U.S. NUCLEAR REGULATORY COMMISSION

Region I

Docket No. 50-220

License No. DPR-63 Category C

Licensee: Niagara Mohawk Power Corporation
300 Erie Boulevard West
Syracuse, New York 13202

Facility Name: Nine Mile Point Unit 1

Inspection At: Oswego and Syracuse, New York

Inspection Conducted: September 10 - 19, 1986

Inspectors: G. Napuda, Lead Reactor Engineer — 10/16/86 date

D. L. Caphton, Sr. Technical Reviewer — 10/16/86 date

J. G. Hunter III, Reactor Engineer — 10/16/86 date

D. L. Harris, Jr., NRC Consultant — 10/16/86 date

D. A. Beckman, NRC Consultant — 10/16/86 date

Approved by: for Dr. P. K. Eapen, Chief, Quality Assurance Section, OB, DRS — Oct 21, 1986 date

Inspection Summary: Special announced inspection on September 10-19, 1986 (Report No. 50-220/86-13)

Areas Inspected: Licensee's actions to address the concerns identified in NRC Generic Letter 83-28 in the areas of Equipment Classification, Vendor Interface, Post Maintenance Testing, Plant Surveillances, and QA/QC Overview.

Results: Six violations were identified (inadequate design/drawing control; failure to control measuring and test equipment; failure to control safety related maintenance activities; inadequate housekeeping; failure to implement surveillance procedures; inadequate inservice testing).

DETAILS

1.0 Persons Contacted

Niagara Mohawk Power Corporation (NMPC)

D. Balduzzi, Supt., Records Management
W. Bandla, Asst. Supt. Operations
*J. Buckley, QC Supervisor
R. Coon, Instrument and Control Supervisor
K. Dahlberg, Maintenance Superintendent
*W. Drews, Technical Superintendent
M. Falise, Supt., Mechanical Maintenance
*P. Francisco, Licensing Lead Engineer
*P. Frasier, Electrical Design Engineering
*F. Kawksley, Inservice Inspection Supt.
*W. James, Instrument and Control Supervisor
*T. Lempges, Vice President, Nuclear Generation
R. Longo, Supry, Mechanical Maintenance
M. Masuicca, Asst. to Supervisor of Operations
*M. Mosier, NMPC Inspection Liaison
*R. Pasternak, Manager, Consulting, Nuclear Technology
*T. Perkins, General Superintendent
*R. Randall, Supervisor, Technical Support
*T. Roman, Station Superintendent, NMP-1
*F. Stelter, Auditor
*K. Sweet, Supt., Electrical Maintenance

United States Nuclear Regulatory Commission

*W. Cook, Senior Resident Inspector
*C. Marschall, Resident Inspector

The inspectors also contacted other licensee administrative and technical personnel during the course of the inspection.

*Present at the September 19, 1986 Exit Meeting

2.0 Inspection Summary

2.1 Background

The reactor trip system, as part of the reactor protection system, is fundamental to reactor safety for all nuclear power reactor designs. Transient and accident analyses are predicated on the assumption that the reactor trip system will automatically initiate reactivity control systems on demand to assure that fuel design limits are not exceeded.

The design and regulatory philosophies for attaining the high reliability required of the reactor trip system have primarily relied on the use of redundancy, periodic testing, and quality assurance.

In February 1983 the Salem Nuclear Power Station experienced two failures of the reactor trip system on demand.

Regulatory and industry task forces were formed to determine the safety significance and generic implications of the events. Based on these findings, certain actions were required of all licensees.

These actions, transmitted in Generic Letter 83-28, fell into four areas.

(1) Post-Trip review,

(2) equipment classification and vendor interface,

(3) post-maintenance testing, and

(4) reactor trip system reliability improvements.

NMPC submitted their response to Generic Letter 83-28 in letters listed in Attachment A. This inspection included the areas of equipment classification, vendor interface, post maintenance testing, and QA/QC interface.

2.2 Inspection Results

Six violations with multiple examples were identified as detailed in paragraphs 3.2.a and 5.2.c. Two unresolved items were identified and are discussed in Paragraphs 4.2 and 5.2.c.

Except for the weaknesses detailed in the violations, and unresolved items, the licensee's actions were found to adequately address the concerns of the Generic Letter 83-28 and were consistent with their commitments provided in the letters listed in Attachment A.

3.0 Equipment Classification

3.1 Program Review

The inspectors reviewed the applicable documents listed in Attachment A and determined that the Equipment Classification Program addressed the following:

-- Safety related components are identified as such in written procedures for procurement, maintenance, and modification.

-- Management oversight of source documentation for the designation of safety related systems and components.

-- Corporate level procedures for safety related component procurement, maintenance, and modification.

-- Periodic Quality Assurance audits of activities impacting safety related equipment.

-- Corrective action program for safety related equipment.

3.2 Program Implementation

The licensee uses the NMP-1 Q-List to identify safety related items at the "system" level. The Q-List specifies the boundaries of the safety related portions of each system by reference to the system drawings (P&ID, elementary diagram, etc.). Further definition is also provided by a computer based "component" level listing.

The Q-List was managed as a controlled document under the cognizance of the corporate QA Engineering staff.

A field comparison of system mechanical drawings and electrical elementary diagrams versus installed equipment was performed and certain components were selected for verification of the implementation of the licensee's Equipment Classification Program. For each component selected, the inspectors reviewed the adequacy of safety classification, procurement, receipt, storage and handling activities as discussed in the following sections of this report.

a. Reactor Protection System (RPS)

Recirculation Pump MG Sets

A visual inspection of the Recirculation Pump Motor Generator Set field breakers confirmed correct component labeling. Components were correctly classified in accordance with the component Q-List.

During the walkdown, all four breaker and control cubicles were found to contain loose nuts, bolts, relay covers, and terminal cover protectors (found on the floor inside the cubicles). Also, in three of the cubicles loose wires (equipped with terminal lugs) were observed lying on the floor.

Station Administrative Procedure 8.5, Housekeeping and Cleanliness Control, Appendix A, provided guidelines for maintaining acceptable fire protection and housekeeping conditions. The procedure required that "trash, rubbish, etc. are not present in cable trays, in or on top of energized switchgear, instrument racks or control cabinets". The above represents a violation of the housekeeping and cleanliness requirements of AP-8.5 (50-220/86-13-01).

Also, eight cables inside the cubicle could not be identified, due to the lack of cable tags.

The licensee's electrical supervisor responded to these findings by issuing work requests (WRs) to correct the above; the WRs (see Attachment A) were completed and the conditions corrected prior to the close of the inspection.

ATWS Control Panel

On September 12, 1986 the inspector visually inspected the ATWS Instrument Panel No. 1S48. The licensee supplied drawing (C-34122-C/1, Revision 2) did not reflect the actual panel wiring configuration. The licensee was notified and their review of this condition established that the drawing had been updated from Revision 2 to Revision 3.

On Sept 15, 1986, the inspector was provided the Revision 3 drawing, reinspected the panel, and noted that the as installed wiring connections were still not in agreement with the drawings. The drawing revision 3 was verified by the inspector to be the most current available at the facility through the Document Control Group.

The inspector then requested the licensee to perform a complete panel wiring verification versus the latest available drawings. The licensee's verification effort confirmed and documented the nonconformities between the panel wiring and drawings on September 15, 1986. The licensee was again notified that the plant documents did not reflect the as-built condition of the panel.

Concurrent with the above verification effort, the Document Control Group found that a Revision 4 of the drawing had been entered in the document control computer system as a "pending revision" by NMPC (Syracuse) Engineering on the morning of September 15, 1986, which was after the inspector's walkdown. The licensee explained that a plant modification had been done early in 1984 and that the drawing had not been updated.

The licensee was asked to provide the modification package or any documentation that would reflect the modification's as installed configuration in the panel. No such information was available onsite to reflect the as-built condition of the panel.

On September 16, 1986 the Revision 4 drawing was delivered to the site by a NMPC (Syracuse Office) engineer and was verified by the inspector to reflect the as-built condition of the panel.

Site Administrative Procedure APN-9, Procedure for Station Permanent and Temporary Modifications and Replacements, Revision 3, (in effect at the time of the above modification), required, in Section 5.3.1 and 5.3.4, that drawings reflecting plant modifications be prepared and delivered to the Station Superintendent in a timely manner. The above drawings were inadequately maintained in that revisions reflecting the installed plant modifications were not provided to the site until more than 24 months after completion of the modification. Failure to maintain drawings reflecting the as-built condition of the facility constitutes a violation of administrative procedures for control of modifications. (50-220/86-13-02)

Subsequent to this inspection, during the week of Septmber 22, 1986, the licensee notified the NRC Resident Inspectors that additional discrepancies had been identified in the ATWS Panel wiring (above). Apparently, the delay in issuing as-built drawings from the 1984 modifications had resulted in subsequent panel wiring modifications being performed with erroneous, unrevised drawings. As a result, an ATWS Panel "Loss of Voltage" annunciator circuit was miswired, rendering it inoperable.

On a loss of voltage to the ATWS Panel, certain circuits, including the Recirculation Pump ATWS Trip, require manual reset action to rearm them. The annunciator is intended to alert the operators to perform the manual reset.

The inoperability of this annunciator could result in undetected inoperability of the ATWS Recirculation Pump Trip if the ATWS Panel circuits were deenergized and reenergized and the operators failed to recognize that the condition required manual reset without the benefit of the annunciation. However, existing restoration procedures and other operable annunciators appear to provide assurance that the manual reset would be accomplished. Other inspection efforts related to this matter were in progress and will be reported in inspection reports Nos. 50-220/86-17 and 86-18.

The NRC Resident Inspectors are conducting followup inspection in this regard; results of their inspection will be reported in NRC Region I Inspection Report 50-220/86-18.

The inspector also checked training records and verified that plant operators had been trained on the modification June 25, 1984.

REMOTE SHUTDOWN PANELS (RSP)

The inspector visually inspected the RSP Channel #12 and found loose bolts, washers, screws, a box of fuses and retaining clips on the floor inside of the cubicle. Cables enter the top

of the panel and it was noted that the cable protector (bushing) on the top panel opening was partially removed. The licensee's electrical supervisor was informed of these conditions and took immediate action to correct the noted conditions by issuing WRs. The above is another example of poor housekeeping and part of violation (50-220/86-13-01).

Further drawing control discrepancies (see ATWS Control Panel above) were identified in that drawing C34813C, Sheet 6, Revision 1, showed field wiring connected to panel terminals R7, R8, R9, R10, R11, S5, S6 and S7. However, physical inspection determined that nothing was wired to the terminals. Drawing C34813C, Sheet 5, Revision 0, showed a shield wire for a drywell pressure instrument channel wired to terminal M4. Physical inspection showed the wire actually landed on terminal M1. Also, drawing C34813C, Sheet 4, Revison 1, shows terminal A13 to be wired for an emergency condenser water level channel which did not exist in the panel; the field wire was actually terminated on point B1.

The licensee representatives were unable to establish the reason for the discrepancies between the drawings and the as-installed wiring but stated that it appeared to be the result of a modification. The electrical supervisor issued a Drawing Change Request to correct the drawings. This is an example of failure to control as-built drawing changes resulting from modification activities. (50-220/86-13-02)

The RSP channel #11 had the same type of drawing configuration control problems as channel #12 and is considered to be a further example of violation 50-220/86-13-02.

Also, during the inspection of Panel 11, the inspector found that three steel panel isolation barriers, which separate non-safety related equipment and wiring from safety related equipment and wiring, were removed and lying on the floor of the cubicle, apparently the result of in-progress or improperly completed maintenance activities.

The licensee was unable to identify the reason for disassembly of the isolation barriers. No in-progress activities were apparently authorized for the panel. The absence of the barriers is also a deviation from the electrical separation criteria requirements of the NMP-1 FSAR, Section IX 3.1.

Five SMB switch covers, and four relay covers were observed lying on the floor of the cubicle. Also a spare instrument was missing from the front of the panel. The electrical supervisor issued WRs for immediate corrective action.

Procedure AP-5.0, Procedure for Repairs, provides the requirements for controlling and documenting maintenance activities on safety related systems, components, and structures and provides for restoration of systems components and structures upon completion of maintenance activities. Failure to control maintenance activities on safety related equipment in accordance with approved procedures constitutes a violation (50-220/86-13-03).

As a result of the discrepancies in as-built drawing accuracy, the sample of modification-affected drawings was expanded for field verification to determine whether the drawings accurately represented existing plant configuration and installed modifications. The expanded sample included:

Modification	Drawing
83-08	C18017-0, Revision 26
82-80.5	C19859-C, Sh. 8&9, Revision 22
82-69	C19859-C, Sh. 2&5, Revision 23

The inspectors noted that the actual drawing revisions had not been made until 1984 for the 1982 modifications. No additional discrepancies were identified.

b. 4160 V Safety Related Switchgear

The under voltage and degraded voltage relays were reviewed for proper safety classification in the Q-List. The relays and timers were physically inspected in the presence of a plant electrician. All components were correctly labeled in accordance with plant documents. No violations were noted.

c. Emergency Core Cooling Systems

1. Mechanical

Portions of the Feedwater/High Pressure Coolant Injection (HPCI), the Shutdown Cooling (SDC), Emergency Cooling (ECS), Containment Spray (CSS), and Control Rod Drive Hydraulic (CRDHS) systems were visually inspected and the following components were selected for verification of safety classification controls.

SOV 117/118	CRDHS Scram Pilot Valves
CV126/1127	CRDHS Scram Valves
SOV NC 16A	Backup Scram Solenoid Valve
SOV NC 16B	Backup Scram Solenoid Valve
80-23/24	Containment Spray Pumps
80-35/16	Containment Spray Valves
SOV 80-16C/D	Containment Spray Solenoid Valves

80-33/34	Containment Spray Heat Exchanger
38-044	SDC Valve and Operator
38-01	SDC Valve and Operator
FCV-30-10	SDC Valve
38-13	SDC Valve and Operator
39-10A	ECS Valve and Operator
39-08A	ECS Valve and Operator
39-06	ECS Valve and Operator

NOTE: The above samples were also used for selection of work request and post maintenance testing review samples.

The inspectors reviewed MRs (listed in Attachment A) for proper safety classification, QC coverage, post maintenance test requirements, maintenance and test equipment used, spare parts used and appropriate supervisory reviews and approvals. A review of the Q-List determined that the above components were correctly classified in Maintenance Requests (MRs) and procedures (listed in Attachment A).

No violations were identified.

d. Instruments and Controls

Instrumentation and controls (I&C) associated with the Reactor Protection, Emergency Core Cooling, and Control Rod Drive Hydraulic systems were visually inspected and the following components selected for verification of safety classification.

PS 80-70/74	CSS Suction Alarm
PT 80-69/75	CSS Pump Discharge Pressure
12K5	HPCI Initiation Logic Circuitry
11K5	HPCI Initiation Logic Circuitry
12K6	HPCI Initiation Logic Circuitry
11K6	HPCI Initiation Logic Circuitry

NOTE: The above samples were also used for selection of work request and post maintenance testing review samples.

The field walk down verified that the above components identified were properly and clearly marked in the field and corresponded to the current revision of system diagrams. The licensee's Q-List properly designated both the systems and components reviewed.

Work Requests (WR's) were examined for selected components of the RPS, HPCI, SDC, ECS, CSS, and CRDHS to verify proper safety classification of repairs and spare parts used. The WRs reviewed are listed in Attachment A. In all cases, safety classification of work and spare parts used was in agreement with the licensee's Q- List and supplementary indices.

No violations were identified.

e. Purchasing and Storage

The licensee's purchasing and storage activities were reviewed using the components selected. The purchase documents (listed in Attachment A) were complete and contained:

-- Proper safety classification

-- Environmental requirements

-- Seismic category

-- National codes criteria (e.g. IEEE, ASME)

-- 10 CFR 21 requirements

-- Shelf life provisions requests

-- Documentation (e.g. Certificates of Conformance, Test Reports) requirements

-- Vendor technical information (e.g. manuals, storage conditions) requirements

The onsite warehouse was toured. Cleanliness, storage environment, item identification, traceability, access restrictions, and shelf life controls were adequate for a sample of items similar to or associated with reviewed Purchase Orders (POs).

The licensee has engaged an agent to evaluate those items in stock subject to age deterioration and to establish a program for shelf life controls. The agent and licensee warehouse personnel have primary roles in this effort that include the following major program aspects:

-- contact of component vendors, composition manufacturers and the NSSS for shelf life information

-- use of published data such as Military Standards

-- consideration of components containing internal parts subject to shelf life considerations

-- marking of components and spare parts as to shelf life expiration dates and their inclusion in a listing

-- removal of expired stored components and spare parts to a hold area until final determination of action is made

-- continuation of this effort for items that were missed and any newly purchased items lacking shelf life information

-- a requirement in purchase documents for vendors to supply shelf life informaiton

No violations were identified, however the following concern is being followed by the Resident Inspectors and will be addressed further in Inspection Report 50-220/86-18.

The recent failure of a Hydraulic Control Unit Scram Outlet Valve Actuator diaphragm, Stock Number 95-26-028, was attributed by the licensee to aging deterioration. The shelf life provisions, purchase, length of service, and status of changeouts for these diaphragms were reviewed with the following results:

-- item composition is Buna-N and nylon

-- stocked spares were purchased in 1975 (Purchase Order 87787)

-- the item was not evaluated during the initial shelf life review

-- an evaluation by the NSSS estimated shelf life to be seven years while the licensee's shelf life program age determination is five years

-- the licensee had removed stocked items to a hold area pending determination of final action

-- approximately half of the installed scram valves, purchased prior to 1970, still contain original diaphragms

-- no service life expectancy determination had been made for this or other items subject to aging deterioration while in service

-- The licensee had not yet decided on a changeout program for these valves nor considered what other valves fall into this category.

4.0 Vendor Interface

4.1 Program Review

The Vendor Technical Manual Upgrade Project Control Plan, Revision 0, details the specific actions, responsibilities, interfaces and sequential steps to implement the vendor information control portion of the Nuclear Utility Task Action Committee (NUTAC) proposal for a Vendor Equipment Technical Information Program (VETIP).

NMPC has contracted an agent to assist in the identification, evaluation, vendor contact, validation, approval, and issuance of accurate and controlled vendor manuals. The agent and Maintenance and Engineering Departments have primary roles in this project. The following are the major aspects of this effort.

-- Manual inventory

-- Reviews and comparison of manual and maintenance procedures and resolution of comments

-- Determination of need for licensing and environmental qualification reviews

-- Field verification of components in plant and determination of appropriate action if differences are found

-- Tracking status of above, assignment of identifiers to validated manuals, and provision of program controls for future updating

No violations were identified.

4.2 Program Implementation

Approximately 1600 vendor manuals were identified; over 500 vendor contacts were completed; plant procedures for almost 200 manuals were reviewed; and maintenance comments resolved for over 90. However, engineering comments, master copy markups and final approval have not been completed for any manual. The projected completion date for the agent's activities is mid-1988 and the licensee review and final approval of all manuals is targeted for mid-1989.

The licensee was informed that the status and anticipated completion dates of the project were not as advanced as anticipated by NRC, based on NRC's understanding of the NMPC responses to Generic Letter 83-28. The licensee was advised that the acceptability of the above would be unresolved pending NRC:RI review. (50-220/86-13-04)

The following were reviewed with respect to vendor supplied manuals and supplementary information.

a. Reactor Protection System

The inspector reviewed the General Electric vendor manual on AK2-25 type breakers used on the Recirculation Pump MG Sets (part of the ATWS pump trip circuit). Currently NMP-1 does not interface vendor technical letters or service advisories with vendor manuals. However the SIL's and SAL's are reviewed by the plant staff for applicability to station procedures and activities.

The technical information supplied by GE suggests the AK breakers being used as Reactor Trip Switchgear breakers should be considered safety related. This licensee's breakers are non-safety related. The licensee has not incorporated the suggested 20 ounce-inch force adjustment on the tripper bar of the breaker and uses the maximum force of 24 ounce-inches. Further advice from GE for AK breaker reliablity suggests the update of the front frame assemblies with the Mobil 28 lubricated bearings. Again the licensee considers the advisory to be applicable for Reactor Trip breakers only.

b. Mechanical Systems

The inspectors reviewed preventive and corrective maintenance procedures, surveillance tests, and post maintenance test instructions listed in Attachment A for technical accuracy and appropriate references to, and incorporation of vendor technical information. The inspectors determined that the documents reviewed appropriately incorporated such information.

The inspectors also reviewed the licensee's preventive maintenance program general implementation status per Administrative Procedure 8.1, Preventive Maintenance, through review of preventive maintenance schedules and completion status, interviews of key personnel, and review of completed maintenance records listed in Attachment A.

NSSS Vendor Recommendations

The licensee is currently addressing NSSS vendor (GE) recommendations. The licensee has initiated action for GE's Rapid Information Communication Services Information Letter (RICSIL) 008 and

Services Information Letter (SIL) 441 concerning Control Rod Drive Scram Anomalies. RICSIL 008 provided the initial notification of problems with scram solenoid valves repair kits.

SIL 441 updated the information in RICSIL 008 and advised that scram solenoid repair kits shipped prior to July 17, 1986 could be defective and should be returned to GE for reinspection. GE also advised that facilities with such kits already installed should continue to use Technical Specification (TS) surveillance testing to demonstrate Control Rod Drive Hydraulic System (CRDHS) operability. SIL 441 provided additional instructions for inspecting solenoid valve core springs and core assemblies to assure proper operation.

The licensee is in the process of gathering the affected repair kits for return to GE. Onsite inspections per SIL 441 will be performed on those kits retained as spares until the reinspected kits are returned from GE. The licensee informed the inspector that one half (previously one third) of the scram pilot valves would be rebuilt during each outage.

c. Instrumentation and Controls

Instrument calibration procedures and data listed in Attachment A were reviewed to determine adequate incorporation of vendor information. The review included a sample of data from recently completed functional tests and calibrations.

No Violations were identified

5.0 Post Maintenance and Surveillance Testing

5.1 Program Review

The inspectors reviewed the procedures in Attachment A to determine that the following were addressed during the performance of maintenance:

-- Written procedures provide for initiating requests for post maintenance testing.

-- Criteria and responsibilities for review and approval of maintenance.

-- Criteria and responsibilities for the basis of safety related/non-safety related activity designated.

-- Criteria and responsibilities for inspection of post maintenance testing.

-- Methods for performing functional testing following maintenance.

-- Administrative controls for documentation of maintenance activities.

No violations were identified.

5.2 Program Implementation

Post maintenance testing is initiated and tracked in accordance with Administrative Procedures AP-5.0, Procedure for Repair, and TDP-8, Post Maintenance Testing Criteria. The inspectors reviewed maintenance activities listed in Appendix A and compared the documentation of those activities with the requirements of the above procedures, the facility Technical Specifications, and available vendor supplied information.

Except for the violations noted below, the licensee's program for assuring adequate post maintenance testing and surveillance testing appeared to be functioning acceptably. The existing practice includes retaining copies of the detailed records of such testing with the maintenance records, providing definitive confirmation of testing adequacy.

a. Reactor Protection System

The inspector determined that the licensee had identified a reliability problem with the MG set voltage regulators and had initiated a plant modification to improve reliability. The inspector reviewed the plant modification package and discussed the licensee's plans with the Technical Services supervisor.

The modification package did not appear to include sufficient information to complete the modification. Examples included recommendations of testing without specifying what type of test to perform. The inspector was informed that the modification is scheduled for the next refueling outage which would give the licensee enough time to complete the modification package for final approval to work.

b. 4160 V Safety Related Switchgear

The inspector determined that the surveillance test procedure with respect to Technical Specification requirements for under voltage and degraded voltage relays was adequately written and the performance of the test showed the set points were checked and verified within the limits of the technical specifications.

c. Mechanical Systems

The inspector reviewed WRs listed in Attachment A for adequate post maintenance testing. Surveillance test procedures and completed surveillance tests performed as post maintenance tests, listed in Attachment A, were also reviewed for technical adequacy, completeness, acceptance criteria, maintenance and test equipment tracking, corrective action and appropriate supervisory review and approval.

During the review of the WRs, the inspector noted that complete listings or descriptions of post maintanence testing were not always provided on the WR cover sheet. In some cases, only one of several applicable procedures would be referenced. In other cases, no specific procedure was referenced. These discrepancies involved WRs issued prior to and during the 1986 refueling outage. The inspector was able to verify documentation of adequate testing for all cases except as noted below.

Backup Scram Valve Testing

In a July 31, 1984 letter to NRC in response to GL 83-28, Item 4.5.1, NMPC provided a justification for not performing on line functional testing of backup scram valves. In a letter dated December 31, 1984, as a result of their evaluation, the licensee advised that they would perform a qualitative test of the backup scram valves during each refueling outage.

The test involves interrupting power to the valves and monitoring the system upstream header pressure to ensure that the valves function properly. The inspector reviewed N1-ISPC-44.2B, Qualitative Test of the Backuup Scram Valves, including data from the first (4/13/86) performance and found it acceptable except for a typographical error in the identification of Annunciator Window F-3-3-2. A temporary procedure changes was issued to correct the error.

The inspector also noted that the licensee uses N1-IMP-44.2, CRD Scram Valves Timing, to insure the proper operation of the scram valves after maintenance on either the scram pilot valve solenoids or the scram valve. The licensee informed the inspector that as a preventative maintenance measure, one half of the pilot and backup scram solenoid valves are repaired or replaced during each refueling outage. The inspector reviewed various WRs listed in Attachment A for performance results of the valve timing after maintenance and no discrepancies were identified.

Control of Measurement and Test Equipment (M&TE)

The inspector reviewed calibration and usage information for a sample of M&TE used on safety related components by the I&C and Maintenance Departments.

The Maintenance Department appeared to be controlling M&TE in compliance with the site administrative procedures.

Administrative Procedure AP-8.4, Procedure for Control and Calibration of Equipment Used in Tests and Inspections, requires that the calibration records for such equipment be maintained at the facility. The I&C Department was unable to provide the inspector with a calibration data sheet for a Transmation Minitemp Calibrator, Serial Number 18497, previously used on safety related equipment. The licensee stated that the calibration had been performed off site and had the data sheet, dated April 16, 1986, forwarded to the site after the inspector's request.

Failure to maintain the above calibration record onsite in accordance with AP-8.4, Section 6.3.1, is an example of failure to follow site administrative procedures (50-220/86-13-05).

AP-8.4, Section 6.3.2, also requires that, between M&TE calibrations, all plant devices calibrated or tested by a piece of M&TE must be recorded in a usage log. Gould Recorder, Serial Number 1155, was used for at least thirteen performances of scram valve timing tests on November 4, 1985. The inspector reviewed the calibration/usage log for the Gould Recorder and determined that the above usage for scram valve testing was not logged. This constitutes a further example of failure to follow AP-8.4 (50-220/86-13-05).

While examining the above recorder, the inspector noted that the individual recorder channel modules (RMS, DC, frequency, etc.) appeared to be individually calibrated and each bore an individual calibration sticker and calibration due date.

I&C personnel informed the inspector that the modules were returned to the vendor for calibration with the recorder but that the modules were also interchanged with other recorders when needed to support tests requiring different recorder configurations. Individual module usage is not recorded on either plant procedure data sheets nor the calibration/usage log. The licensee was unable to substantiate prior usage of individual recorder modules for safety related activities.

Failure to maintain the calibration/usage log for each individually calibrated module is another example of failure to follow site adminsitrative procedure AP-8.4 (Section 6.3.2). (50-220/86-13-05)

Pump and Valve Inservice Testing

Periodic and post maintenance testing of pumps and valves is administered, in part, by the licensee's Pump and Valve Inservice Test (IST) Program. The inspectors reviewed implementation of this program's requirements for selected pumps and valves in the Shutdown Cooling, Emergency Cooling, and HPCI System.

The licensee's IST Program, Revision 4, for the first 120 month inspection interval (since initial plant operation), concluded at the end of the 1986 refueling outage on June 20, 1986. This program was based upon Section XI of the ASME Boiler and Pressure Vessel Code, 1974 Edition, Summer 1975 Addenda and is required by Technical Specification 4.2.6.

The IST Program, Revision 7, for the second 120 month interval (beginning June 20, 1986) is based upon the 1983 edition, Summer 1983 Addenda, of ASME Section XI.

Both Revisions 4 and 7 of the IST Program had been submitted to NRC:NRR for approval; approval had not been granted at the time of this inspection. The licensee had implemented the programs pending approval. Further discussion of licensee implementation and administration of the programs is provided below.

Emergency Cooling System Valves

Emergency Condenser Condensate Return Valve 39-06 (and its sister valve 39-01 in the #11 Train) are air-to-close, spring-to-open, normally closed isolation valves in the reactor condensate return line from the ECS isolation condensers.

TS 3.7.2 lists the valves as Reactor Coolant Isolation valves that are required to open on an ECCS initiation signal and to close automatically to isolate the reactor on indication of an ECS downstream piping rupture.

The IST Program, Revision 4, Pump and Valve List Section, Page A-20, lists valves 39-01 and -06 as ASME XI Category A valves. Category A valves are those for which seat leakage is limited to a specified maximum amount in the closed position for fulfillment of their function .

ASME Section XI, Article IWV 3420 requires seat leakage testing of Category A valves at each refueling outage but not less than once every two years. Consistent with this requirement, IST Program, Revision 4, specifies the performance of periodic leak rate testing. This categorization is consistent with the valves' Reactor Coolant isolation valve functions. However, IST Program, Revision 4, Table C1, Test Schedule, Page 8, lists the valves as Category B (valves for which seat leakage is inconsequential for fufilliiment of their function). This categorization appears erroneous.

The licensee was unable to demonstrate that individual seat leakage tests had been performed on either valve. The licensee demonstrated that the valves had been tested as boundary valves during a 5/29/84 containment integrated leak rate test per 10 CFR 50, Appendix J and stipulated that this latter test met the testing requirements for the valve. Further, the licensee maintained that the normally shut valves are exposed to reactor pressure during normal operations and that any leakage under those conditions is readily apparent. The inspector noted, however, that under the above conditions, the valves are not necessarily exposed to rated pressure across the valve seats.

Further, the second 120 month IST Program, Revision 7, includes both a valve seat leakage test requirement and a relief request to preclude testing valves 39-01 and 39-06. The relief request is based upon a 10CFR50 Appendix J, TS Change Request (dated August 27, 1984) currently pending with NRC to exclude these valves from Appendix J, Type C local leak rate testing.

The inspector stated to the licensee that: (1) the above exemption request had not yet been approved by NRC and therefore could not be implemented without formal written relief from NRC; (2) the Appendix J test requirements are exclusive of and are derived from technical bases that are different from the requirements of ASME XI; and (3) under the requirements of ASME XI, the valves must be considered as reactor coolant isolation valves requiring demonstration of seat integrity.

Failure to periodically test valves 39-01 and 39-06 constitutes a violation of TS 4.2.6 and the IST Program requirements (50-220/86-13-06).

Shutdown Cooling System Valves

Shutdown Cooling loop isolation valves 38-01, 38-02, 38-12, and 38-13 are also listed as Reactor Coolant Isolation Valves in TS 3.2.7.

The valves are identified as Category A valves in the IST Program Revision 4, Field Change 8. Prior to Field Change 6 the valves were subject to seat leakage testing.

The IST Program specified that they be tested per 10 CFR 50, Appendix J as they were then considered to perform the dual role of both containment and reactor coolant isolation valves. (NRC will, on a case basis, accept Appendix J, Type C, testing as an equivalent to the leak testing of ASME XI).

However, on May 31, 1985, the licensee issued Field Change 6 to the IST Program, Revision 4, deleting the leak rate test requirements based upon the submitted but unapproved August 27, 1984 10 CFR 50, Appendix J, TS Change Request to NRC.

Based on the above Field Change, no seat leakage testing required by ASME XI has been performed on the valves corresponding to either of the valve's dual roles as containment and reactor coolant isolation valves. Deletion of the seat leakage testing requirements and failure to perform the seat leakage testing on the subject valves consitutes a second example of the violation of TS 4.2.6 (50-220/86-13-06).

Further, valve 38-12 is a swing check valve. Both Revisions 4 and 7 of the IST program provide for valve exercise testing in only the forward flow direction. In its role as a reactor coolant isolation valve, 38-12 is required to seat in the reverse flow direction consistent with ASME XI, Article IWV3410 (1974/75 Code) and Article IWV 3412 (1983 Code).

The licensee conducts forward flow check valve exercise testing of 38-12 by verifying system flow during normal system operation in accordance with Operating Procedure OP-43. However, no provisions for reverse flow exercise testing the valve have been established or implemented. This is a third example of the violation of TS 4.2.6 (50-220/86-13-06).

Overall Program Implementation

As noted above, NRC:NRR approval for the IST Program has not been granted. By NPMC letter to NRC (Mangan to Zwolinski) dated December 11, 1985, the licensee forwarded Revision 7 of the program and stated that the "second 120 month interval is scheduled to begin after the 1986 refueling and maintenance outage".

At the time of this inspection, the licensee had not fully implemented the program although the above outage concluded on about June 20, 1986. For example, the program provides for

testing of the Shutdown Cooling Pumps. The licensee advised that the procedures for these tests were under preparation and not yet implemented.

The acceptability of overall program implementation and its approval status remains unresolved and has been referred to NRC management for review and disposition. (50-220/86-13-07)

Feedwater/HPCI Pump Testing

During the review of post maintenance surveillance testing, several discrepancies were identified in the licensee's implementation and documentation of the testing.

During 1980 - 1986 the licensee performed extensive and varied maintenance on the motor driven main feed (HPCI) pumps. For the #11 pump, this included replacement of the impeller in 1980 with a new design. During testing following another major overhaul during July, 1986, the licensee found that the #11 pump's performance no longer matched the existing pump performance curve, apparently as a result of the modified impeller and other maintenance and modification over the five year period.

TS 4.1.8 requires that the HPCI pumps be demonstrated operable but provides no quantitative acceptance criteria. Licensee procedures N1-ST-Q3 and N1-ST-IC5 (see Attachment A) are used to demonstrate compliance with TS 4.1.8 and provide quantitative acceptance criteria for total flow (3800 gpm at rated pressure) and agreement with the pump performance curves. These procedures' acceptance criteria were established in accordance with the TS Bases for 4.1.8.

Because the pump could not meet the procedure and TS Bases criteria, the licensee obtained informal NRC:NRR concurrence (NMPC Memo 6706I, Attachment A) to consider only total delivered flow (3800 gpm) as a demonstration of pump operability pending receipt of new pump curves from the pump vendor.

On July 14, 1986, data was collected for both the #11 and #12 HPCI pumps to demonstrate compliance with TS 4.8.1, apparently without the use of either surveillance procedure (above) nor any other formal procedure. The data was recorded in the shift log. The licensee was unable to explain why the existing surveillance procedures had not been revised to reflect the new, though temporary, acceptance criteria and then used for performance of the surveillance.

TS 6.8.1 and Administrative Procedure 4.0, Administration of Operations, require that all operations shall be conducted in accordance with approved procedures. Conduct of the above surveillance activities without the use of an approved procedure constitutes one example of violation (50-220/86-13-08).

The inspector reviewed the above data, including verification of the licensee's calculated conversions and adjustments for pump head, fluid density, and mass flow. Updated pump curves based on analytical data had since been received and were also reviewed by the inspector. No further discrepancies were identified.

On June 18, 1986, procedure N1-ST-C3, Automatic Startup of HPCI System, was performed to demonstrate compliance with TS. 4.1.8a as part of the outage restart activities. The procedure Data Sheet, Return To Normal section (corresponding to procedure Section 8.0) provides for recording the "return to service" Feedwater System and Condensate System alignments. This section would typically be completed to document the overall system status upon completion.

For the June 18 performance, this section was initialed by the operator as complete and the entire procedure was signed off as satisfactory but no system lineup status was recorded.

This failure to record system lineup constitutes a second example of a violation of TS 6.8.1 and AP-4.0 for failure to properly implement procedures (50-220/86-13-08)

Containment Spray Raw Water Pump Testing

During the 1986 outage, the Raw Water Pump #112 underwent a major overhaul. Procedure N1-ST-Q6, Containment Spray and Raw Water Pump Operability Test, was performed on August 14, 1986 to demonstrate compliance with TS 4.1.7 and to collect inservice test and related data. Procedure Section B.2.b.(4) requires observation of Raw Water Pump #112 motor current and provides an acceptable range of 54-66.5 amps.

During the above performance, a motor current of 70 amps was observed. The operator annotated the procedure acknowledging the unsatisfactory data, indicating that it was likely due to a change in the pump/motor characteristics following overhaul. The procedure was signed off by the operator as "satisfactory, corrective action required" and "Step B-2-4-b - need an update on amps". No supervisory or engineering evaluation of the data was evident nor had the procedure been revised during or after the test to reflect a new baseline for the motor operating current.

The motor current acceptance criteria and the trending of motor current are not specific regulatory requirements, (i.e. not required by license conditions or regulation). However, the licensee had established them as criteria for satisfactory completion of the procedure demonstrating normal pump operation.

Signoff of the procedure with unacceptable data and/or without resolution via a procedure revision is a third example of a failure to properly implement procedures (50-220/86-13-08).

d. Instrumentation and Control

Maintenance and surveillance activities for the equipment listed in Section 3.2 were reviewed to verify adequacy of post maintenance testing. In all cases reviewed, post maintenance testing was found to be thorough, adequate, and complete. Those work requests reviewed are listed in Attachment A.

e. Trending and Corrective Action

Trending of equipment failures, malfunctions, and maintenance is performed on an annual basis in accordance with Administrative Procedure AP-5.0, Procedure for Repair. The key plant departments are required to conduct a review of inservice test and inspection, corrective and preventive maintenance activities for similar failures, high failure incidence rates, etc. The departments then issue a report of their results and recommendations.

The Technical Superintendent then reviews the departmental reports and makes recommendations for program or equipment improvements to the Operations Assessment Committee for review and assignment. Assignment items are administered as Site Operations Review Committee (SORC) action items, and are tracked on a computerized open items listing and are required to be formally closed by the submittal of completed actions to the SORC. The inspector reviewed the reports for the Maintenance, I&C, and Computer Department and discussed the status of the licensee's review with the Technical Support Supervisor.

The inspector noted that the licensee also maintains an active participation in the INPO Nuclear Plant Reliability Data System (NPRDS). The licensee has used the NPRDS data for specific failure studies and reviews but does not include an overall review of the plant specific or generic NPRDS data as part of the annual review per AP-5.0. In response to the inspector's comments, the licensee reviewed the above

practices and issued NMPC Memo NMP-20379 (Attachment A) directing how NPRDS data is to be incorporated in the annual reviews.

The inspector also reviewed other relevant programs which evaluate potential problem trends. Technical Support Services performs reviews of Occurrence Reports, NPRDS Input, reports to NRC and other operations assessment mechanisms and reports apparent trends and recommendations to the SORC. These items are tracked by SORC as open action items.

The inspector reviewed the computer listing of SORC open items, finding that several dozen items remained open from 1982 - 1985. These items were not necessarily trending or operations assessment items but spanned many aspects of SORC activity.

Typical examples included:

SORC Item No.	Title
82-86	Need test schedule for CO2 and Halon Systems
83-38	Need procedure change to exercise switches
84-109	Verify that procedure for scram solenoids contains caution for use of loctite
83-44	Tech Spec change needed for containment atmosphere post LOCA vent line modification
83-42	SE on Emergency Condenser mods will require changes in FSAR & procedures

The Technical Superintendent demonstrated that the items remaining from 1982 - 1985 had not been formally closed pending assembly of documentation packages and that all the actual required actions had apparently been completed. One individual had been assigned to prepare the documentation packages and another to verify their completeness and close each item.

6. QA/QC Interface

A Senior Supervisor - Audits and eight auditors, and a Supervisor - QA Services with a staff of six report to the Manager, Corporate Quality Assurance. An onsite Supervisor and seven auditors report to the offsite Senior Supervisor - QA Audits. This group is responsible for conducting audits required by Technical Specifications and the QA Program except for those associated with vendor evaluation and control.

A Supervisor - Quality Engineering and fifteen engineers, Supervisor - Materials and Reliability Engineering with a staff of seven report to the Manager, Quality and Reliability Engineering. The Procurement Quality sub-group is responsible for vendor surveys and evaluations, annual reevaluations, and vendor visits to inspect or conduct surveillances. They also establish and maintain the approved vendor list that is distributed as a controlled document.

The Supervisor - Quality Control and twelve inspectors, and Supervisor - Operations Surveillance with a staff of seven (for Unit 1) report to the onsite Manager, Nuclear QA Operations. The QC group is responsible for performing the inspection/witness points that are established in work procedures or WRs. The Operations Surveillance group conducts a second level monitoring/observation of ongoing activities such as maintenance, modification installation, and QC first level inspections.

The managers of the above three groups and a Manager, Non-Nuclear QA Operations report to the Vice President, Quality Assurance who reports directly to the President of the company.

Audits were conducted on functional areas that were reviewed during this inspection. Checklists were used, deficiencies were followed up, and the audits were completed within the general framework of the schedule.

The Qualified Contractor List (approved vendors) was controlled and maintained. A sample of four vendors asssociated with the purchase orders listed in Attachment A were on the list, had been surveyed, evaulated, and reevaluated, and appropriate vendor visits conducted. Those WRs (Attachment A) classified as safety related had QC Group involvement as evidenced by the inspections and observations documented on Quality Control Inspection Checklists (QCIRs). Also, the QA Surveillance group conducted some second level overview of the functional areas reviewed during this inspection.

No violations were identified.

7.0 Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable, deviations or violations. Two unresolved items were identified during this inspection and are discussed in paragraphs 4.2 and 5.2.c.

8.0 Management Meetings

Licensee management was informed of the sccpe and purpose of the inspection at an entrance meeting conducted September 10, 1986. The findings of the inspection were discussed with licensee representatives during the course of the inspection. An exit meeting was conducted September 19, 1986 at the conclusion of the inspection (see Paragraph 1

for attendees) at which time the licensee management was informed of the inspection results. At no time during this inspection was written material provided to the licensee.

ATTACHMENT A

1.0 References/Requirements

NRC Generic Letter 83-28, "Generic Implications of Salem ATWS Events"

10 CFR 50, Appendix B

PNPS Technical Specifications

FSAR

Quality Assurance Program

ANSI N18.7-1972, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants.

ANSI N45.2.2-1972, Packing, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants.

ANSI N45.2.12-1974, Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants.

ASME Boiler and Pressure Vessel Code Section XI, 1974 edition thru summer of 1975 addenda, and 1983 edition with addenda.

NMPC Ltr to NRC:NRR, GL 83-28 Supplemental Response and Schedule Update, dated 7/31/84

NMPC Ltr to NRC:NRR, Status Update - GL 83-28 Items, dated 4/30/84

NMPC Ltr to NRC:NRR, Status Update - GL 83-28 Items, dated 2/29/84

NMPC Ltr to NRC:NRR, Responses to GL 83-28, Items 2.1 and 2.2.2, dated 9/4/84

1.0 References/Requirements Continued

NRC Safety Evaluation, Generic Letter Items 3.1.1, 3.1.2, 3.2.1, 3.2.2, 4.5.1 for NMP-1 dated March 3, 1986

NMPC Ltr to NRC:NRR, Status of GL 83-28 Items, dated 12/31/85

NMPC Ltr to NRC:NRR, Clarification to Responses to GL 83-28 Items 2.1, 2.2, 3.1.3, 3.2.3 and 4.5.3, dated 7/2/85

NMPC Ltr to NRC:NRR, Commitment for Refueling Outage Tests of Backup Scram Valves, dated 12/31/84

NMPC Ltr to NRC:NRR, Supplemental Response to GL 83-28, Items 2.1, 3.1, 2.2, dated 11/30/84

NMPC Ltr to NRC:NRR, Response to GL 83-38, dated 11/8/83.

NMPC Ltr to NRC:NRR, Schedule Extension, GL 83-28 dated 1/30/85

Corrective Maintenance Review Report - I&C, 2/11/86

Corrective Maintenance Review Report - Electrical & Mechanical, 2/17/86

Corrective Maintenance Review Report - Computer Operations & Maintenance, 1/27/86

NMPC Memo, 6706I, NRC Telecon Re HPCI Operability, 7/15/86

Worthington Pump Division Ltr, Feedwater Pumps Impeller Redesign - Estimated Pump Performance Curve, dated July 22, 1986.

NMPC Memo, MD-86182, Motor Driven Feedwater Pump Expected Performance Curves, 8/7/86

NMPC Memo, HPC1, Surveillance Testing Concerns, 8/1/86 Including Reactor Feel Pump curves (Head Flow, dP-THD, lb/hr-GPM)

1.0 References/Requirements Continued

- NMPC Memo, 7026I, Notes of Telecon with NRC Regarding Implementation of Generic Requirements and App. J. SER, 8/28/86
- NMPC Memo, 69SSP, Notes of Telecon with NRC Regarding Appendix J Technical Specification Changes, 8/19/86
- NMPC Memo, 6846I, Notes of Telecon with NRC Regarding Appendix J Technical Specification Changes, 8/5/86
- NMPC Memo, 6831V, Notes of Telecon with NRC Regarding Appendix J Technical Specification Changes, 7/31/86
- NMPC Memo, 6536I, Notes of Telecon with NRC Regarding Appendix J Technical Specification Changes, 6/20/86
- NMPC Memo, 6481I, Notes of Telecon with NRC Regarding Appendix J Technical Specification Changes, 6/11/86
- NMPC Memo, 6148I, Notes of Telecon with NRC Regarding Appendix J Technical Specification Changes, 4/30/86
- NMPC Memo, 5724I, Notes of Telecon with NRC Regarding Appendix J Technical Specification Changes, 3/7/86
- NMPC MEMO, 5706I, Notes of Telecon with NRC Regarding Appendix J Technical Specification Changes, 3/8/86
- NMPC Memo, NMP 14527, Notes of Telecon with NRC Regarding Appendix J Technical Specification Changes, 10/1/85
- NMPC Memo, MNP 13821, Notes of Telecon with NRC Regarding Appendix J Technical Specification Changes, 9/11/85
- NMPC Memo, (No File #), Notes of Telecon with NRC Regarding Appendix J Technical Specification Changes, 4/16/85
- NMPC Memo, (No File #), Notes of Telecon with NRC Regarding Appendix J Technical Specification Changes, 4/11/85
- IE Info Notice 86-78, Scram Solenoid Pilot Valve (SSPV) Rebuilt Kit Problems, 9/2/86

1.0 References/Requirements Continued

- IE Info Notice 86-71, Recent Identified Problems With Limitorque Operators, 8/18/86

- IE Info Notice 86-34, Improper Assembly, Material Selection, And Test of Valves And Their Actuators, 5/13/86

2.0 Documents Reviewed

2.1 Procedures/Tests

Nine Mile Point Unit 1 Q-List, Revision B

AP-3.4.2, Operations Experience Assessment, Revision 2

TDP-5, Administration of Operations Engineering Assessment Items, Revision 1

TDP-8, Post Maintenance Testing Criteria, Revision 1

DC1-4, Instruction for Control of Station Manuals, Revision 3

N1-1CP-C-FWC-2, FW System Reactor Level Calibration, Revision 0 Performed 6/7/86

N1-1MP-38, Shutdown Cooling Calibration, Revision 4, Performed 6/10/86

N1-1MP-39, Emergency Cooling Timer Maintenance, Revision 0, Performed 3/29/86

N1-1SP-M-36, Lo^2 & Lo^3 Rx Level, Revision 0, Performed 8/18/86

N1-EPM-GEN-R-120&21, Limitorque Valve & MCC Inspection, Revision 0, Performed 6/11/86

N1-EMP-27.7, Maintenance of SDC Pump Motors, Revision 0

N1-EMP-44.18, Limitorque Preassembly of Type SMB&SB, Revision 2, Performed 5/24/86

N1-EMP-44.26, Replacement of HFA Relays, Revision 0, Performed 3/13/86

N1-NMP-6.2, Overhaul of CRD, Revision 0

N1-MMP-6.3, Installation of CRD, Revision 1

N1-MMP-8.1, Overhaul of SDC Pumps, Revision 0

N1-MMP-8.2, Maintenance of SDC Valves, Revision 0

N1-MMP-8.3, Maintenance of SDC Valves, Revision 0

N1-MMP-8.4, Maintenance of SDC Valves, Revision 0

N1-MMP-8.5, Maintenance of SDC Valves, Revision 0

N1-MMP-9.1, Maintenance of Emergency Condenser Steam Isolation Valve, Revision 0

AP-8.4, Procedure for Control and Calibration of Equipment used in Tests and Inspections, Revision 4

N1-MMP-9.2, Maintenance of Emergency Condenser DC Motor Operated Steam Isolation Valves, Revision 0

N1-MMP-9.3, Overhaul of Emergency Condenser Condensate Isolation Valves

AP-5.0, Procedure for Repair, Revision 7

AP-4.0, Administration of Operations, Revision 6

AP-2.0, Protection and Control of Procedures, Revision 6

AP-3.4.1, Administration of Technical and Safety Reviews, Revision 0

S-MI-GEN-002, Maintenance Instructions for Writing Procedures, Revision 0

S-IDP-PO, Outline for I&C Procedures, Revision 6

TDP-6, NPRDS Failure Reporting, Revision 1

TDP-9, Independent Safety Engineering Group, Revision 0

NEL-0146, Control & Distribution of Vendor Documents, Revision 0

AP-8.1, Preventive Maintenance

AP-10-2.2, Procedure for Reporting Variations From Normal Plant Operations, Defects and Noncompliances, Revision 1

N1-EPM-C16, Data Sheet, Protective Relay Setting & Testing Checklist, Revision 7, Performed 2/11/86, 1/24/86

PTP-232.66, Preoperational Test - Replacement of RPS HFA Relays, 4-111A/40 and 4-111B/40, Revision 0, Performed 3/20/86

AP-8.5, Housekeeping and Cleanliness Contract, Revision 1

N1-ST-C3, Automatic Startup of HPCI, Revision 2, Performed 6/15/86 and 6/18/86

Containment Spray System Description, Revision 0

Feed Water/HPCI System Description, Revision 0

Shutdown Cooling System Description, Revision 0

Emergency Cooling System Description, Revision 1

Control Rod Drive Hydraulic System Description, Revision 0

1986 Occurrence/LER Log (Nos. 86-01 to 86-1542)

SORC Open Item List, dated 9/11/86

N1-ST-ICS, HPCI Surveillance with Inoperable Component Test, Revision 3, Performed 7/1/86

N1-ST-Q3, HPCI Pump Operability Test, Revision 1, Performed 8/12/86

N1-MMP-7.1, Overhaul of Electrical FW Pumps Data Sheet, Performed 7/4-13/86

POT-223.12, Replacement of RPSHFA Relay 12K6, Revision 0, Performed 3/18/86

POT-223.60, Replacement of RPSHFA Relay 11K23, Revision 0, Performed 8/18/86

POT-223.9, Replacement of RPSHFA Relay 11K5, Revision 0, Performed 8/18/86

POT-232.11, Replacement of RPSHFA Relay 12K5, Revision 0, Performed 3/14/86

POT-233.10, Replacement of RPSHFA Relay 11K6, Revision 0, 3/13/86

N1-EPM-V6, Visual Inspection of HFA Relays for SIC 44, Revision 2 and IE Bulletin 84-02, Revision 1

N1-EPM-V5, Procedure for Testing MOV's Utilizing MOVATS, Revision 1

N1-ST-Q2, CRD Pumps Flow Rate Check, Revision 4, Performed 8/18/86

N1-ST-Q6, Containment Spray and Raw Water Pumps Operability Test, Revision 18, Performed 8/14/86

N1-ST-R1, Control Rod Scram Insertion Time Test, Revision 7, Performed 8/8/86

N1-1CP-Q-80, Containment Spray Flow and Pressure Calibration, Revision 5, Performed 5/14/86 and 8/8/86

N1-1MP-44.2, CRD Scram Valve Timing, Revision 0, Performed 5/10/86 and 8/25/86

N1-1SP-C-25.3, Local Leakage Test Containment Spray Raw Water Heat Exchanger, Revision 5, Performed 3/11/86 and 5/20/86

N1-MMP-13.1, Maintenance of Containment Spray Pump, Revision 1, Performed 3/20/86 and 4/2/86

N1-MMP-13.6, Maintenance of Containment Spray Heat Exchangers, Revision 0, Performed 5/25/86

N1-MMP-13.7, Maintenance of Containment Spray Valves, Revision 0, Performed 4/2/86 and 5/10/86

NMP-13.4, Maintenance of Containment Spray Inlet Isolation Valves, Revision 0, Performed 5/12/86 and 3/28/86

N1-IMP-SOV-3, Repair/Replacement of Miscellaneous Solenoid Operated Valves, Revision 0

N1-IMP-SOV-2, Repair/Replacement of CRD Scram Pilot Solenoid Valves, Revision 0, Performed 5/3/86

N1-IMP-SOV-1, Replacement/Repair of Solenoid Operated Valves Which Control Primary Containment Isolation Valves, Revision 1

N1-ISP-C44.2B, Qualitative Test of the Backup Scram Valves, Revision 0, Performed 4/13/86

DCI-1, Station Incoming/Outgoing Correspondence Control Instruction, Revision 2

DCI-3, NMP Drawing Control Instruction, Revision 7

DCI-4, Instructions For Control Of Station Manuals, Revision 3,

ND-100, Plant Modifications, Revision 1

ND-160, Drawing Change Control, Revision 0

ND-220, Plant Configuration Verification, Revision 0

TDP-8, Post Maintenance Testing Criteria, Revision 1

N1-IMP-38, Shutdown Cooling, Revision 4

N1-ST-Q7, Manual SCRAM Instrument Test, Revision 6

N1-EST-C5, Emergency Undervoltage Relay Surveillance Test, Revision 1

APN-9, Procedure For Station Permanent and Temporary Modifications and Replacement, Revision 3

APN-17, Management of Station Records, Revision 5

N1-EPM-C12, Type AK Breaker/Motor Inspect and Breaker Load Test, Revision 2

2.2 Vendor Manuals

Valve No.	Valve Model	Limitorque Operator
38-01&13 AC	Grave Model 900	SMB-2
38-02 DC	Grave Model 900	SMB-3
38-09/10/11 AC	Fisher Type 657AR	
31-07/08	Rockwell Class 900	SMB-2
31-01/02	Chapman #SP923	
S0117/118	ASCO HVA 90 4052A	

Pumps

NU-02A/B/C	Pacific Model HVCH
FWP 11 & 12	Worthington 8WNC-141

2.3 Prints/Drawings

18012-C, Reactor Containment Spray System, Sheet 2, Revision 13
18016-C, Control Rod Drive, Sheet 1, Revision 13
18016-C, Control Rod Drive, Sheet 2, Revision 11
22008-C, Control Rod Drive Interconnection Wiring Diagram, Sheet 1, Revision 8
22008-C, Control Rod Drive Interconnection Wiring Diagram, Sheet 2, Revision 3
22008-C, Control Rod Drive Interconnection Wiring Diagram, Sheet 3, Revision 5
22008-C, Control Rod Drive Interconnection Wiring Diagram, Sheet 4, Revision 4
18017-C, Emergency Cooling System, Revision 24
18018-C, Reactor Shutdown Cooling, Revision 10
18005-C, Feedwater Flow H.P., Sheet 1, Revision 11
18005-C, Feedwater Flow H.P., Sheet 2, Revision 13
19859-C, Reactor Protection System Trip Diagram, Sheet 1, Revision 9

19859-C, Reactor Protection System Elementary Wiring Diagram, Sheet 2, Revision 27
19859-C, Reactor Protection System Elementary Wiring Diagram, Sheet 5, Revision 26
19859-C, Reactor Protection System Elementary Wiring Diagram, Sheet 6, Revision 21
19859-C, Reactor Protection System Elementary Wiring Diagram, Sheet 8, Revision 31
19859-C, Reactor Protection System Elementary Wiring Diagram, Sheet 8A, Revision 8
19859-C, Reactor Protection System Elementary Wiring Diagram, Sheet 9, Revision 16
19859-C, Reactor Protection System Elementary Wiring Diagram, Sheet 10, Revision 19
19859-C, Reactor Protection System Elementary Wiring Diagram, Sheet 10A, Revision 5
19859-C, Reactor Protection System Elementary Wiring Diagram, Sheet 17, Revision 11
C-19408-C/2, One-line Diagram Main and Secondary Connections, Revision 19
C-19409-C/1A, One-line Diagram Auxiliary System (Powerboards), Revision 3
C-19409-C/3, One-line Diagram 4160V Emergency Boards 102/103, Revision 20
C-19410-C/11, 4.16kV Emergency Powerboard and DG #102 UV Relays, Revision 5
C-19410-C/12, 4.16kV Emergency Powerboard and DG #103 UV Relays, Revision 5
C-34122-C/1, Aux Control Cab 1S48 ATWS Channel #11, 3/9/82, Revision 2
C-34122-C/1, Aux Control Cab 1S48 ATWS Channel #11, 8/29/82, Revision 4
C-34122-C/1, Aux Control Cab 1S48 ATWS Channel #11, 7/1/86, Revision 3
C-34122-C/2, Aux Control Cab 1S48 ATWS Channel #12, 8/29/82, Revision 4
C-34122-C/2, Aux Control Cab 1S48 ATWS Channel #12, 7/1/86, Revision 3
C-34122-C/2, Aux Control Cab 1S48 ATWS Channel #12, 3/9/82, Revision 2
C-34814-C/1, Remote Shutdown Panel #11, Revision 5

C-34814-C/2, Remote Shutdown Panel #11, Revision 9

C-34814-C/3, Remote Shutdown Panel #12, Revision 5

C-34814-C/4, Remote Shutdown Panel #12, Revision 7

C-34816-C/2, Remote Shutdown Panel #12, Revision 3

C-34816-C/4, Remote Shutdown Panel #12, Revision 1

C-34816-C/5, Remote Shutdown Panel #12, Revision 0

C-34816-C/6, Remote Shutdown Panel #12, Revision 1

2.4 Work Requests

37171, Replace HFA Relays - CS Valve & Recirc Pump Trip, 4/15/86
14168, Repair Limitorque Operators, 32-NG(08 B), 5/26/86
10582, Replace CRD 26-23 & Position Indicator, 4/25/86
100168, Repair #11 MDFP-Failed HPC1 Head/Flow Test, 7/14/86
014341, Recirc Valve 30-31 Would Not Stroke During HPC1 Test, 5/17/86
010238, Overhaul #12 MDFP, 3/86
023454, Overhaul #12 MDFP, 5/86
37070, Replace HFA Relays 11K5, 3/31/86
37065, Replace HFA Relays 11K23, 3/13/86
37150, Replace HFA Relays 12K6, 3/14/86
37097, Replace HFA Relays 11K6, 3/13/86
32408, HCU 14-19 Scram Outlet Valve CV127, Diaphram Leak, 4/29/85
32893, Core Spray Topping Pump 111, Inspection, 3/1/86
34415, Core Spray Pump 111, Heater Repair, 8/27/85
32158, Containment Spray Pump 121, Rebuild, 12/17/85
32686, Containment Spray HX 111, Weld Repair, 5/12/85
32689, Containment Spray HX 121, Weld Repair, 5/20/85
32713, Containment Spray HX 111, Weld Inspection, 6/1/85
010056, Containment Spray HX, 121, Head Removal, 3/13/86
014456, Containment Spray HX 121, End Plate Removal For Tube Test, 5/28/86
010231, Containment Spray Block Valve 80-11, Leaking, 5/30/86
32172, HCU 42-19, Scram Pilot Valves 117/118, Rebuild, 11/4/85
30776, HCU 50-27, Scram Pilot Valve 117, Rebuild, 3/5/85
32173, HCU 42-23, Scram Pilot Valves 117/118, Rebuild, 11/4/85
32174, HCU 42-27, Scram Pilot Valves 117/118, Rebuild, 11/4/85
32176, HCU 42-35, Scram Pilot Valves 117/118, Rebuild, 11/4/85
32175, HCU 42-31, Scram Pilot Valves 117/118, Rebuild, 11/4/85
32177, HCU 46-23, Scram Pilot Valves 117/118, Rebuild, 11/4/85
32178, HCU 46-35, Scram Pilot Valves 117/118, Rebuild, 11/4/85
32179, HCU 42-39, Scram Pilot Valves 117/118, Rebuild, 11/4/85
32180, HCU 42-43, Scram Pilot Valves 117/118, Rebuild, 11/4/85
32181, HCU 26-51, Scram Pilot Valves 117/118, Rebuild, 11/4/85
32182, HCU 22-51, Scram Pilot Valves 117/118, Rebuild, 11/4/85
32183, HCU 26-47, Scram Pilot Valves 117/118, Rebuild, 11/4/85
35550, HCU 38-11, Scram Pilot Valves 117/118, Rebuild, 11/4/85
010763, New Containment Spray HX 111, Cover Replacement, 5/29/86
010273, Containment Spray Pump 111, Rebuild, 6/15/86
011011, Rosemont Model 1153 Series D, E.Q. "O" Ring Replacement, 4/3/86
010987, Containment Spray Inlet IV 80-15, Binding, 4/21/86
010235, Containment Spray Inlet IV 80-16, Leaking, 4/6/86
31281, Containment Spray Valves, Leaking Solenoids, 4/17/85

010565, Containment Spray Breaker for 80-03, 5/29/86
10223, RPS Instruments (ATWS) IE Notice 85-02 Verify Prop, 3/9/86
10778, Replace O-Rings On Transmitter PT 36-21C ATWS, 3/18/86
13877, Re-brush MG-set 162, 6/16/85
14094, RSP #11, Replace barriers & SBM SW Brackets, 9/17/86
14095, RPS #12 Repair/replace Tubing For Incomming Cable, 9/17/86
14096, RPS #11 Repalce Covers On Aux Relays And SMB SWs, 9/17/86
15725, Replace Burntout 2" Relay On MG-set 172, 6/11/86
16296, ATWS Level Xmitter. Test Valve Leaks, 6/20/86
24489, Trouble Shoot Shutdown Cooling Pump #13, 3/21/84
25084, Inspect Breaker On Shutdown Cooling Pump #11, 3/20/84
25935, Investigate Breaker On Reactor Shutdown Cooling Pump, 4/5/84
31305, Re-brush MG-set 172, 2/25/85
31433, Investigate LCVs Operation From Remote Shutdown, 2/15/84
31995, Re-brush MG-set 171, 7/1/85
31997, Re-brush MG-set 162, 7/1/85
31999, Re-brush MG-set 11, 7/1/85
33060, SDV Level Instrument Does Not Work, 6/3/85
33278, Replace Whitey Valves On Transmitters 36-21, A,B,C, 6/12/85
33914, Replace Light Switch On MG-set 131, 12/9/85
34853, Re-brush MG-set 172, 9/30/85
35570, SCRAM Pump Vol Water Lvl Inspect/repair/replace, 11/16/85
35837, RSP's Rx Water Temp, Change Scales For Non-linear, 11/25/85
36033, RSP #11 Calibrate Rx Water Temp, 11/24/85
37171, Replace HFA Relays Core Spray Vlv & Recirc Pump, 2/11/86
100181, Investigate MG-set 141 For Problems, 7/6/86
100623, Replace Voltage Regulator MG-set 141, 7/17/86
105004, RSP #11 Meter Internals Missing, Replace Meter, 9/17/86
105026, RSP #12, Check Gaitronics Wiring, Write DCR If Changed
105027, RSP #11 Check Gaitronics Wiring, Write DCR If Changed
105674, Lable Cable Numbers Correctly in Rx Recir Control, 9/16/86
105675, Clean Cabinet RY21C, RY21A, RY20A, RY21D, RY20D, 9/16/86

2.5 Purchase Orders and Associated WRs

40697, HFA Relays (WR 37070)
54333, Shutdown Cooling Pump Shaft Sleeve Collar (WR 22381)
22123, Bearings (WR 22381)
94420, Flexitallic Bonnet Gasket (WR 34932)
22014, Index Tube (WR 011312)
50106, Valve Poppet (WR 34932)
94434, Lubricant (WR 011312)
74123, Cylinder and Flange Assembly Tube (WR 11312)
21632, Rods and Tubes (WR 11312)
74124, O-Rings Piston Tube (WR 11312)
87787, Scram Valve Diaphrams (WR 105641)
1-86-0369, Replacement of HFA Relays RPS-11/4-1118140, 4/6/86
1-86-1195, Overhaul of Electrical FW Pump #11, 7/4-13/86
1-86-0144, Replacement of HFA Relay 11KS

1-85-257, Replacement of Air Diaphram on Scram Outlet Valve on HCU 14-19, 4/29/85
1-85-269, Containment Spray HX 111, Weld Repair, 5/13/85
1-85-276, Containment Spray HX 111, Weld Examination, 5/31/85
1-86-0134, Containment Spray HX 121, Head Removal, 3/12/86
1-86-1037, Containment Spray HX 121, End Plate Installation, 5/27/86
1-86-1003, Containment Spray Block Valve 80-11, Picking Replacement, 5/25/86
1-85-0474, HCU 42-19 Scram Pilot Valve 117/118, Rebuild, 11/4/85
1-86-0402, New Containment Spray HX 111, Cover Replacement, 4/9/86
1-86-0287, Replace "O" Rings in Signal Transmitters, 4/4/86
1-85-121, SOV for 80-35 Replacement, 4/16/86

2.7 Audits/Vendor Control

SY-RG-IN-86003, Syracuse Nuclear Technology
SY-RG-IN-86011, Implementation of NRC Generic Letter 83-28, Salem ATWS Event
SY-RG-IN-85014, Nuclear Design Engineering
SY-RG-IN-86006, CPS Electric
SRAB Audit B, Operations Activities
GE Wilmington Nuclear Energy Products Division (survey, evaluations, visits, etc.)
GE Power System Management Business Department (visits, etc. at corporate offices and three manufacturing locations)
Worthington Pump Corporation (visits, etc.)

2.8 Design Change Requests

N1Y86MX001LG040, RSP #12 Correct drawings for field installation, 9/18/86

2.9 Training

NMP Unlicensed Operators training Curricula/schedule 1984, Revision 0