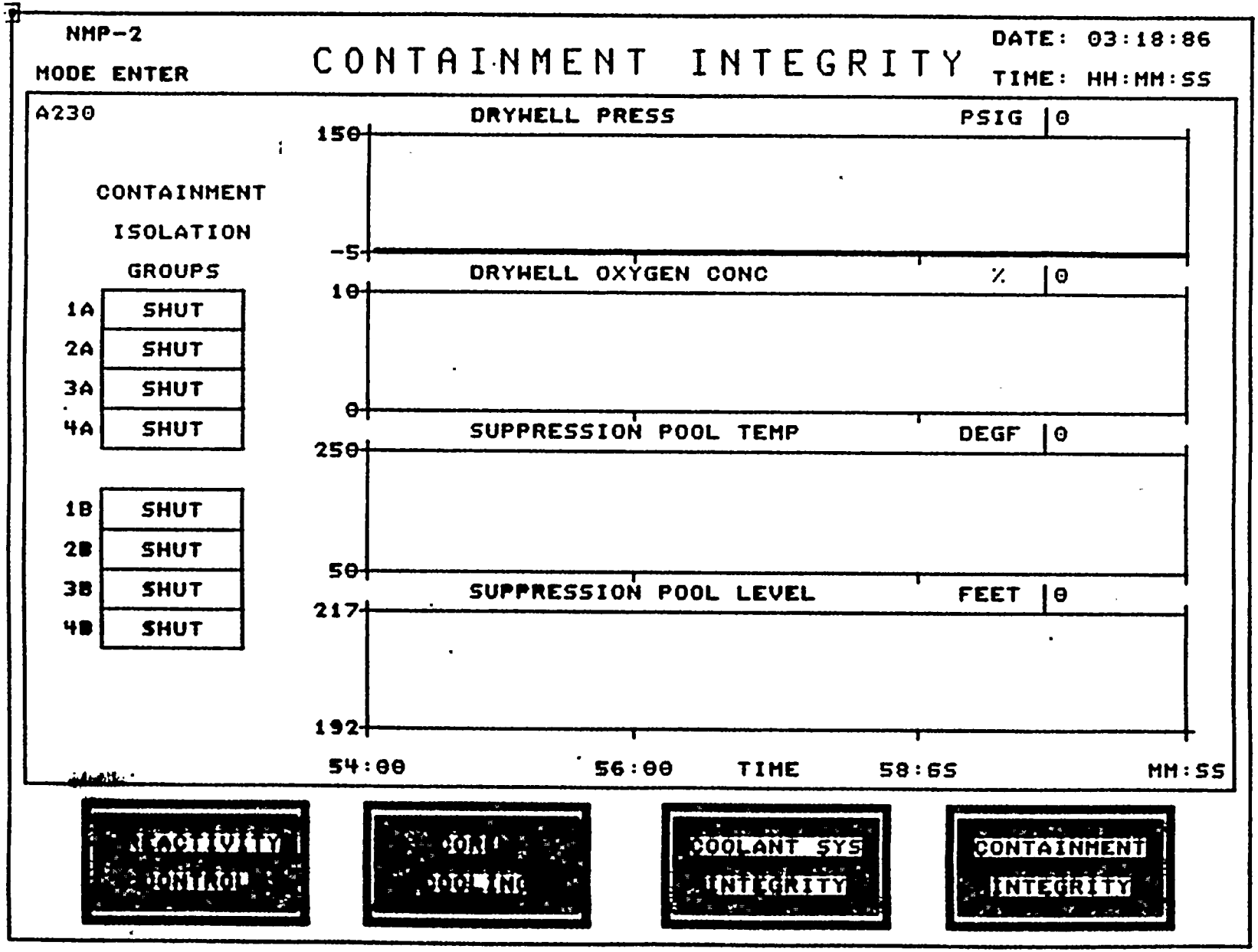
ATTACHMENT B (to 1.2 B)



ATTACHMENT C (to 1.2-B)



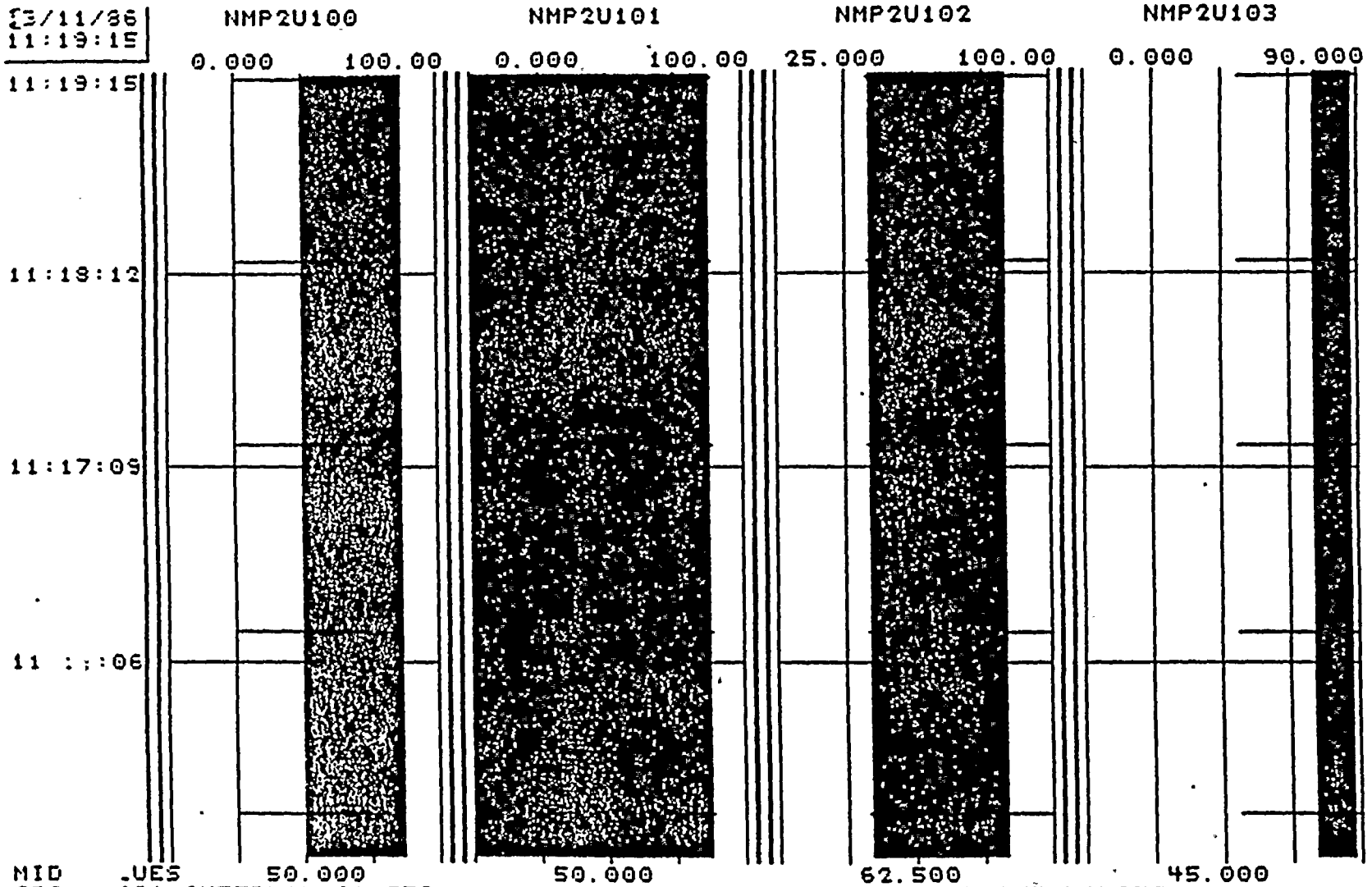
ATTACHMENT D (to 1.2 B)



ENTER (D) DISPLAY, (PF) PAGE FORWARD, (PB) PAGE BACK, (P) PRINT, (C) CANCEL PRNT
REVIEW BUFFER TIME SPAN 03-11-86 11:14 THRU 03-12-86 18:51
START DATE 03-11-86 TIME 11:14, END DATE 03-11-86 TIME 20:11. GROUP NUMBER 1

TIME	NMP2U100 %PWR	NMP2U101 %PWR	NMP2U102 %PWR	NMP2U103 %PWR	NMP2U104 %PWR	NMP2U105 %PWR
3-11-86						
11:14:06	86.19	86.75	86.97	87.13	86.09	87.40
11:14:07	86.19	86.75	86.97	87.13	86.09	87.40
11:14:08	86.19	86.75	86.97	87.13	86.09	87.40
11:14:09	86.19	86.75	86.97	87.13	86.09	87.40
11:14:10	86.19	86.75	86.97	87.13	86.09	87.40
11:14:11	86.19	86.75	86.97	87.13	86.09	87.40
11:14:12	86.19	86.75	86.97	87.13	86.09	87.40
11:14:13	86.19	86.75	86.97	87.13	86.09	87.40
11:14:14	86.19	86.75	86.97	87.13	86.09	87.40
11:14:15	86.19	86.75	86.97	87.13	86.09	87.40
11:14:16	86.19	86.75	86.97	87.13	86.09	87.40
11:14:17	86.19	86.75	86.97	87.13	86.09	87.40
11:14:18	86.19	86.75	86.97	87.13	86.09	87.40
11:14:19	86.19	86.75	86.97	87.13	86.09	87.40
11:14:20	86.19	86.75	86.97	87.13	86.09	87.40
11:14:21	86.19	86.75	86.97	87.13	86.09	87.40
11:14:22	86.19	86.75	86.97	87.13	86.09	87.40
11:14:23	86.19	86.75	86.97	87.13	86.09	87.40
11:14:24	86.19	86.75	86.97	87.13	86.09	87.40
11:14:25	86.19	86.75	86.97	87.13	86.09	87.40
11:14:26	86.19	86.75	86.97	87.13	86.09	87.40
11:14:27	86.19	86.75	86.97	87.13	86.09	87.40
11:14:28	86.19	86.75	86.97	87.13	86.09	87.40
11:14:29	86.19	86.75	86.97	87.13	86.09	87.40
11:14:30	86.19	86.75	86.97	87.13	86.09	87.40
11:14:31	86.19	86.75	86.97	87.13	86.09	87.40
11:14:32	86.19	86.75	86.97	87.13	86.09	87.40
11:14:33	86.19	86.75	86.97	87.13	86.09	87.40
11:14:34	86.19	86.75	86.97	87.13	86.09	87.40
11:14:35	86.19	86.75	86.97	87.13	86.09	87.40
11:14:36	86.19	86.75	86.97	87.13	86.09	87.40
11:14:37	86.19	86.75	86.97	87.13	86.09	87.40
11:14:38	86.19	86.75	86.97	87.13	86.09	87.40
11:14:39	86.19	86.75	86.97	87.13	86.09	87.40
11:14:40	86.19	86.75	86.97	87.13	86.09	87.40
11:14:41	86.19	86.75	86.97	87.13	86.09	87.40
11:14:42	86.19	86.75	86.97	87.13	86.09	87.40
11:14:43	86.19	86.75	86.97	87.13	86.09	87.40
11:14:44	86.19	86.75	86.97	87.13	86.09	87.40
11:14:45	86.19	86.75	86.97	87.13	86.09	87.40

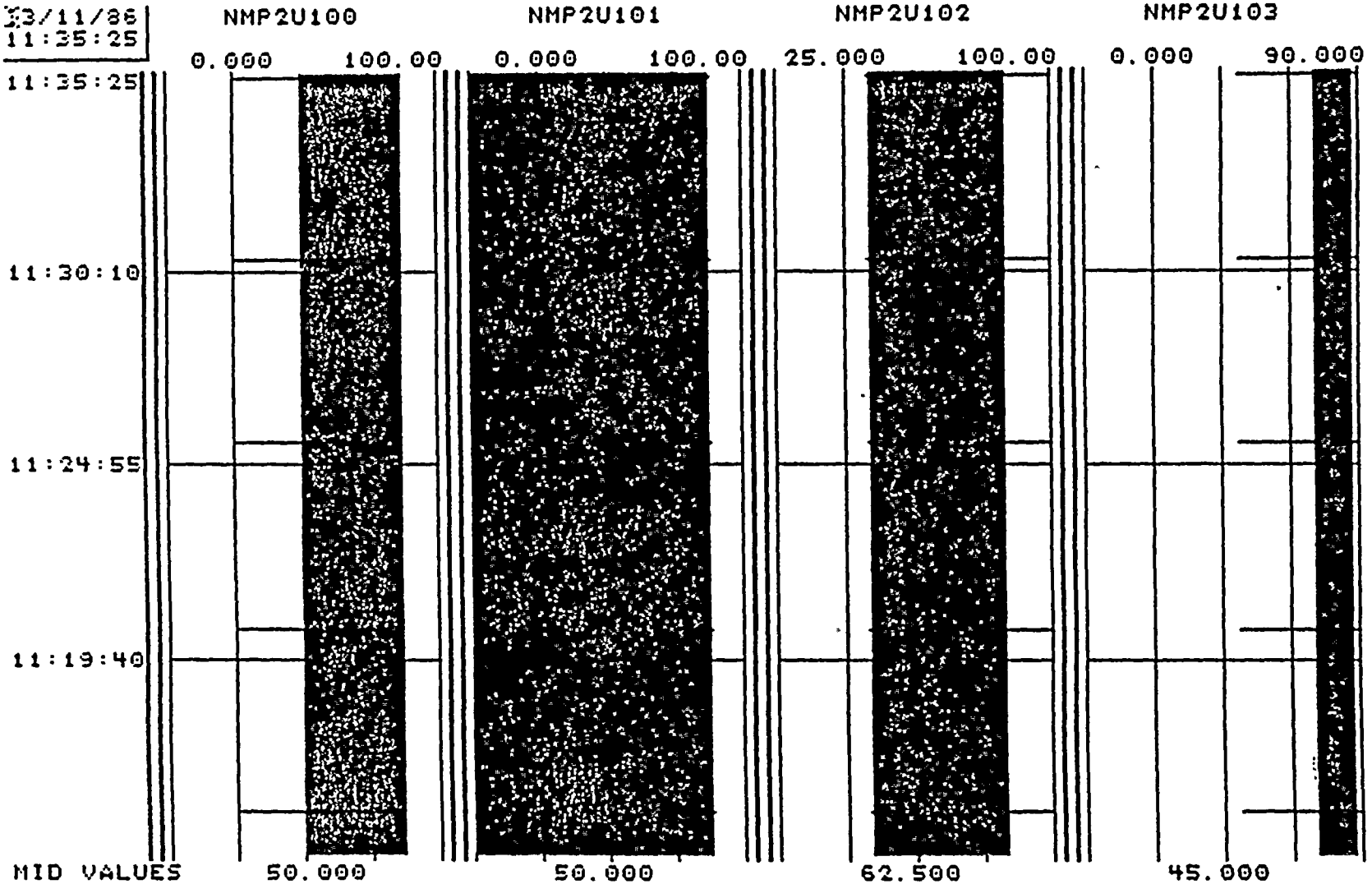
ATTACHMENT F (to 1.2 B)



MID .UES
GRUL)21 INTERVAL 01 SEC

		VALUE	- TREND LIMITS - LOW	HIGH
NMF :0	APRM CHANNEL A PWR LVL	85.78	25.00	75.000
NMF :1	APRM CHANNEL B PWR LVL	86.94	75.00	90.000
NMF :2	APRM CHANNEL C PWR LVL	86.81	50.00	100.00
NMF :3	APRM CHANNEL D PWR LVL	87.15	50.00	90.000

ATTACH'[illegible] (to 1.2 B)

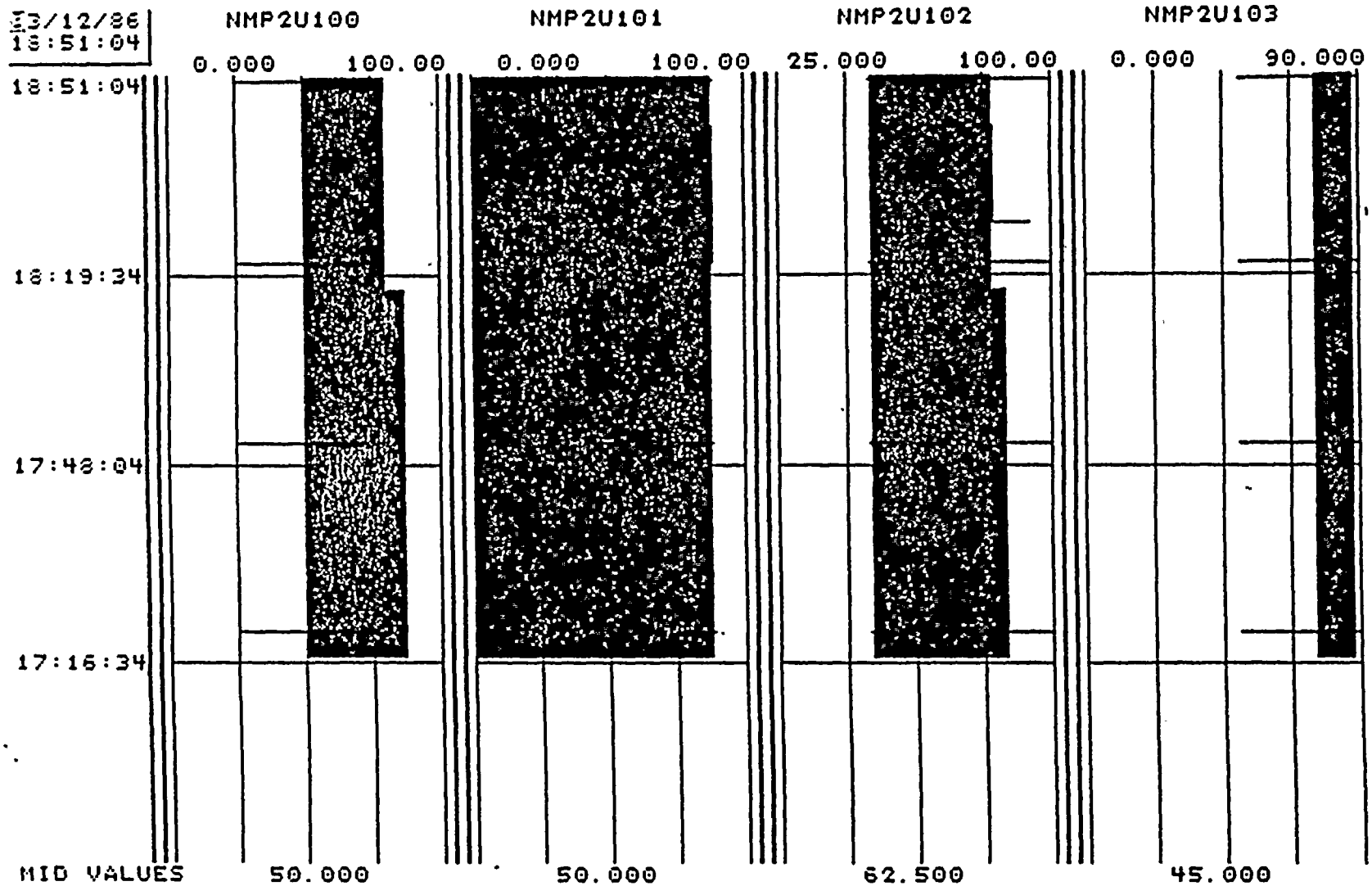


MID VALUES 50.000 50.000 62.500 45.000

GROUP 021 INTERVAL 05 SEC

		VALUE	- TREND LIMITS - LOW	HIGH
NMP2U100	APRM CHANNEL A PWR LVL	85.78	25.00	75.000
NMP2U101	APRM CHANNEL B PWR LVL	86.94	75.00	90.000
NMP2U102	APRM CHANNEL C PWR LVL	86.81	50.00	100.00
NMP2U103	APRM CHANNEL D PWR LVL	87.15	50.00	90.000

ATTACH (to 1.2-B)



MID VALUES	50.000	50.000	62.500	45.000

GROUP 021 INTERVAL 30 SEC

		VALUE	- TREND LIMITS - LOW	HIGH
NMP2U100	APRM CHANNEL A PWR LVL	85.78	25.00	75.000
NMP2U101	APRM CHANNEL B PWR LVL	86.94	75.00	90.000
NMP2U102	APRM CHANNEL C PWR LVL	86.81	50.00	100.00
NMP2U103	APRM CHANNEL D PWR LVL	87.15	50.00	90.000

Attachment 1.2 C

Generic Letter 83-28

Post-Trip Review - Data and Information Capability

General Electric's Transient Analysis Recording System

GETARS - 1

1.2.1 Capability for assessing sequency of events (on-off indications).

1.2.1.1 Brief description of equipment (e.g., plant computer, dedicated computer, strip chart).

NMP2 Response

The General Electric Transient Analysis Recording System (GETARS-1) is a high-speed data acquisition system developed for startup operations but is a permanent plant system. The system operates on a Hewlett-Packard 2117F computer system. The processor contains 128K words of high-speed memory, dual-channel direct memory access, and a dynamic mapping system. The system utilizes a Hewlett-Packard 7920 moving head disk, which has a capability of 50 mbytes for program and data storage. A Hewlett-Packard 7970E magnetic tape drive is used for historical recording. The system also utilizes the Validyne HD310 Expanded Multiplexer system as the analog to digital converter. This system can contain up to 4096 analog inputs.

Peripherals contained on the system include the Versatec V80 printer/plotter, and one HP2645A black and white video display.

The operating system uses two sets of supervisory software. The realtime executive system is the RTE-IVB. This system executes all data entry programs, data reduction programs, and utility programs. A lower overhead executive called RTEM is used to permit interfacing between peripheral devices and (control for high-speed data) acquisition programs.

These are also 21 permanent remote multiplexes used for analog scanning.

1.2.1.2 Parameters monitored.

NMP2 Response

The GETARS system presently contains approximately 500 Analog points. Attachment 1 contains a list of the systems and the ID points which are monitored by the GETARS system.

1.2.1.3 Time discrimination between events.

NMP2 Response

The remote multiplexers (MC370AD) each contain 32 analog channels. The scan rates range from 23,810 scans/second when monitoring one channel, to 2,100 scans/second when monitoring all 32 channels. In a real time environment, groups may not be scanned more rapidly than once each millisecond i.e., 1,000 samples per second.

1.2.1.4 Format for displaying data and information.

NMP2 Response

There are a number of functions contained on the GETARS system that produce various reports and plots.

The control rod timing function indentifies the status of each control rod and evaluates control rod scram performance against test time criteria. Attachments 2 through 7 provide format examples for the reports generated by this function.

The off-line Print/Plot program provides on-site verification and analysis of data recorded by the data acquisition system. Attachments 8 and 9 represent the format associated with the printer and the plotter.

The dynamic noise frequency analysis function is a time series analysis package which allows time history data to be analyzed in the frequency domain. Attachment 10 provides this function's output format.

The histogram function provides a display of signal data in either engineering units, millivolts, or engineering units. Attachments 11 & 12 provides a sample of this function's output.

The Run analysis function provides a statistical analysis of a given data acquisition Run. A sample format is provided on Attachment 13.

1.2.1.5 Capability for retention of data and information.

NMP2 Response

Data retention for the GETARS system is contained on either the Disk Drive or Magnetic Tape. System utilities are available on this system to save the data to or from tape. The data acquisition system automatically writes analog data to the disk.

1.2.1.6 Power source(s) (e.g., Class 1E, non-Class 1E, noninterruptible).

NMP2 Response

Power to the General Electric Transient Analysis Response System (GETARS) is supplied by an Uninterruptible Power Supply 2VBB-UPS1G Non-Class 1E. This supply is fed from a 600V power panel 2VBB-PNL301, which is supplied by one of two sources, either the Station Generator 13.8KV line (2NJS-US3, during normal operation) or from an off-site Scriba 115KV line (2NJS-US4, during a shutdown condition). The GETARS system is also supplied by an alternate 600V BUS 2NJS-US6. In a condition by which all power is lost, backup power is supplied by a 125V DC battery supply 2BYS-SWG001C.

1.2.1.6 NMP2 Response (Cont'd)

In summary, upon loss of normal power, a static transfer switch transfers power from the normal source to the alternative source. If both normal and alternate sources are lost, the DC source will automatically pickup the loads (by means of a DC auctioneering circuit) and supply power panel 2VBS-PNLC102 which feeds GETARS.

1.2.2 Capability for assessing the time history of analog variables needed to determine the cause of unscheduled 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).

NMP2 Response

A description of the equipment making up the GETARS system is provided in the response for Section 1.2.1.1.

1.2.2.2 Parameters monitored, sampling rate and basis for selecting parameters and sampling rate.

NMP2 Response

All system inputs contained in the systems described on Attachment 1 are continually being monitored. As stated in Section 1.2.1.3, the absolute maximum recording speed is 1,000 samples per channel.

1.2.2.3 Duration of time history (minutes before trip and minutes after trip).

NMP2 Response

Upon a trip condition, data recording continues until the disk data area becomes full or the operator terminates the data recording. This disk area will hold a maximum of 11 minutes of data of which one-sixth is pre-trip data.

1.2.2.4 Format for displaying data including scale (readability) of time histories.

NMP2 Response

Description of the formats for displaying the recorded data is contained in Section 1.2.1.4.

1.2.2.5 Capability for retention of data, informatin and physical evidence (both hardware and software).

NMP2 Response

Description of the capability for retention of data is contained in Section 1.2.1.5.

1.2.2.6 Power source(s) (e.g., Class 1E, non-Class 1E, noninterruptible).

NMP2 Response

A description of the power sources is contained in Section 1.2.1.6.

1.2.3 Other data and information provided to assess the cause of unscheduled reactor shutdowns.

1.2.4 Schedule for any planned changes to existing data and information capability.

NMP2 Response

See section 1.2.4.A.

Attachment 1 (to Section 1.2 C)

Unit 2's GETAR's System (parameters Monitored) and ID Points

Main Steam

Steam Line Flow
Main Steam Header Pressure
Main Steam Line Isolation
MSIV Position

RPS

Manual Reactor Scram
Auto Reactor Scram

Rx Instrumentation

Rx Dome Pressure
Rx Water Level
Rx Core Plate DP
Rx Bottom Head Drain Temperature
Rx Vessel Level (WR)

Neutron Monitoring

APRM's
LPRM's
Thermal Heat Flux
Flow-Biased Thermal Upscale Trip Setpoin

Residual Heat Removal

RHR Hx Level
RHR Sys Flow
RHR Hx Lvl Cont Output
RHR Hx Pressure
RHR Pump Trp Brkr. Posn.
CRD System Flow
Selectable CRD Position

Recirculation System

Recirc Loop Flow
Recirc Loop Flow Control Valve Position
Recirc Pmp Trip Bkr
Recirc Master Controller Output
Load Demand Error
Recirc Sys Flux Error
Recirc Sys Flux Estimator Output
Recirc Loop Suction Temp
Recirc Pump D/P
Jet Pump Double Tap D/P
Jet Pump Flow Loops
Total Core Flow
LFMG Drive Motor Bkr
Recirc Flow Control Funct Generator Inputs

RCIC

RCIC Initiation
RCIC Suction Pressure Controller Output
RCIC Elbow Tap D/P
RCIC Turbine Spd
RCIC Flow

Feedwater

Fdwtr Line Temp
Fdwtr Flow
Stm/Fdwtr Flow Mismatch
Fdwtr Master Controller Output
Fdwtr Pump Suction Pressure
Fdwtr Pump Disch Pressure
Fdwtr Pump Byp Low Flow Control Valve Pos
Fdwtr Pump Trip
Fdwtr Low Flow Valve Pos
Fdwtr High Flow Control Valve Pos
Fdwtr Recirc Valve Pos
High Flow Funct Generator Output
Low Flow Master Controller Level Setpoint
STep Generator Output

HPCS/LPCS

HPCS Pump Trip
HPCS Initiation
HPCS Discharge Flow
HPCS Discharge Pressure
HPCS Diesel Generator Bkr Trip
HPCS MCC Feeder Bkr Trip
LPCS Injection Valve Pos

Control Rod Drive

CRD Flow Controller Output
RCIC Trip/Throttle Valve Pos

Safety Relief Valve

SRV's
ADS Initiation

BOP/Emergency Bus Breaker

Normal Brkr Pos
Alternate Brkr Pos
Diesel Brkr Pos
MCC Feeder Breaker Pos

BOP (Turbine/Generator)

Main Turbine Speed
Auto Load Following
Load Reference Output
Main Turbine trip
Transient Auto Pressure Setpoint
EHC Pressure Setpoint
Power/Load Unbalance
Stop Valve Pos
Bypass Valve Pos
Main Turbine Stm Flow
Main Generator MWE
Grid Voltage
Grid Frequency
RCIC Ramp Gen Signal Converter Ouput
RCIC EGM Output
RCIC Steam Control (Governor) Valve Pos
Total Byp Valve Posn

BOP (Condenser, Extract Stm, Service Water, FW Heater

Cond Bstr Pmp Disch Hdr Press
Service Water Pump Trips
Spent Fuel Pool Cooling Pump Trip
Service Water Pump Trip
Main Condenser Vacuum
Cond Pump Disch Hdr Press
Htr Drn Pmp Disch Press
Lp Htr Strings
A&B Isolation Valves
Bypass Rx FWP Bypass
ESS LP/HP Htr Strings
Warming Valves
Main Gen Bkr Pos
Press Reg Output
Total Cont Valve Pos

4.2.3 Sample Output - Channel And Subchannel Number

CRDED OUTPUT 10 22 AM THU., 26 JUNE, 1984

CRD I.D.	CHANNEL/SUBCHANNEL NUMBER															
3																
61						336/ 1	0/ 0	0/ 0	373/ 1	0/ 0	371/ 1	0/ 0				
57				336/	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	336/ 3	0/ 0	0 0	0/ 0		
53			0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	
49		336/ 4	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	
45	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
41	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
37	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	371/ 3
33	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
29	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
25	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
21	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
17		0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	
13		0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	
9			0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0		
5						0/ 0	0/ 0	371/ 2	0/ 0	0/ 0	0/ 0	0/ 0				
1	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	

Sample_Output Con't - Channel and Subchannel Number

CRD I.D.	STATUS OF ALL CRD'S															
J																
61						1	0	0	3	0	2	0				
57				0	0	0	0	0	0	0	4	0	0	0		
53			0	0	0	0	0	0	0	0	0	0	0	0	0	
49		99	0	0	0	0	0	0	0	0	0	0	0	0	0	
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17		0	0	0	0	0	0	0	0	0	0	0	0	0		
13		0	0	0	0	0	0	0	0	0	0	0	0	0		
9			0	0	0	0	0	0	0	0	0	0	0			
5					0	0	99	0	0	0	0					
1	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	

0 => NO DATA, 1 => FAST ROD, 2 => NORMAL ROD, 3 => SLOW ROD, 4 => FAILED ROD, 99 => INOPERATIVE ROD

4.2.4 Sample Output - Rod Timming

CRD #	STATUS	DATE	TIME	CRD #	STATUS	DATE	TIME	CRD #	STATUS	DATE	TIME
28.61	1	4/28/81	3: 8	24.61	8	6/28/84	8:18	28.61	8	6/28/84	8:18
32.61	3	12/12/80	8:38	36.61	8	6/28/84	8:18	48.61	2	1/18/81	8:48
44.61	8	6/28/84	8:18	12.57	8	4/28/81	1:28	16.57	8	6/28/84	8:18
28.57	8	6/28/84	8:18	24.57	8	6/28/84	8:18	28.57	8	6/28/84	8:18
32.57	8	6/28/84	8:18	36.57	8	6/28/84	8:18	48.57	4	4/25/81	3:28
44.57	8	6/28/84	8:18	48.57	8	6/28/84	8:18	52.57	8	6/28/84	8:18
8.53	8	6/28/84	8:18	12.53	8	6/28/84	8:18	16.53	8	6/28/84	8:18
28.53	8	6/28/84	8:18	24.53	8	6/28/84	8:18	28.53	8	6/28/84	8:18
32.53	8	6/28/84	8:18	36.53	8	6/28/84	8:18	48.53	8	6/28/84	8:18
44.53	8	6/28/84	8:18	48.53	8	6/28/84	8:18	52.53	8	6/28/84	8:18
56.53	8	6/28/84	8:18	8.49	99	4/23/81	6:12	12.49	8	6/28/84	8:18
16.49	8	6/28/84	8:18	28.49	8	6/28/84	8:18	24.49	8	6/28/84	8:18
28.49	8	6/28/84	8:18	32.49	8	6/28/84	8:18	36.49	8	6/28/84	8:18
48.49	8	6/28/84	8:18	44.49	8	6/28/84	8:18	48.49	8	6/28/84	8:18
52.49	8	6/28/84	8:18	56.49	8	6/28/84	8:18	4.45	8	6/28/84	8:18
8.45	8	6/28/84	8:18	12.45	8	6/28/84	8:18	16.45	8	6/28/84	8:18
28.45	8	6/28/84	8:18	24.45	8	6/28/84	8:18	28.45	8	6/28/84	8:18
32.45	8	6/28/84	8:18	36.45	8	6/28/84	8:18	48.45	8	6/28/84	8:18
44.45	8	6/28/84	8:18	48.45	8	6/28/84	8:18	52.45	8	6/28/84	8:18
56.45	8	6/28/84	8:18	60.45	8	6/28/84	8:18	4.41	8	6/28/84	8:18
8.41	8	6/28/84	8:18	12.41	8	6/28/84	8:18	16.41	8	6/28/84	8:18
28.41	8	6/28/84	8:18	24.41	8	6/28/84	8:18	28.41	8	6/28/84	8:18
32.41	8	6/28/84	8:18	36.41	8	6/28/84	8:18	48.41	8	6/28/84	8:18
44.41	8	6/28/84	8:18	48.41	8	6/28/84	8:18	52.41	8	6/28/84	8:18
56.41	8	6/28/84	8:18	60.41	8	6/28/84	8:18	4.37	8	6/28/84	8:18
8.37	8	6/28/84	8:18	12.37	8	6/28/84	8:18	16.37	8	6/28/84	8:18
28.37	8	6/28/84	8:18	24.37	8	6/28/84	8:18	28.37	8	6/28/84	8:18
32.37	8	6/28/84	8:18	36.37	8	6/28/84	8:18	48.37	8	6/28/84	8:18
44.37	8	6/28/84	8:18	48.37	8	6/28/84	8:18	52.37	8	6/28/84	8:18
56.37	8	6/28/84	8:18	60.37	99	12/12/81	23: 8	4.33	8	6/28/84	8:18
8.33	8	6/28/84	8:18	12.33	8	6/28/84	8:18	16.33	8	6/28/84	8:18
28.33	8	6/28/84	8:18	24.33	8	6/28/84	8:18	28.33	8	6/28/84	8:18
32.33	8	6/28/84	8:18	36.33	8	6/28/84	8:18	48.33	8	6/28/84	8:18
44.33	8	6/28/84	8:18	48.33	8	6/28/84	8:18	52.33	8	6/28/84	8:18
56.33	8	6/28/84	8:18	60.33	8	6/28/84	8:18	4.29	8	6/28/84	8:18
8.29	8	6/28/84	8:18	12.29	8	6/28/84	8:18	16.29	8	6/28/84	8:18
28.29	8	6/28/84	8:18	24.29	8	6/28/84	8:18	28.29	8	6/28/84	8:18
32.29	8	6/28/84	8:18	36.29	8	6/28/84	8:18	48.29	8	6/28/84	8:18
44.29	8	6/28/84	8:18	48.29	8	6/28/84	8:18	52.29	8	6/28/84	8:18
56.29	8	6/28/84	8:18	60.29	8	6/28/84	8:18	4.25	8	6/28/84	8:18
8.25	8	6/28/84	8:18	12.25	8	6/28/84	8:18	16.25	8	6/28/84	8:18
28.25	8	6/28/84	8:18	24.25	8	6/28/84	8:18	28.25	8	6/28/84	8:18
32.25	8	6/28/84	8:18	36.25	8	6/28/84	8:18	48.25	8	6/28/84	8:18
44.25	8	6/28/84	8:18	48.25	8	6/28/84	8:18	52.25	8	6/28/84	8:18
56.25	8	6/28/84	8:18	60.25	8	6/28/84	8:18	4.21	8	6/28/84	8:18
8.21	8	6/28/84	8:18	12.21	8	6/28/84	8:18	16.21	8	6/28/84	8:18
28.21	8	6/28/84	8:18	24.21	8	6/28/84	8:18	28.21	8	6/28/84	8:18
32.21	8	6/28/84	8:18	36.21	8	6/28/84	8:18	48.21	8	6/28/84	8:18
44.21	8	6/28/84	8:18	48.21	8	6/28/84	8:18	52.21	8	6/28/84	8:18
56.21	8	6/28/84	8:18	60.21	8	6/28/84	8:18	8.17	8	6/28/84	8:18
12.17	8	6/28/84	8:18	16.17	8	6/28/84	8:18	20.17	8	6/28/84	8:18
24.17	8	6/28/84	8:18	28.17	8	6/28/84	8:18	32.17	8	6/28/84	8:18
36.17	8	6/28/84	8:18	40.17	8	6/28/84	8:18	44.17	8	6/28/84	8:18
48.17	8	6/28/84	8:18	52.17	8	6/28/84	8:18	56.17	8	6/28/84	8:18
8.13	8	6/28/84	8:18	12.13	8	6/28/84	8:18	16.13	8	6/28/84	8:18
28.13	8	6/28/84	8:18	24.13	8	6/28/84	8:18	28.13	8	6/28/84	8:18
32.13	8	6/28/84	8:18	36.13	8	6/28/84	8:18	48.13	8	6/28/84	8:18
44.13	8	6/28/84	8:18	48.13	8	6/28/84	8:18	52.13	8	6/28/84	8:18
56.13	8	6/28/84	8:18	12. 9	8	6/28/84	8:18	16. 9	8	6/28/84	8:18
28. 9	8	6/28/84	8:18	24. 9	8	6/28/84	8:18	28. 9	8	6/28/84	8:18
32. 9	8	6/28/84	8:18	36. 9	8	6/28/84	8:18	48. 9	8	6/28/84	8:18
44. 9	8	6/28/84	8:18	48. 9	8	6/28/84	8:18	52. 9	8	6/28/84	8:18
28. 5	8	6/28/84	8:18	24. 5	8	6/28/84	8:18	28. 5	99	1/ 1/82	8: 8
32. 5	8	6/28/84	8:18	36. 5	8	6/28/84	8:18	48. 5	8	6/28/84	8:18
44. 5	8	6/28/84	8:18								

4.2.5 Sample Input - CRDSV

```
:RU,CRDSV
 LIST DEVICE LU?                                                    76
 THIS PROGRAM WILL CHECK SCRAM DATES AGAINST SCRAM
 SURVEILLANCE REQUIREMENTS AND WILL PRINTOUT THE RESULTS
 TO HELP THE USER IN IDENTIFYING RODS DUE FOR TESTING.
 INPUT FILE NAME?                                                   ?CRD#1
```

4.2.6 Sample Output - CRDSV

CRDSV OUTPUT 12:27 AM THU. 28 JUNE, 1984

ALL RODS HAVE BEEN SCRAM TESTED WITHIN 1294 DAYS.

***** SURVEILLANCE INTERVALS HAVE BEEN EXCEEDED *****

THE FOLLOWING RODS HAVE SCRAM TIME DATES* LESS THAN 128 DAYS

DATE	ROD COORDINATE	STATUS

THE FOLLOWING 20% OF THE RODS HAVE THE* OLDEST SCRAM TEST DATES

DATE	ROD* COORDINATE	STATUS
12/12/80	32,61	3
1/18/81	40,61	2
4/28/81	20,61	1
6/28/84	24,61	0
6/28/84	36,61	0
6/28/84	28,61	0
6/28/84	44,61	0
4/28/81	12,57	0
6/28/84	16,57	0
6/28/84	20,57	0
6/28/84	24,57	0
6/28/84	28,57	0
6/28/84	32,57	0
6/28/84	36,57	0
4/25/81	40,57	4
6/28/84	44,57	0
6/28/84	48,57	0
6/28/84	52,57	0
6/28/84	8,53	0
6/28/84	12,53	0
6/28/84	16,53	0
6/28/84	20,53	0
6/28/84	24,53	0
6/28/84	28,53	0
6/28/84	32,53	0
6/28/84	36,53	0
6/28/84	40,53	0
6/28/84	44,53	0
6/28/84	48,53	0
6/28/84	52,53	0
6/28/84	56,53	0
4/23/81	8,49	99
6/28/84	12,49	0
6/28/84	16,49	0
6/28/84	20,49	0
6/28/84	24,49	0
6/28/84	28,49	0
6/28/84	32,49	0

4.2.9 Sample Output - List Of Rods

```
          LIST OF RODS WITH STATUS 4 , 99 & 0

RODS WHICH HAVE FAILED SCRAM TIME REQUIREMENTS STATUS 4

ROD   48,57

OPERATOR DECLARED INOPERATIVE RODS* STATUS 99

ROD    8,49
ROD   48,37
ROD   28, 5

RODS FOR WHICH NO SCRAM TIME IS AVAILABLE STATUS  0

ROD   24,61   28,61   36,61   44,61
ROD   12,57   16,57   28,57   24,57   28,57   32,57   36,57   44,57   48,57   52,57
ROD    8,53   12,53   16,53   20,53   24,53   28,53   32,53   36,53   40,53   44,53   48,53   52,53   56,53
ROD   12,49   16,49   28,49   24,49   28,49   32,49   36,49   48,49   44,49   48,49   52,49   56,49
ROD    4,45    8,45   12,45   16,45   20,45   24,45   28,45   32,45   36,45   40,45   44,45   48,45   52,45   56,45   60,45
ROD    4,41    8,41   12,41   16,41   20,41   24,41   28,41   32,41   36,41   40,41   44,41   48,41   52,41   56,41   60,41
ROD    4,37    8,37   12,37   16,37   20,37   24,37   28,37   32,37   36,37   40,37   44,37   48,37   52,37   56,37
ROD    4,33    8,33   12,33   16,33   20,33   24,33   28,33   32,33   36,33   40,33   44,33   48,33   52,33   56,33   60,33
ROD    4,29    8,29   12,29   16,29   20,29   24,29   28,29   32,29   36,29   40,29   44,29   48,29   52,29   56,29   60,29
ROD    4,25    8,25   12,25   16,25   20,25   24,25   28,25   32,25   36,25   40,25   44,25   48,25   52,25   56,25   60,25
ROD    4,21    8,21   12,21   16,21   20,21   24,21   28,21   32,21   36,21   40,21   44,21   48,21   52,21   56,21   60,21
ROD    8,17   12,17   16,17   20,17   24,17   28,17   32,17   36,17   40,17   44,17   48,17   52,17   56,17
ROD    8,13   12,13   16,13   20,13   24,13   28,13   32,13   36,13   40,13   44,13   48,13   52,13   56,13
ROD   12, 9   16, 9   20, 9   24, 9   28, 9   32, 9   36, 9   40, 9   44, 9   48, 9   52, 9
ROD   28, 5   24, 5   32, 5   36, 5   40, 5   44, 5
```

4.2.8 Sample Output - Timing Analysis

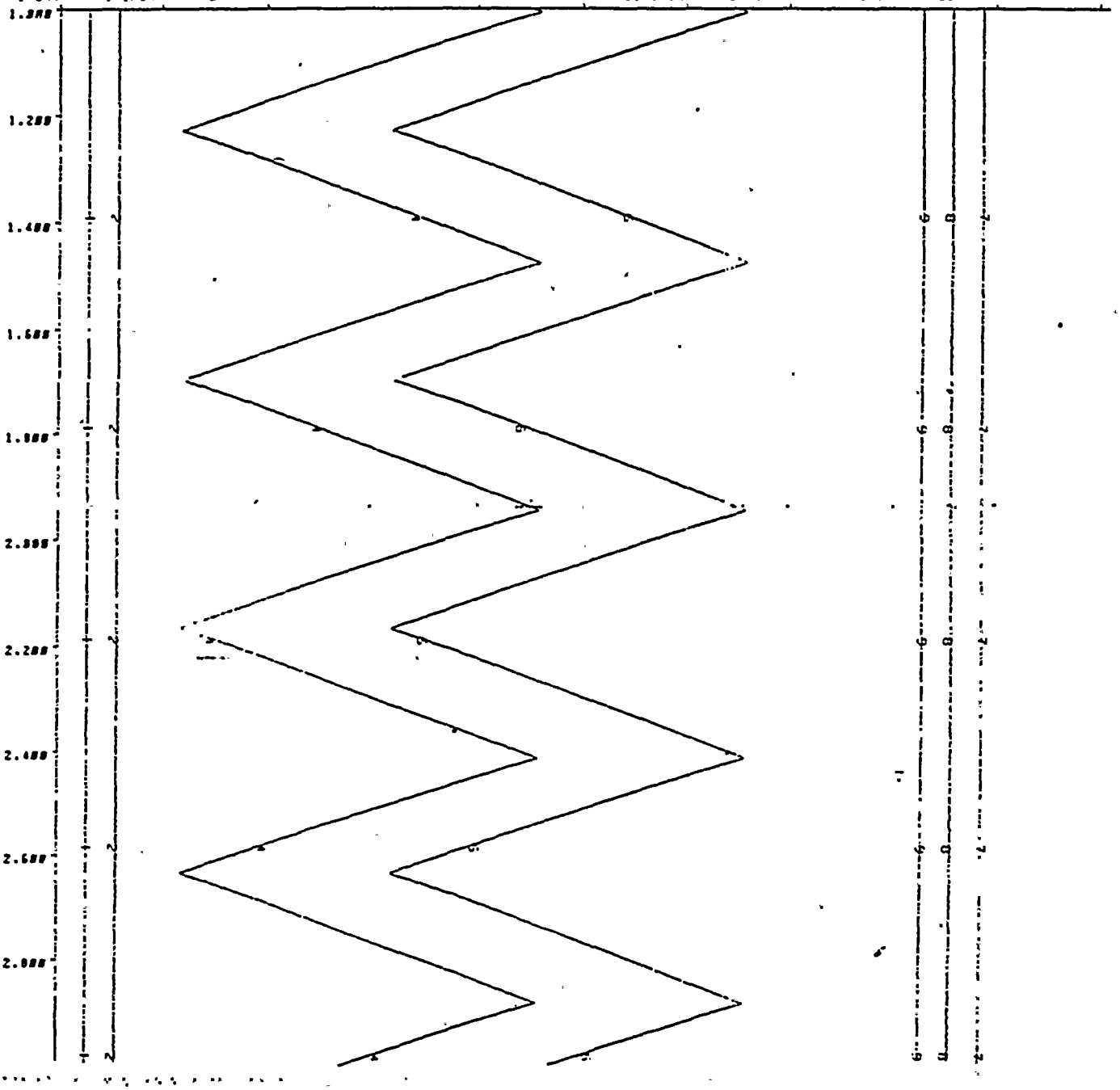
```
CONTRO. TIMING ANALYSIS PERFORMED AT 12:25 AM  THU . 28  JUNE. .984
RUN NUMBER      38          SCRAM TIME TEST ROD 48-39

CRD I.D.                STATUS  OF  ALL  CRD'S
  J
 61                                    1    0    0    3    0    2    0
 57                         0    3    0    0    0    0    0    4    0    0    0
 53               0    0    3    0    0    0    0    0    0    0    0    0    0    0
 49              99    0    0    0    0    0    0    0    0    0    0    0    0    0
 45         0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 41         0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 37         0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   99
 33         0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 29         0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 25         0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 21         0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 17              0    0    3    0    0    0    0    0    0    0    0    0    0    3
 13              0    0    0    0    0    0    0    0    0    0    0    0    0    3
  9                   0    0    0    0    0    0    0    0    0    0    0    0
  5                             0    0   99    0    0    0    0

  1         4    8   12   16   20   24   28   32   36   40   44   48   52   56   60

  0 => NO DATA, 1 => FAST ROD, 2 => NORMAL ROD, 3 => SLOW ROD, 4 => FAILED ROD, 99 => INOPERATIVE ROD
```

4.3.2 DSPLY PRINT Sample Output

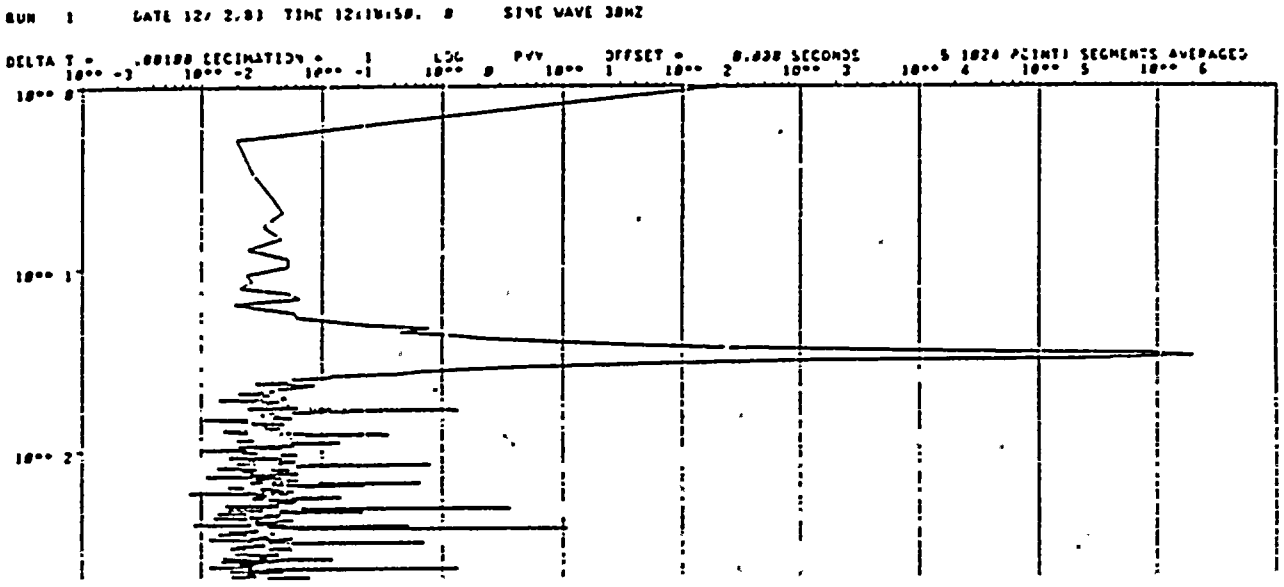
```
                    INZ-1
                    FILE #   1
                    RUN  #   1
                    DATE     1/ 1/85
                    TIME # START OF RUN    4:19:21:313
                    BEGINNING AT    1.00 SECS. FROM START OF RUN

CHAN#     97 CHAN#     98 CHAN#     99 CHAN#    100
CHA  B97     CHA  B98     CHA  B99     CHA  100
MV           MV           MV           MV
LINK      11 LINK      11 LINK      11 LINK      11
ISUB.      1 ISUBL      1 ISUB.      1 ISUBL      1
IPORT      1 IPORT      2 IPORT      3 IPORT      4
RELATIVE TIME . . .0
     2865.600     5764.000     8716.001     6006.400
     2868.000     5768.000     8712.000     6187.200
     2868.000     5764.000     8716.001     6297.601
     2868.000     5764.000     8716.001     6398.400
     2868.000     5768.000     8716.001     6326.400
     2868.000     5768.000     8716.001     6139.200
     2868.600     5764.000     8712.000     6009.601
     2868.000     5764.000     8716.601     5878.400
     2868.000     5768.000     8716.001     5764.000
     2865.600     5768.000     8716.001     5616.000
RELATIVE TIME . . .0                                    22
     2868.000     5764.000     8716.001     5438.400
     2868.000     5764.000     8712.000     5328.000
     2868.000     5764.000     8712.000     5203.200
     2868.000     5768.000     8712.000     5078.400
     2868.000     5764.000     8712.000     4944.000
     2868.000     5768.000     8712.000     4798.400
     2868.000     5768.000     8716.001     4651.200
     2868.000     5764.000     8712.000     4548.000
     2865.600     5768.000     8716.001     4416.000
     2868.000     5764.000     8716.001     4305.601
RELATIVE TIME . . .0                                    42
     2865.600     5768.000     8716.001     4147.200
     2868.000     5768.000     8716.001     4012.800
     2868.000     5768.000     8716.001     3897.600
     2865.600     5768.000     8716.001     3748.800
     2868.000     5764.000     8716.001     3652.800
     2865.600     5768.000     8716.001     3513.600
     2865.600     5768.000     8716.001     3398.400
     2868.000     5764.000     8716.001     3278.400
     2865.600     5768.000     8716.001     3139.200
     2868.000     5768.000     8716.001     3033.600
RELATIVE TIME . . .0                                    62
     2865.600     5768.000     8712.000     2875.200
     2868.000     5764.000     8716.001     2748.000
     2868.000     5764.000     8716.001     2649.600
     2868.000     5764.000     8716.001     2528.000
     2865.600     5768.000     8716.001     2409.600
     2868.000     5764.000     8716.001     2284.800
     2865.600     5764.000     8716.001     2126.400
     2868.000     5764.000     8716.001     2054.400
     2865.600     5764.000     8716.001     1924.800
     2865.600     5768.000     8712.000     1788.000
RELATIVE TIME . . .0                                    82
     2868.000     5764.000     8716.001     1665.600
     2865.600     5768.000     8712.000     1531.200
     2865.600     5764.000     8716.001     1440.000
     2865.600     5764.000     8721.600     1310.400
     2865.600     5764.000     8716.001     1195.200
     2868.000     5764.000     8716.001     1084.800
     2868.000     5764.000     8716.001      940.800
     2865.600     5768.000     8716.001      811.200
     2865.600     5768.000     8716.001      676.800
     2868.000     5768.000     8712.000      580.800
```

4.3.4 DSPLY PLOT Sample Output

```
O F F - L I N E   P L O T
INZ-1
FILE #   1
RUN  #   1
DATE    1/ 1/85
TIME # START OF RUN    4:19:21:313
BEGINNING AT    1.## SECS. FROM START OF RUN

   .2##SEC./GRID LINE

CHAN#    97 CHAN#    98          CHAN#   100          CHAN#    96 CHAN#    95 CHAN#    94 CHAN#    93
CHA  #97    CHA  #98             CHA  100             CHA  #96    CHA  #95    CHA  #94    CHA  #93
MV          MV                   MV                   MV          MV          MV          MV
EU  10000.0 EU  10000.0          EU   4000.0          EU   4000.0 EU  10000.0 EU  10000.0 EU  10000.0
OFF     0.0 OFF 10000.0          OFF     0.0          OFF     0.0 OFF-20000.0 OFF-10000.0 OFF     0.0
ORG.     1. ORG.     2.          ORG.     4.          ORG.     6. ORG.     7. ORG.     8. ORG.     9.
LINK    11 LINK    11           LINK    11           LINK    11 LINK    11 LINK    11 LINK    11
ISUBL    1 ISUBL    1           ISUBL    1           ISUBL    1 ISUBL    1 ISUBL    1 ISUBL    1
IPORT    1 IPORT    2           IPORT    4           IPORT   32 IPORT   31 IPORT   30 IPORT   29
```



DYNNO Sample Output Con't



4.10.2 HISTOGRAM Sample Output

```
:RU,HIST
 ENTER COMMENTS                                          HIST-2
 FILE NAME?   (ENTER -1 FOR MIL-VOLT DISPLAY)            MILLV
 ENTER A  1  FOR CRT DISPLAY                             0
 1ST CHANNEL,  LAST CHANNEL,  # OF SCANS?                21,31,500
 ENTER -1 TO END                                         -1
```

HISTOGRAM 4:14 AM TUE., 1 JAN., 1985

HIST-2

ENG. UNITS DISPLAY FILE = MILLV

CHAN	NAME	UNITS	MEAN	MAX	MIN	SIG	P-P	LO5%	LO1%	LO.2%	NORM	HI.2%	HI1%	HI5%
21	CHA #21	MV	2883.0435	2889.6001	2875.2002	2.3903	14.3999	0	0	1	498	1	0	0
22	CHA #22	MV	5768.7000	5769.6006	5764.7998	2.0566	4.8008	0	0	0	500	0	0	0
23	CHA #23	MV	8724.2402	8726.4004	8716.8008	2.9725	9.5996	0	0	0	500	0	0	0
24	CHA #24	MV	-859.7472	6369.6006	-7185.6006	3824.8179	13555.2018	258	2	0	0	1	0	239
25	CHA #25	MV	2875.2769	2880.0000	2870.3999	1.7637	9.6001	0	0	0	500	0	0	0
26	CHA #26	MV	5765.5391	5769.6006	5760.0000	3.3612	9.6006	0	0	0	500	0	0	0
27	CHA #27	MV	8724.5664	8726.4004	8712.8008	2.9668	14.4004	0	0	0	500	0	0	0
28	CHA #28	MV	-859.5168	6379.2002	-7228.7998	3824.7651	13608.0000	258	2	0	0	0	2	238
29	CHA #29	MV	2877.3696	2880.0000	2870.3999	2.4116	9.6001	0	0	2	498	0	0	0
30	CHA #30	MV	5763.0332	5764.7998	5755.2002	2.2659	9.5996	0	0	0	500	0	0	0
31	CHA #31	MV	8717.7227	8721.5996	8712.0000	2.3900	9.5996	0	0	0	500	0	0	0

4.13.2 MPXT Sample Output

```
>RU,MPXT
 ENTER COMMENTS                                          MPXT-2
 FILE NAME?   (ENTER -1 FOR MILLIVOLT DISPLAY)           MILLV
 ENTER A  1  FOR CRT DISPLAY.                            0
 1ST CHANNEL,  LAST CHANNEL,  # OF SCANS?                246,256,10
 ENTER A -1 TO END.                                      -1
  MPXT  STOP  0000
```

```
MPXT          COMMENTS    MPXT-2
          --  ENG. UNITS DISPLAY - FILE = MILLV

POINT ID. = CHA 246  CHA 247  CHA 248  CHA 249  CHA 250  CHA 251  CHA 252  CHA 253  CHA 254  CHA 255  CHA 256
ENG. UNITS=    MV       MV       MV       MV       MV       MV       MV       MV       MV       MV       MV
LINK      =    11       11       11       11       11       11       11       11       11       11       11
SUBLINK   =     1        1        1        1        1        1        1        1        1        1        1
PORT      =    22       23       24       25       26       27       28       29       30       31       32
SLOPE     =  1.000    1.000    1.000    1.000    1.000    1.000    1.000    1.000    1.000    1.000    1.000
INTERCEPT =  0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000

          5769.601  8726.400   619.200  2875.200  5764.800  8721.600   604.800  2875.200  5764.800  8721.600   595.200
          5764.802  8726.400 -1526.402  2875.200  5764.802  8721.600 -1562.000  2880.000  5764.802  8716.321 -1535.802
          5769.601  8726.400 -3629.600  2870.400  5769.601  8721.620 -3619.200  2875.200  5764.802  8716.801 -3623.602
          5764.802  8721.600 -5563.200  2875.200  5769.601  8726.402 -5601.601  2880.000  5760.000  8716.321 -5615.200
          5764.802  8716.801 -6724.802  2875.200  5764.802  8726.400 -6744.000  2875.200  5764.802  8721.600 -6727.601
          5769.601  8726.400 -4724.820  2875.200  5769.601  8721.600 -4694.000  2875.200  5764.802  8716.801 -4723.200
          5769.601  8721.600 -2851.200  2875.200  5769.601  8726.400 -2883.200  2880.000  5760.000  8712.200 -2836.322
          5769.601  8726.400 -4339.223  2875.200  5764.802  8726.400 -4302.400  2850.000  5764.802  8716.321 -4359.402
          5769.601  8726.402 -6336.000  2875.200  5764.800  8721.600 -6304.800  2880.000  5760.000  8716.321 -6379.200
          5769.601  8721.600 -6829.601  2875.200  5764.800  8721.600 -6803.601  2875.200  5764.800  8721.600 -6829.601
```

GETARS-I SAMPLE INPUT AND OUTPUT
VMEAN - RUN ANALYSIS PROGRAM

4.28.2 VMEAN Sample Output

RUN NO. 1 DATE 1/ 1/85 TIME 4:19:22:315 THRU 4:19:24:315

RUN DESCRIPTION : INZ-1

SCAN PERIOD (MS) = 2.00

FIRST CHANNEL = 1

LAST CHANNEL = 100

I. D. T A B L E

CH#	NAME	EU	LINK	SUBL	PORT	ABSOLUTE VALUES MEAN	STD DEV	MIN VAL	MAX VALUE	P-P
1	CHA #01	MV	11	1	1	2862.910	2.412	2856.000	2865.600	9.600
2	CHA #02	MV	11	1	2	5762.561	2.335	5755.200	5764.800	9.600
3	CHA #03	MV	11	1	3	8715.856	1.191	8712.000	8721.600	9.600
4	CHA #04	MV	11	1	4	-206.860	3896.320	-7220.000	6417.601	13646.400
5	CHA #05	MV	11	1	5	2874.864	2.034	2870.400	2875.200	4.800
6	CHA #06	MV	11	1	6	5757.583	2.662	5750.400	5760.000	9.600
7	CHA #07	MV	11	1	7	8718.757	2.797	8712.000	8726.400	14.400
8	CHA #08	MV	11	1	8	-202.736	3896.081	-7219.200	6427.200	13646.400
9	CHA #09	MV	11	1	9	2873.747	2.200	2870.400	2875.200	4.800
10	CHA #10	MV	11	1	10	5762.623	2.300	5755.200	5764.800	9.600
11	CHA #11	MV	11	1	11	8718.120	2.362	8712.000	8721.600	9.600
12	CHA #12	MV	11	1	12	-206.549	3896.175	-7238.400	6403.200	13641.602
13	CHA #13	MV	11	1	13	2871.493	2.134	2865.600	2875.200	9.600
14	CHA #14	MV	11	1	14	5759.779	.976	5755.200	5760.000	4.800
15	CHA #15	MV	11	1	15	8715.621	1.262	8712.000	8721.600	9.600
16	CHA #16	MV	11	1	16	-206.462	3895.834	-7238.400	6451.200	13689.602
17	CHA #17	MV	11	1	17	2874.864	2.034	2870.400	2875.200	4.800
18	CHA #18	MV	11	1	18	5758.624	2.005	5755.200	5760.000	4.800
19	CHA #19	MV	11	1	19	8723.955	3.272	8712.000	8726.400	14.400
20	CHA #20	MV	11	1	20	-200.646	3895.866	-7224.000	6403.200	13627.201
21	CHA #21	MV	11	1	21	2883.295	2.300	2875.200	2889.600	14.400
22	CHA #22	MV	11	1	22	5768.675	2.076	5764.800	5769.601	4.801
23	CHA #23	MV	11	1	23	8724.100	3.050	8712.000	8726.400	14.400
24	CHA #24	MV	11	1	24	-207.666	3896.891	-7228.800	6403.200	13632.000
25	CHA #25	MV	11	1	25	2875.378	1.607	2870.400	2880.000	9.600
26	CHA #26	MV	11	1	26	5765.351	2.948	5760.000	5769.601	9.601
27	CHA #27	MV	11	1	27	8724.592	2.807	8716.801	8726.400	9.600
28	CHA #28	MV	11	1	28	-207.431	3895.583	-7228.800	6417.601	13646.400
29	CHA #29	MV	11	1	29	2877.238	2.303	2870.400	2880.000	9.600
30	CHA #30	MV	11	1	30	5762.978	2.233	5755.200	5764.800	9.600
31	CHA #31	MV	11	1	31	8717.500	2.520	8712.000	8721.600	9.600
32	CHA #32	MV	11	1	32	-204.100	3896.834	-7220.800	6412.800	13641.600
33	CHA #33	MV	11	1	1	2862.896	2.401	2856.000	2865.600	9.600
34	CHA #34	MV	11	1	2	5762.517	2.329	5755.200	5764.800	9.600
35	CHA #35	MV	11	1	3	8715.832	1.173	8712.000	8721.600	9.600
36	CHA #36	MV	11	1	4	-206.501	3896.887	-7220.800	6417.601	13646.400
37	CHA #37	MV	11	1	5	2874.883	2.022	2870.400	2875.200	4.800
38	CHA #38	MV	11	1	6	5757.574	2.670	5750.400	5760.000	9.600
39	CHA #39	MV	11	1	7	8718.838	2.775	8712.000	8726.400	14.400
40	CHA #40	MV	11	1	8	-203.772	3896.101	-7219.200	6427.200	13646.400
41	CHA #41	MV	11	1	9	2873.762	2.202	2870.400	2875.200	4.800
42	CHA #42	MV	11	1	10	5762.604	2.320	5755.200	5764.800	9.600
43	CHA #43	MV	11	1	11	8718.895	2.467	8712.000	8721.600	9.600
44	CHA #44	MV	11	1	12	-206.673	3895.914	-7238.400	6403.200	13641.602
45	CHA #45	MV	11	1	13	2871.536	2.159	2865.600	2875.200	9.600
46	CHA #46	MV	11	1	14	5759.779	.976	5755.200	5760.000	4.800
47	CHA #47	MV	11	1	15	8715.650	1.256	8712.000	8721.600	9.600
48	CHA #48	MV	11	1	16	-206.553	3895.155	-7238.400	6451.200	13689.602
49	CHA #49	MV	11	1	17	2873.977	2.000	2870.400	2875.200	4.800

Section 2.1, 2.2

Generic Letter 83-28

Equipment Classification and Vendor Interface

2.1 EQUIPMENT CLASSIFICATION AND VENDOR INTERFACE (REACTOR TRIP SYSTEM COMPONENTS)

Position

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. In addition, 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. Vendors of these components should be contacted and an interface established. Where vendors cannot be identified, have gone out of business, or will not supply the information, the licensee or applicant shall assure that sufficient attention is paid to equipment maintenance, replacement, and repair to compensate for the lack of vendor backup and to assure reactor trip system reliability. The vendor interface program shall include periodic communication with vendors to assure that all applicable information has been received. The program should use a system of positive feedback with vendors for mailings containing technical information. This could be accomplished by licensee acknowledgement for receipt of technical mailings. The program shall also define the interface and division of responsibilities among the licensees and the nuclear and non-nuclear divisions of their vendors that provide service on reactor trip system components to assure that requisite control of, and applicable instructions for maintenance work are provided.

NMP2 Response

Niagara Mohawk does not currently plan to develop a specific list of components that would comprise a reactor trip system. The reactor trip function is accomplished at Nine Mile Point Unit 2 by utilizing redundant plant process instrumentation that input to a one-out-of-two taken twice logic system. These signals initiate a reactor trip (rapid control rod insertion i.e. scram) by deenergizing solenoid operated scram pilot valves that vent air from the reactor scram valves.

The components that contribute to the reactor trip function are contained in several systems rather than one reactor trip system. Those systems whose components contribute to the reactor trip function include the reactor protection system, reactor vessel instrumentation system, neutron monitoring system and control rod drive system. Therefore, a new system identified as the reactor trip system would cause unnecessary inconsistencies with existing Nine Mile Point Unit 2 system nomenclature. This would require extensive revision to existing documentation and training program with no enhancement of safety.

2.1 (Cont'd)

However, a task is currently underway to upgrade the details of our equipment classification list (Q-List, See Response 2.2.1.2). This will provide additional assurance that those components which contribute to the reactor trip function are appropriately classified as safety-related.

Administrative controls consisting of documents, procedures and information handling systems are used in the station to control safety-related activities including maintenance, work requests (work orders), parts replacements and modifications.

The work request form (AP-5, Page 15) contains the classification information, which is derived from the equipment classification list (Q-List) by the work request originator or the approving supervisor. A Quality Assurance representative checks the classification again using the equipment classification list (Q-List) (AP-5, Page 6 and 7).

Maintenance procedures are in the process of being reviewed to assure that any classification information is correct. The review of Maintenance Department maintenance procedures is complete. The review of I&C Department maintenance procedures is ongoing and will be completed prior to startup.

Nine Mile Point Unit 2 has an ongoing program to ensure that vendor information is complete, current and controlled throughout the life of the plant, and appropriately referenced in procedures. This program is conducted in three parts. The first part is the AP-3.4.2, Operations Experience Assessment program which receives, reviews and acts on applicable information from the reactor trip system supplier for Nine Mile Point Unit 2. The information consists of General Electric Service Information Letters (SILs) which the Independent Safety Engineering Group (ISEG) receives and reviews to determine applicability. These documents provide recommendations for equipment modification, plant design improvements or changes to procedures to improve plant performance. They are distributed through the GE Domestic Apparatus and Engineering Service Operations (DAESO) or GE Nuclear Services Operation Regional Offices and are normally followed up by discussion during periodic service plan conferences. TDP-5, Administration of Operational Engineering Assessment Items, provides guidance to the ISEG for the handling of OEA items to assure complete and accurate closeout of potential operating problems.

In summary, Niagara Mohawk receives SILs from General Electric. The Independent Safety Engineering Group investigates each one to determine its applicability to the plant and incorporates accordingly (via, Operations Experience Assessment Program). A response form is then completed (Attachment A) and returned to General Electric where it's logged in and recorded. A copy of the GE SIL Log is available through GE for plant review. This Log enables plants to review the SILs that have been transmitted, and act on any they have either missed or haven't received. This program provides an open line of communication between the reactor trip system vendor and Niagara Mohawk, hence improving relations between the two.

2.1 (Cont'd)

In addition, the Operations Assessment Program addresses information from the Nuclear Regulatory Commission (NRC) such as I&E Notices, Circulars and Bulletins, as well as information from the Institute of Nuclear Power Operations (INPO) such as Significant Event Reports and Significant Operating Experience Reports. Collectively, these sources of information provide a comprehensive and timely mechanism to assure that information pertaining to problems with safety-related equipment are identified and corrected.

Niagara Mohawk currently participates in the General Electric Operations Engineer (OE) Program. This results in a GE senior engineer being assigned on a resident basis to the Nine Mile Point Station. This individual is SRO Certified by GE and has a company senior engineer position. This resident engineer program provides Niagara Mohawk as well as GE with a number of benefits, such as:

1. Improve fuel performance through assistance with core management and PCIOMR implementation.

2. Contribute to availability and capacity factor improvements.

3. Assist in general plant operations, such as maintenance and operations.

4. Increase information flow between Niagara Mohawk and General Electric.

5. Assist with interpretation of SILs, backfits, and other modifications.

6. Provide operating plant data to GE to improve future designs, backfit designs and modification recommendations.

7. Provide access to GE technical expertise on an informal basis.

This engineer has a computerized communication system connecting all the staffed sites within the U.S. Plant status, good practices, current plant concerns and expedited data requests are handled on typically a 24 to 48 hour turn around.

GE also provides the site with a (Service Project Manager) company representative. This individual handles all commercial communciation between NMPC and GE. Through these particular programs, a high level of communication, feedback and equipment performance improvement is achieved.

2.1 (Cont.d)

The second part of this program is the Administrative Control of technical manuals. The current method used to control the flow of technical information is Stone & Webster's Project Procedure PP-81, Method for Handling Supplier Technical Documents. This procedure states a specific program in which technical documents are received and transmitted to the appropriate personnel for proper channeling. All technical documents are received by Stone & Webster where a responsible engineer is assigned to review it and monitor its progress until it is issued as a controlled document. This review consists of a detailed investigation to ensure that the information and specifications are technically adequate and applicable to the equipment purchased. It is then transmitted to the site (Nine Mile Point's Document Control) where it is checked for comments, issued as a controlled document and maintained throughout the life of the plant. This procedure will stay in effect until a similar program, such as the one being implemented at Unit 1, NEL-014G, Control and Distribution of Vendor Documents can be developed. This procedure will define specific instructions on handling vendor documents received by Nuclear Engineering and Licensing. It will contain lists of responsibilities for the responsible engineer enabling him/her to ensure that vendor documents undergo proper reviewing. It will then, only after all comments are resolved and reviews completed, be transmitted to the Administrator/Engineering clerk who in turn will log the document in the Master Drawing Index, stamp the manuals "Controlled" in red ink, and issue each as a controlled document. This procedure will provide proper guidance for the control and distribution of vendor documents.

The third part of the program is Niagara Mohawk's Technical Review and Control of maintenance procedures per Section 6.5.2 of Technical Specifications, which is administered through AP-2, Production and Control of Procedures. This is a unique feature of the Nine Mile Point Technical Specifications which assures that a thorough technical review is performed on all safety-related procedures, rather than a cursory review and approval by the Site Operations Review Committee as could occur at nuclear stations with Standard Technical Specifications.

These three parts provide Unit 2 with an improved method of evaluating and controlling technical information which subsequently enhances Nine Mile's position on safety.

2.2 EQUIPMENT CLASSIFICATION AND VENDOR INTERFACE (PROGRAMS FOR ALL SAFETY-RELATED COMPONENTS)

Position

Licensees and applicants shall submit, for staff review, a description of their programs for safety-related equipment classification and vendor interface as described below:

1. For equipment classification, licensees and applicants shall describe their program for ensuring that all components of safety-related systems necessary for accomplishing required

2.2 (Cont'd)

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. This description shall include:

2.2.1.1 The criteria for identifying components as safety-related within systems currently classified as safety-related. This shall not be interpreted to require changes in safety classification at the systems level.

NMP2 Response

NMP2 currently does not have a program for classifying subcomponents of safety-related components. All subcomponents of safety-related components are considered safety-related.

NMP-2 utilizes the quality group classification system for classifying the water, steam, and radioactive waste containing components important to the safety of water-cooled nuclear power plants. This system established by NRC Regulatory Guide 1.26, "Quality Group Classification and Standards," defines the Quality Group Classification System consisting of four Quality Groups A, B, C, and D. The definition of Quality Group A (Class 1) is provided by 10CFR50.2 (V) under "Reactor Coolant Boundary". The definitions of Groups B, C, and D are provided by Regulatory Guide 1.26.

Niagara Mohawk's architect engineer, Stone & Webster, used this guide to develop a detailed "Equipment and Structure Classification List" located in Section 3.2 (Classification of Structures, Systems, and Components) of the FSAR. This section states that, "Seismic Category I structures, systems and components are necessary to ensure:

1. The integrity of the reactor coolant pressure boundary (RCPB).

2. The capability to shut down the reactor and maintain it in a safe shutdown condition.

3. The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guideline exposures of 10CFR100."

The criteria used for identifying equipment as safety-related on documents, drawings, and information handling systems is Stone & Webster's procedure C-3, Equipment Identification Codes. This procedure describes a format and application by which the equipment is identified in such a manner to allow control during all phases of plant design and construction. Each piece of equipment is identified by an equipment code number. This code number is divided in two by either an asterisk(*) for safety-related equipment, or a dash(-) for all other equipment. This provides a systematic way in which safety-related equipment can be identified by operating personnel in quick concise manner. Therefore, NMP2 meets the intent of Section 2.2.1.1.

2.2.1.2 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.

NMP2 Response

The current listing of safety-related equipment is provided in the Q-List, Table 3.2-1 of the FSAR. Currently, this document is being used by plant and engineering personnel to identify safety-related components. As mentioned in Section 2.1, a task is currently underway to upgrade the details and accessibility of the equipment classification list. This upgrade is described as follows and will be implemented when the data is fully validated.

The Information Handling System that will be used to identify safety-related components is the Master Equipment List (MEL). The MEL is a computer data base which will ultimately consist of on-line information on all equipment installed at NMP2. This data base forms the nucleus of an information system that ties engineered component attributes to (1) installed component attributes, (2) active component documents, (3) spare parts necessary to maintain components, and (4) archived component documents. Eventually, it will form an operational authority file which interfaces with other computer data bases which track scheduled and unscheduled maintenance, equipment qualification requirements, in-service inspections, and modifications of plant components, thus ensuring configuration integrity for NMP2 as well as ready access for station supervision.

The MEL was developed from all major existing computerized design information systems on cables, raceways, equipment, pipe lines & supports etc., and then integrated into one data base. The design information provided by the NSSS vendor and A/E was developed from engineering evaluations performed by GE and Stone & Webster engineers using the criteria of FSAR Section 3.2.

Niagara Mohawk is in the process of reviewing a Project Guideline Procedure that will provide instructions for the control, use and updating the MEL system.

Section 6.1 of this procedure identifies a specific Modification Group who's responsibility is to input, modify and verify information within the MEL data base. They are the only individuals authorized to modify data base information. This is done only under the direct supervision of the Lead Modification Engineer. If and when a user becomes aware of the information pertaining to plant equipment which is not present in the MEL, is an authorized data field, or is in conflict with existing MEL data, he/she is required to file a MEL Data Input Form. This form allows the modification group to investigate new additions and corrections for verification and validation. If the information is valid, the modification engineer signs-off on the input form and a change is made to the data base.

2.2.1.2 (Cont'd)

Validation of the MEL for safety-related components is accomplished on a system basis by an extensive check of the component identification number against drawings, existing data bases, testing information, name plate serial numbers and if necessary, physical inspection in the plant. This effort is currently continuing.

Personnel using the MEL data base will have access to a number of terminals available at several locations throughout the plant. Selected terminals will have printers available enabling the user to make "hard" copies of requested information. In addition, a MEL users manual will be made accessible to the user to assist in using the terminals.

2.2.1.3 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 10CFR50, Appendix B, apply to safety-related components.

NMP2 Response

The following is a description of the process of determining if an activity is safety related. The supervisor of the department responsible for the activity has the responsibility to utilize the Equipment Classification List (Q-List) to determine the equipment classification. Documents such as work requests and purchase requisitions are reviewed and approved by the Quality Assurance Department. Activities such as surveillance or preventative maintenance are covered by procedures which are reviewed and approved per Section 6.5.2 of the Unit 2 Technical Specifications. These attributes are specified in various administrative procedures currently in place. The final administrative control before work occurs is approved by the Shift Supervisor. Based on the training, experience and knowledge of Technical Specifications required to fill the position, the Shift Supervisor can determine if the correct practices are to be used. This control includes sign-offs in the procedures, work requests and markups (tags) to be used. It is the intent of the process at Nine Mile Point Unit 2 to have checks and balances on the system to assure that an error on the part of an individual will not result in "non-safety related practices" being applied to safety-related equipment.

2.2.1.4 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.

NMP2 Response

Safety-related activities are governed by various administrative controls which implement the Quality Assurance Program. Adherence to the Quality Assurance Program is monitored primarily through the use of audits and inspections. These audits and inspections encompassed

2.2.1.4 (Cont'd)

the various safety-related activities and are performed at various frequencies. For example, maintenance activities on safety-related equipment are subject to quality assurance inspections on a routine basis. Other audits or inspections are performed less often but cover a longer period of operation or activity. Items of non-compliance identified as a result of these audits and inspections are documented in accordance with provisions of the quality assurance program and are carried as open items until resolved.

The Project Guildline Procedure (Management Control) for utilizing the Master Equipment List (MEL) has been described in Section 2.2.1.2. This procedure will be governed by the Quality Assurance Program to assure validation and compliance of standards.

2.2.1.5 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.

NMP2 Respnse

Currently, Equipment Qualification and Design Verification are performed in accordance with the Project Manual. The Project Manual includes Project Procedures (PP), Project Guidelines (PG) and other administrative documents that control activities at Nine Mile Point Unit 2.

Design Verification and Equipment Qualification requirements are specified in procedures and specifications for all safety-related procured items. Project Procedures 3, 94 and Engineering Assurance Procedure 3.1 describes the review, control and updating of these specifications. Independent review is performed in accordance with Section H.1.e(3) of PP-3.

As required by the aforementioned procedures, the specifications include requirements for qualification testing, review, receipt and approval of testing documentation and vendor manuals which support the limits of life recommended by the supplier.

The testing documentation and vendor manuals are reviewed, maintenance and surveillance data is extracted in accordance with PP-131 and transmitted via Equipment Qualification Maintenance Program Data Sheet (EQMPDS) to Niagara Mohawk Project Engineering.

2.2.1.5 (Cont.d)

This information (EQMPDS) is transferred to on site maintenance management for incorporation into maintenance procedures as appropriate in accordance with Maintenance Instruction MI-4.0.

Administrative Procedure AP-6.1 is in the final stages of signoff and will be approved prior to fuel load. Once approved, it will control engineering support for design modifications after fuel load. This procedure permits the use of the project manual and procedures described above or the NMPC Nuclear Engineering and Licensing procedures will be updated and used when approved for use at Unit 2. Until the NMPC Engineering Procedures are approved for use at Unit 2, the Project Procedures will be implemented in accordance with AP-6.1.

A provision is also included in AP-6.1 for procurement of exact replacements. Exact replacements procured in accordance with the applicable NMP2 Quality Assurance Program Topical Report (December 1985), Sect. 7.2.5 and/or ASME, Section XI, IWA-7210 (a) or (b) may be installed without recourse to a new design safety analysis. Applicable procurement and Quality Assurance requirements shall be met and station documentation of these replacements shall be updated to provide a current record of station components and configuration.

The NMPC Nuclear Engineering and Licensing Procedures currently used at Unit 1, which will be updated for Unit 2 Design Verification and Equipment Qualification, include:

NEL 014D	-	Control & Distribution of Calculations, Specifications/System Descriptions/Design Verfication
NEL 015	-	Procurement of Material Services
NEL 027	-	Design Verification
N.D. 100	-	Plant Modifications
N.T. 100.C	-	Equipment Qualification
N.T. 015.I	-	Commercial Grade Procurement and Dedication

These procedures will ensure that appropriate design verification and qualification testing is specified for procurement of safety-related components. These procedures will ensure the receipt of testing documentation which supports the limits of life recommended by the supplier.

2.2.1.6 Licensees and applicants need only to submit for staff review the equipment classification program for safety-related components. Although not required to be submitted for staff review, your equipment classification program should also include the broader class of structures, systems and components important to safety required by GDC-1 (defined in 10CFR Part 50, Appendix A, "General Design Criteria, Introduction").

2.2.1.6 (Con't)

NMP2 Response

With respect to the equipment classification program in use at Niagara Mohawk for structures, systems and components Important to Safety, we are participating in the Utility Safety Classification Group and are seeking a generic resolution to the Staff's concern in this regard through the efforts of the Group. We do not agree that the plant structure and components important to safety constitute a broader class than the safety-related set. Nevertheless, we believe that non-safety related plant structures, systems and components have been designed and are maintained in a manner commensurate with their importance to the safety and operation of the plant.

2.2.2 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. Vendors of safety-related equipment should be contacted and an interface established. Where vendors cannot be identified, have gone out of business, or will not supply information, the licensee orapplicant shall assure that sufficient attention is paid to equipment maintenance, replacement, and repair, to compensate for the lack of vendor backup, to assure reliability commensurate with its safety function (GDC-1). The program shall be closely coupled with action 2.2.1 above (equipment qualification). The program shall include periodic communication with vendors to assure that all applicable information has been received. The program should use a system of positive feedback with vendors for mailings containing technical information. This could be accomplished by licensee acknowledgment for receipt of technical mailings. It shall also define the interface and division of responsibilities among the licensee and the nuclear and nonnuclear divisions of their vendors that provide service on safety-related equipment to assure that requisite control of and applicable instructions for maintenance work on safety-related equipment are provided.

NMP2 Response

Niagara Mohawk was an active participant in the Nuclear Utility Task Action Committee formed to address control and utilization of information regarding safety-related components. At the outset the Committee recognized that individual utilities have the greatest experience with, and are most cognizant of, the application of safety-related equipment. Based on this recognition, the Committee investigated the mechanisms currently available to facilitate information exchange among utilities. These included the routine utility/vendor and utility/regulator interchanges and the Significant Event Evaluation and Information Network (SEE-IN) and Nuclear Plant Reliability Data Systems (NPRDS) programs managed by the Institute of Nuclear Power Operations (INPO). The committee concluded that these

2.2.2 (Cont'd)

existing activities, coupled with a coordinated program within each utility, constituted an overall program to ensure the dissemination and utilization of technical information regarding reliability of safety-related equipment. Additional information describing this overall program was provided to the Nuclear Regulatory Commission in March 1984 by the Committee.

A key element of the vendor equipment technical information program is a utility program to contribute information to the NPRDS and SEE-IN programs and to use the results of these programs. The administrative controls currently being implemented at Nine Mile Point Unit 2 contain procedures and data collection requirements related to these programs. AP-3.4.2, "Operations Experience Assessment", TDP-5, "Administration of Operational Engineering Assessment Items", and TDP-9, "Independent Safety Engineering Group" define the administrative controls for handling information from SEE-IN, NRC, GE, etc. TDP-6, "Nuclear Plant Reliability Data System (NPRDS) Failure Reporting", describes the steps used to input data to SEE-IN via NPRDS. These requirements provide assurance that information regarding safety-related equipment is handled in an efficient, timely manner. No specific change to these existing administrative controls is deemed necessary at this time. A minimum of 5 dedicated engineers (comprising the ISEG) are responsible for handling the SEE-IN information. Another dedicated individual is responsible for coordinating NPRDS activities for both Unit 1 and Unit 2, with technician and clerical assistance assigned as necessary. This action, coupled with the existing administrative controls, meets the intent of Section 2.2.2 of Generic Letter 83-28 addressing vendor information and interface.

The following are responses to the NRC's review guidelines for Section 2.2.2:

NMPC has obtained from INPO a status on the NPRDS and SEE-IN program enhancements. This letter is attached to this response. In addition, NMPC controls currently in place with regard to the guidelines for the SEE-IN program are described below:

Guideline:

> Reports should be generated for potential failures caused by faulty or missing vendor supplied information or other Equipment Technical Information (ETI). Such occurrences should be reported over NUCLEAR NETWORK.

Response:

> TDP-5 requires that reports be submitted to INPO via Nuclear Network for any occurrence with generic applications. Potential failures caused by faulty or missing vendor supplied information or other Equipment Technical Information (ETI) would fall into this criteria.

2.2 (Cont'd)

Guideline:

Licensee response should describe briefly how their program will accomplish the implementation responsibilities recommended in Section 4.1.1 of the NUTAC/VETIP Report. These include:

Establishment and maintenance of vendor interface with NSSS supplier.

Response:

Vendor interface has been established with General Electric, the NSSS vendor for Unit 2. This interface consists principally of the Service Information Letter (SIL) program, augmented by less formal information exchange programs such as Service Advice Letters and Technical Information Letters.

Guideline:

Have a program of seeking assistance from other vendors of safety-related equipment when found necessary.

Response:

Assistance is routinely sought and obtained from vendors of safety-related as well as non-safety related equipment. This assistance ranges from telephone contact to bringing the vendor service representative on site to assist in servicing the components. This is a basic part of the maintenance program and is implemented any time that the staff cannot resolve a component performance problem with existing procedures or technical manuals. Technical Specification operability requirements and post-maintenance testing requirements assure that components are not returned to service until it is proven that they can meet their intended function. Therefore, it is not necessary to formalize a program to seek assistance from a vendor because existing programs indirectly require it.

Guideline:

Have procedures for processing all incoming Equipment Technical Information (ETI) regardless of source to assure prompt review, evaluation, and distribution of results so that:

(1) Key personnel are promptly warned of possible problems.

(2) New or revised information is incorporated into plant procedures and programs.

(3) Significant Equipment Technical Information (ETI) is shared with other utilities via NUCLEAR NETWORK reports.

2.2 (Cont'd)

Response:

The Operations Assessment Program (AP-3.4.2, TDP-5) contain these attributes.

Guideline:

(4) Administrative procedures should require that plant procedures at least reference appropriate Equipment Technical Information (ETI).

(5) Appropriate Equipment Technical Information (ETI) should be incorporated into the performance and quality review sections of safety-related procedures.

Response:

S-MI-GEN-002, Maintenance Instructions for Writing Procedures, and S-IDP-PO, Outline for I&C Department Procedures contain provisions that require the use of Equipment Technical Information (ETI) in writing maintenance procedures.

Guideline:

(6) Vendors or outside contractors who perform or provide safety-related services shall be subject to adequate utility control and shall conform to utility or utility-approved QA procedures and controls.

Response:

All work performed on safety-related equipment at Nine Mile Point Unit 2 must be performed with NMPC approved procedures, regardless of whether it is performed by NMPC employees or outside vendors or contractors. Consequently all work is performed in conformance with NMPC or NMPC approved QA procedures and controls.

Guideline:

Licensee response should show that interfaces have been or are being established with at least two or more major vendors of safety-related equipment other than the NSSS. Examples of such vendors include: diesel generator vendor, switchgear vendor, major pumps vendor, or vendor of motor-operated valves.

2.2.2 (Cont'd)

Response:

NMPC strongly endorses the NUTAC report on Generic Letter 83-28 NMPC will attempt to establish a vendor interface program with two major vendors of safety-related equipment other than the NSSS. It is our intention to develop this relationship with the diesel generator vendor, and/or with the major vendor of motor operators for valves, and/or with the major vendor of valves, and/or with the vendor of safety-related switchgear. This relationship will be developed expeditiously, however due to uncertainties in the willingness of these companies to participate, no commitment date can be specified at this time. It should be noted, however, that the existing SIL program covers the components in the GE scope of supply, which includes components in the following major systems: ECCS, including RCIC; ADS; SLC; RWCU; RPS; Recirculation; Neutron monitoring, including RSCS; RRCS; and Fuel Handling among others. Therefore the intent of this guideline is met without establishing two additional vendor interface programs.

Guideline:

Licensee response should show that they have committed to work with INPO to ensure accomplishment of INPO Implementation Responsibilities as described in Sections 3.2, 4.1.2, and 4.2.2.1 of the NUTAC/VETIP report.

Response:

INPO has prepared revisions to NPRDS and SEE-IN as described in the attached letter.

Guideline:

The vendor interface program should include periodic contact with the NSSS vendor to assure that the latest versions of maintenance, test, service, and modification recommendations are in the licensee's possession.

Response:

TDP-5 has been revised to require annual contact with General Electric regarding the SIL program and an audit of the results to assure that all the SILs are in NMPC's possession.

2.2 (Cont'd)

Guideline:

The licensee should show that contact has been attempted with major vendors of their safety-related equipment other than the NSSS to establish continuing, periodic interfaces with them for exchange of service, test, maintenance, and modification information. Evidence of such attempts and their results should be retained for audit.

Response:

As described above, NMPC routinely consults vendors for the purpose of exchange of service, test, maintenance, and modification information. However, no attempt was made to develop a formal vendor interface program with all vendors of safety-related equipment because NMPC strongly endorses the NUTAC report on Generic Letter 83-28, section 2.2.2, and considers a formal program unnecessary.

Guideline:

The vendor interface program should use a system of positive feedback such as licensee acknowledgement of receipt of technical information mailings to assure that licensee has received all current information.

Response:

The SIL program utilizes a SIL feedback form which is used by General Electric to update a computerized status log. This form is sent to GE at the time of closeout by NMPC, not at the time of receipt. TDP-5, as described above, assures, on an annual basis, that NMPC has received all current information.

Guideline:

Program description shall define the interface and describe the division of responsibilities among the licensee and the nuclear and non-nuclear divisions of their vendors that provide service on safety-related equipment. This is interpreted to mean that the licensee shall remain responsible for controlling the content and application of procedures, instructions, and quality assurance activities to maintenance, test, service, and modification work on safety-related equipment performed by other than licensee organizations and personnel.

2.2 (Cont'd)

Response:

As described above, all work performed on safety-related equipment at Nine Mile Point must be performed with NMPC approved procedures, regardless of whether it is performed by NMPC employees or outside vendors or contractors. Consequently all work is performed in conformance with NMPC or NMPC approved procedures and controls. NMPC always remains responsible for controlling the content and application of procedures, instructions, and quality assurance activities to maintenance, test, service, and modification work on safety-related equipment performed by other than NMPC personnel.

Attachment A
(To Section 2.1)

TO: GENERAL ELECTRIC COMPANY
MANAGER, UTILITY SUPPORT SERVICES
175 CURTNER AVENUE
SAN JOSE, CA 95125
M/C 890

S I 0 2
01

SERVICE INFORMATION LETTER STATUS RESPONSE

SIL NO. [. △ △] 05

PROJECT K G 1 14 Nine Mile Point 2

C
17

ACTION TAKEN AS OF MO DY YR 18

CHECK ONE

1	UNDER INVESTIGATION
2	NOT APPLICABLE
3	DO NOT PLAN TO IMPLEMENT
4	ALREADY IN COMPLIANCE
5	PLAN TO PARTIALLY IMPLEMENT
6	PLAN TO FULLY IMPLEMENT
7	PARTIALLY IMPLEMENTED – NO FURTHER ACTION
8	PARTIALLY IMPLEMENTED – PLAN TO COMPLETE
9	FULLY IMPLEMENTED

24

COMMENTS: (HAND PRINTED COMMENTS MAY BE ENTERED BELOW OR USE REVERSE SIDE OF SHEET FOR TYPED COMMENTS)

25

60

95

130

165

FROM _____ DATE / /

CHARGE NO. [illegible]

Section 3.1 & 3.2

Generic Letter 83-28

Post-Maintenance Testing (Safety Related Systems)

3.1 & 3.2 POST-MAINTENANCE TESTING

Positions

The following actions are applicable to post-maintenance testing:

3.1.1 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.

NMP2 Response

AP-2, Production and Control of Procedures requires 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 conducted. Additionally, this procedure requires that the testing demonstrates that the equipment is capable of performing its safety functions before being returned to service. The AP-2 review is conducted in two parts: 1) an interdisciplinary review, and 2) a cross disciplinary review. The interdisciplinary review is the portion that involves assuring that the test procedure demonstrates that the equipment is capable of performing its safety functions. All tests in maintenance procedures and Technical Specification changes under go this review prior to implementation.

S-IDP-PO, Outline for I&C Procedures and S-MI-GEN-002, Maintenance Instructions for Writing Procedures are the two departmental procedures that control the development of maintenance procedures. These two procedures require post-maintenance testing and are used by the reviewer to assure that appropriate post-maintenance testing has been incorporated.

At this time not all maintenance and test procedures have been approved. Those that have been approved have been reviewed for adequacy of post-maintenance testing via the procedures described above. Those that have not yet been approved will be reviewed for adequacy of post-maintenance testing with these same administrative controls.

Therefore Unit 2 has complied with the requirements of Section 3.1.1 for those procedures approved to date, and has administrative controls in place to comply with these requirements in the future.

Further, AP-5, Procedure for Repair contains additional controls to assure that these requirements are met. These controls are described in the response to Section 3.2.1 below.

3.1.2 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.

NMP2 Response

Vendor and Engineering reccomendations are currently being reviewed to ensure that any appropriate test guidance is included in the test and maintenance procedures or the Technical Specifications.

As stated in Section 2.1, the General Electric SIL program constitutes the RTS Vendor Interface Program. The post-maintenance testing recommendations contained in the SILs have been identified and are being handled via the Operations Assessment Program as described in the response to Section 2.1 above. As of this writing, approximately 90% have been reviewed. A few instances have been found where procedure changes are required. These changes are being tracked to assure completion. The remainder (which number under 10) have been assigned to an engineer for incorporation of applicable information. Disposition of all of these will occur prior to fuel load.

Engineering recommendations are in general sent to the Station Superintendent, who assigns them to the appropriate department head for disposition. However, documentation of this process is not formalized, so at this time it is not possible to state the status. A thorough search and review of engineering testing recommendations has been initiated and will be completed by 12-1-86, with any procedure modifications completed by 1-31-87.

3.1.3 Licensees and applicants shall indentify, 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.)

NMP2 Response

Technical Specifications have been reviewed for Post-Maintenance Testing Requirements that can be demonstrated to degrade safety rather than enhance it. None were identified.

3.2.1 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.

3.2.1 (Cont'd)

NMP2 Response

Niagara Mohawk has made improvements to administrative and implementing procedures to more clearly satisfy the Post-Maintenance Testing (PMT) requirements of Generic Letter 83-28. AP-5 "Procedure for Repair" (pages 5,9,10,15 and 18) specifies the requirement for PMT following any maintenance of Safety Related equipment. TDP-8 "Post-Maintenance Testing Criteria" provides guidance on the type of testing required based on the type of component and the type of maintenance performed.

This process applies to systems that have been turned over to NMPC from Construction and is summarized as follows: The department supervisor receiving the Work Request (AP-5.0, page 15) determines if the departmental procedure for accomplishing the maintenance task, or another departmart('s) procedure, incorporates a maintenance test that meets the requirements given in TDP-8. If so, he denotes the procedure number on the WR (line #15) and on the PMT requirements line (line 37). If not, line #37 is left blank. Upon completion of the work, the WR is returned to the Control Room, where the Station Shift Supervisor or the Assistant Shift Supervisor review the WR including line #37. If the Operations Department has a procedure which meets the testing requirements of TDP-8, it is denoted on line #37, and performed. Successful performance results in the Station Shift Supervisor or Assistant Station Shift Supervisor accepting the system/component for return to service. An unsuccessful test results in the initiation of another WR.

If no procedure exists for testing the system/component in relation to the maintenance performed, (which could be the case for a safety related component or system that is not in Technical Specifications) a PMT Test Report is completed per AP-5 and attached to the WR. Generally, this will involve placing the component in service and witnessing proper operation.

Further, maintenance procedures which do not contain post-maintenance tests generally contain steps to notify the appropriate department to conduct a test. However, the WR is the administrative control.

Thus, Nine Mile Point Unit 2 is currently in compliance with Post-Maintenance Testing requirements of Generic Letter 83-28.

3.2.2 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.

3.2.2 (Cont.d)

NMP2 Response

Vendor and Engineering reccomendations are currently being reviewed to ensure that any appropriate test guidance is included in the test and maintenance procedures or the Technical Specifications.

As stated in Section 2.2.2, the General Electric SIL program constitutes the Safety Related Systems Vendor Interface Program. The post-maintenance testing recommendations contained in the SILs and in any other vendor reccomendations not contained in technical manuals have been identified and are being handled via the Operations Assessment Program. As of this writing, 90% have been reviewed. A few instances have been found where procedure changes are required. These changes are being tracked to assure completion. The remainder (which number under 20) have been assigned to an engineer for incorporation of applicable information. It is expected that disposition of all of these will occur prior to fuel load. The status of engineering testing recommendations is given in the response to 3.1.2 above.

3.2.3 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.

NMP2 Response

Technical Specifications have been reviewed for Post-Maintenance Testing Requirements that can be demonstrated to degrade safety rather than enhance it. None were identified.

Section 4.5

Generic Letter 83-28

Reactor Trip System Reliability (System Functional Testing)

4.5 REACTOR TRIP SYSTEM RELIABILITY (SYSTEM FUNCTIONAL TESTING)

Position

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

4.5.1 The diverse trip features to be tested include the breaker undervoltage and shunt trip features on Westinghouse, B&W and GE plants; the circuitry used for power interruption with the silicon controlled rectifiers on B&W plants; and the scram pilot valve and backup scram valves (including all initiating circuitry) on GE plants.

NMP2 Response

Generic Letter 83-28, Section 4.5 recommends on-line functional testing of scram pilot valves and scram backup valves. At Nine Mile Point Unit 2, the scram pilot air system controls and supplies air to operate the scram valves and the scram discharge volume vent and drain valves. The control air is supplied through two backup scram, and two Redundant Reactivity Control System (RRCS) solenoid operated air valves to the scram pilot valves at the individual control rod drive Hydraulic Control Units (HCU) and the scram discharge volume vent and drain valves, per each of two HCU Air Headers. The backup scram valves receive signals from the reactor protection system, as do the pilot solenoids, to each scram, vent and drain valve, providing redundancy and increasing system reliability. In the event that the scram pilot valves fail to function, the action of the backup scram valves assure that the control rods insert, thus, enhancing the reliability of the reactor trip function.

The backup scram valves are normally de-energized, DC solenoid operated valves. When at least one pair of channel sensor relays in both trip systems de-energize (one out of two taken twice logic), both backup scram valve solenoids energize and reposition the backup scram valves to block the instrument air supply and exhaust the scram air header. This action alone will cause the insertion of all control rods. The check valve around backup scram valve B allows the pilot air header to bleed down even if backup scram valve B fails to change position. Thus, the failure of one backup scram valve to operate will not prevent a scram, and the operation of one backup scram valve will cause a scram of the one half of the control rods.

Current testing of the scram pilot valves is accomplished through the existing surveillance program. The surveillance tests, taken together, functionally test the trip system from the sensing instrument, through the trip logic circuitry, to the scram pilot valves. The surveillance procedures are written to test the one-out-of-two taken twice logic in such a manner that the channels are tested independently. This allows one-half of the necessary logic to "makeup," actuating the entire trip channel up to and including one out of the two scram pilot valves on every control rod's scram inlet and discharge valves.

4.5.1 (Cont'd)

Scram testing will be performed during each operating cycle. This scram time testing demonstrates the action of the pilot scram valves and scram inlet and discharge valves. The frequency of testing is as follows: *

1. For all control rods prior to THERMAL POWER exceeding 40% of RATED THERMAL POWER following CORE ALTERATIONS or after a reactor shutdown that is greater than 120 days.

2. For specifically affected individual control rods following maintenance on or modification to the control rod or control rod drive system which could affect the scram insertion time of those specific control rods, and

3. For at least 10% of the control rods, on a rotating basis, at least once per 120 days of POWER OPERATION.

In series with the backup scram valves are two normally deenergized DC RRCS solenoid operated Alternate Rod Insertion (ARI) valves. Similar to the B backup scram valve, each RRCS valve has a check valve in a bypass line so its failure will not prevent the other RRCS or the backup scram valves from depressurizing its scram air header. The ARI function of RRCS is actuated on failure to scram symptoms, i.e. high reactor vessel pressure or low-low reactor water level.

Because of the design of the system, on-line testing of one backup scram or one RRCS valve would result in a full scram of one half the control rods. This would be an unacceptable situation which would result in an automatic or a manual full scram of all the control rods. Therefore, on-line testing of backup scram valves or RRCS valves will not be performed. However, backup scram valves and RRCS valves will be tested.

A plant specific reliability study was performed by GE in NEDE 22157 for RRCS and ARI. The results of this study showed that these systems are highly reliable.

4.5.2 Plants not currently designed to permit periodic on-line testing shall justify not making modifications to permit such testing. Alternates 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.

*NOTE: This frequency is currently specified in the Unit 2 Technical Specifications. The scram timing program will always be based on the Technical Specifications.

4.5.2 (Cont'd)

NMP2 Response

As described in 4.5.1, Nine Mile Point Unit 2 is not designed for on-line testing of the backup scram or the ARI valves. The current design would result in scram of one half of the rods, if one of the backup scram, or ARI valves were energized while on-line. However, due to the multiple redundancy of the system, ie. the backup scram valves are redundant to the scram pilot valves, and are also redundant to each other, modifications to permit on-line testing are not warranted.

Additionally, the ARI valves are a redundant scram system, utilizing independent sensors from the Reactor Protection System and capable of completing a scram with the total failure of the normal scram system. The ARI valves are controlled by the Redundant Reactivity Control system, which is also redundant.

NMPC endorses the following excerpt from NEDC-30505 "Response Guidelines for NRC Generic Letter 83-28" prepared by General Electric for the BWR Owners Group.

"The Nine Mile Point Unit 2 Reactor Protection System design complies with all applicable regulatory requirements for the RPS.

The remainder of this paragraph is a summary of the on-line functional testing and testing intervals performed on the RPS. Consistent with the Technical Specifications, on-line channel functional testing is performed on the multiple and diverse reactor transient trip sensors [Average Power Range Monitor (APRM) and intermediate Range Monitor (IRM) Reactor trip signal channels, and multiple and diverse Scram Discharge Volume High water level trips]. During the required trip sensor channel tests discussed above, each scram contactor which actuates the scram pilot solenoid valves is tested. 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 regularly. Redundant Electrical Protection Assemblies (EPAs) which protect the Scram Pilot Solenoid Valves from low voltage chattering (and the associated potential consequence of accelerated wear) are also functionally tested. These surveillance testing requirements related to the Scram Pilot Solenoid Valves assure that the probability of undetected failure of these solenoid valves is small. In summary, the current RPS on-line surveillance requirement, in conjunction with multiple and diverse scram sensors, assure that the probability of failure of enough control rods to prevent scram is negligible.

4.5.2 (Cont'd)

Channel functional tests are performed on-line 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 APRMs and IRMs.

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 intitiated 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 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).

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 tests described above ensure 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.

Other channel functional tests include 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. 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.

4.5.2 (Cont'd)

The 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.

Reference 2 concluded that reactor shutdown can be achieved if at least 50% of the control rods in a 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 would cause unsafe shutdown. The Technical Specification surveillance requirements adequately ensure 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 staggared maintenance and overhaul of selected degraded 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."

Therefore, since the scram pilot valves are tested weekly during APRM half scram tests, and since the backup scram valves and the ARI valves will be tested once a refueling cycle, and since rod scram time testing is performed at on a refueling cycle or more frequently in accordance with Standard Technical Specifications, on-line testing of the backup scram and ARI valves is not warranted.

4.5.3 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

4.5.3 (Cont'd)

Licensees currently not performing periodic on-line testing shall determine appropriate test intervals as described above. Changes to existing required intervals for on-line testing as well as the intervals to be determined by licensees currently not performing on-line testing shall be justified by information on the sensitivity of reactor trip system availability to parameters such as the test intervals, component failure rates, and common mode failure rates.

NMP2 Response

Nine Mile Point Unit 2 on-line functional testing and testing intervals are performed consistent with the Technical Specifications which are based on Standard Technical Specifications. The following reactor trips are functionally tested on-line.

Manual Scram
High Reactor Pressure
High Drywell Pressure
Low Reactor Water Level
High Water Level Scram Discharge Volume
Main Steam Line Valve Position
High Radiation Main Steam Line
Neutron Flux
    Intermediate Range Monitor (IRM) (when required)
    Average Power Range Monitors
Turbine Valve Closure
Generator Load Rejection

In addition, the shutdown position of the reactor mode switch scram function is tested during refueling outages. During the testing discussed above, the scram pilot solenoid valves are tested, in that one of the two scram pilot valves on every control rod scram inlet and outlet valves are activated. Also, overvoltage, undervoltage and underfrequency protection is provided for the reactor trip bus including power to the scram pilot valves.

For the major transients evaluated, the number of independent scram features which are available to terminate a particular transient are listed in the response to Section 4.5.2 above. Therefore, it can be demonstrated that adequate redundancy exists in the Nine Mile Point Unit 2 design to provide protection against multiple independent sensor failures.

Further, NMPC participated in and endorses the "BWR Owners Group response to NRC Generic Letter 83-28, Item 4.5.3" NEDC-30844. This document contains analyses performed by General Electric that concluded that the current on-line functional testing intervals are adequate to achieve high reactor trip system availability.

4.5.3 (Cont'd)

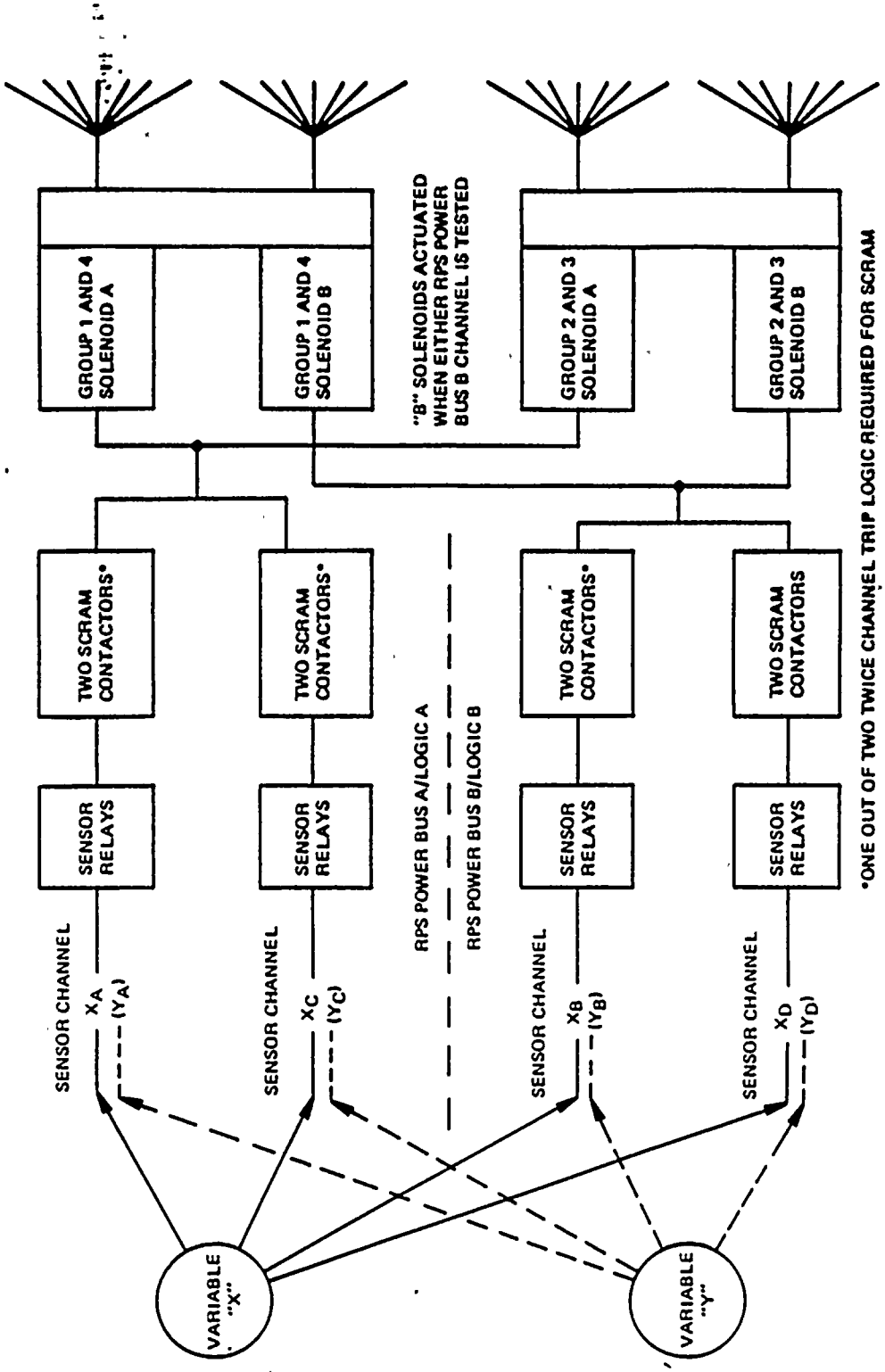
In summary, the current reactor protection system on-line surveillance program requirements, in terms of scope and testing intervals, in conjunction with multiple and diverse scram sensors assures the probability and reliability of the reactor trip system to function to effect control rod insertion and resulting reactor shutdown.

Further, for Unit 2 an automatic standby liquid control system is installed which provides redundant means to shut down the reactor.

Table 1 (to Section 4.5)
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 >1065 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. >6 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	

Figure 1 RPS Relay Logic Configuration (to Section 4.5)



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).