

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-410/87-33

Docket No. 50-410

License No. NPF-69

Licensee: Niagara Mohawk Power Corporation
301 Plainfield Road
Syracuse, New York 13212

Facility Name: Nine Mile Point Nuclear Station, Unit 2

Inspection At: Scriba, New York

Inspection Conducted: August 24-28, 1987

Inspector: L. J. Wink
L. J. Wink, Operations Engineer

9/15/87
date

Approved by: D. J. Lange Jr. D. J. Florek.
D. J. Florek, Acting Chief,
BWR Section, DRS

9-16-87
date

Inspection Summary: Inspection on August 24-28, 1987 (Report No. 50-410/87-33)

Areas Inspected: Routine, unannounced inspection by one region-based inspector of the overall power ascension test program including procedure review, test witnessing and test results evaluation, surveillance test witnessing, QA interfaces, and independent measurements and verifications.

Results: No violations were identified.

Note: For acronyms not defined, refer to NUREG-0544, "Handbook of Acronyms and Initialisms."



Details

1.0 Persons Contacted

Niagara Mohawk Power Corporation

- *R. Abbott, Station Superintendent
- G. Carlisle, Lead STD&A Engineer
- M. Colomb, Station Shift Supervisor
- *J. Conway, Power Ascension Manager
- T. Devik, STD&A Engineer
- *P. Eddy, Site Representative, New York State PSC
- R. Gayne, Assistant Superintendent of Operations
- J. Harris, Shift Test Supervisor
- D. Helms, Lead Shift Test Supervisor
- M. Jones, Superintendent of Operations
- *P. MacEwan, Site Representative, NYSEG
- G. Moyer, Station Shift Supervisor
- D. Oakes, STO Engineer
- K. Picard, STD&A Engineer
- *A. Pinter, Licensing Engineer
- B. Rudd, Shift Test Supervisor
- T. Tomlinson, Reactor Analyst

NRC Personnel

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

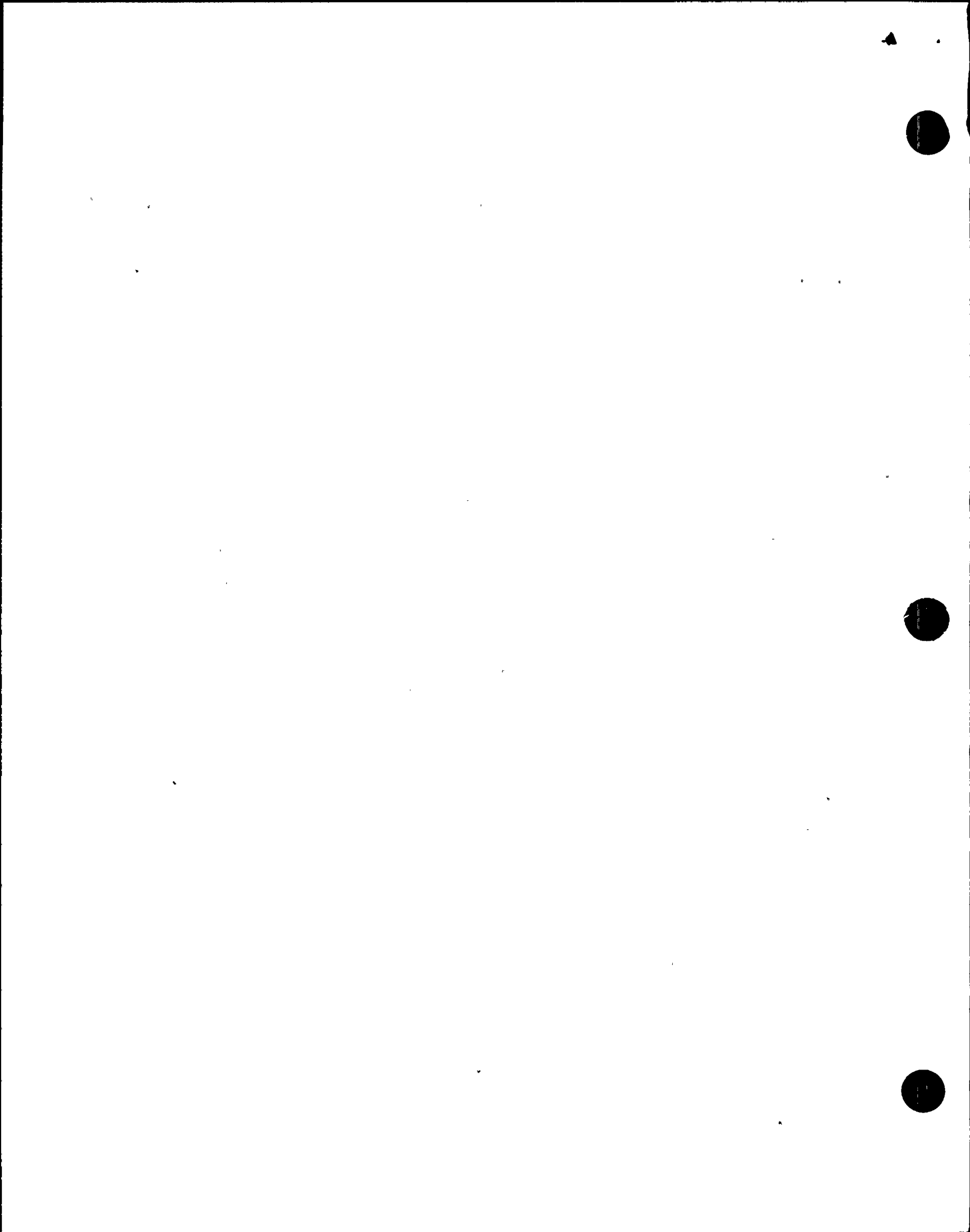
*Denotes those present at the exit meeting on August 28, 1987.

The inspector also contacted other members of the Licensee's Operations, Technical, Test and QA staffs.

2.0 Operations Surveillance Test Witnessing

Scope

The performance of the Operations Surveillances discussed below were witnessed by the inspector to assure that technical specification surveillance requirements were being adequately met. The inspector verified, through direct observations, that the surveillances were performed in accordance with technically adequate procedures by qualified personnel and that appropriate test prerequisites and limiting conditions for operations were satisfied. The inspector also verified that the systems were returned to normal alignments following the completion of testing.



Discussion

On August 5, 1987, with the unit at 24% of rated thermal power and the generator on-line, carrying a load of 180MWe, the inspector witnessed the following operational surveillances:

- N2-OSP-RPS-W001, Weekly Turbine Valve Cycling
- N2-OSP-RPS-M001, Monthly Turbine Valve Cycling and Control Valve Fast Closure Scram Functional Test
- N2-OSP-RPS-M002, Monthly Functional Test of the RPS Turbine Stop Valve Closure Logic

In addition, during these tests the inspector also witnessed data collection for N2-BOP-30, Main Turbine Initial Startup (Section 6.8, Turbine-Generator Initial Synchronization).

The inspector witnessed the briefing of operations personnel, I&C technicians and test engineers participating in the tests by the station shift supervisor. The briefing was comprehensive and the responsibilities of participants were clearly assigned. Since the RPS functions for turbine control valve fast closure and turbine stop valve closure are not required below 30% of rated thermal power, the monthly surveillances directed the enabling of these functions for testing below 30% power (by removing an automatic bypass). The inspector observed the I&C technician remove the rosemont trip units (C72-N652 A, B, C and D) to enable these functions.

The initial testing consisted of individual cycling of each main turbine control valve and stop valve. During this testing the inspector observed overall plant response, the response of the EHC system and the receipt of appropriate annunciators. An I&C technician was observed to be verifying that appropriate relays changed state, as expected, at the control room back panels. Following these individual valve tests, the main turbine stop valves were cycled partially closed, in pairs, to verify the divisional RPS logic for turbine stop valve closure. On completion of the RPS functional tests the rosemont trip units were re-installed to enable the automatic bypass function. Final testing was then performed on the main turbine combined intermediate valves.

During the test the inspector observed overall good coordination and control of test activities by the station shift supervisor. Participants performed their assigned duties in a competent and professional manner. The surveillance tests were completed with satisfactory results.

Findings

No unacceptable conditions were identified.



3.0 Power Ascension Test Program (PATP)

3.1 References

- Regulatory Guide 1.68, Revision 2, August 1978, "Initial Test Program for Water Cooled Nuclear Power Plants."
- ANSI N18.7-1976, "Administrative Controls and Quality Assurance for Operations Phase of Nuclear Power Plants."
- Nine Mile Point Unit 2 (NMP-2) Technical Specifications, July 2, 1987.
- Nine Mile Point Unit 2 Final Safety Analysis Report (FSAR) Chapter 14, "Initial Test Program."
- Nine Mile Point Unit 2 Safety Evaluation Report.
- Nine Mile Point 2 AP-1.4, Startup Test Phase, Revision 5.

3.2 Overall Power Ascension Test Program

The inspector held discussions with the power ascension manager (PAM), the lead startup test, design and analysis (STD&A) engineer and other members of the PATP staff to assess the status of testing, the test results evaluation process and the preparation and approval of test procedures. In addition, the inspector attended the daily power ascension management meetings.

On August 20, 1987 at the completion of a scheduled 10 day outage, the unit was restarted. On August 21, 1987, the licensee formally began testing in test condition 2. At the beginning of the inspection period, the unit was holding at 15% power for the performance of main turbine overspeed trip tests. Following completion of these tests power was increased to 20-25% and testing of the plant process computer commenced. The plant remained in this condition for the balance of the inspection.

The test results review of test condition 1 was completed by the SORC on August 14, 1987 and accepted by the general superintendent on August 15, 1987. The inspector verified that all testing which had been preliminarily reviewed during previous inspections had been formally reviewed by the SORC and accepted by the general superintendent.

3.3 Power Ascension Test Procedure Review

Scope

The procedures of Attachment A were reviewed for the attributes identified in Inspection Report No. 50-410/86-38, Section 4.3.



Discussion

The procedures reviewed were generally acceptable. Those procedures marked with asterisk in Attachment A are revisions of previously reviewed procedures which reflect an ongoing licensee follow-up review of issued procedures.

The inspector had several questions and comments concerning procedures for test condition 5. These were all satisfactorily answered and addressed during discussion with the PAM.

Findings

No unacceptable conditions were identified.

3.4 Power Ascension Test Witnessing

Scope

The inspector witnessed the performance of the power ascension test discussed below. The performance of this test was witnessed to verify the attributes previously defined in Inspection Report No. 50-410/86-64, Section 2.3.

Discussion

N2-SUT-13-2, Process Computer

This test was begun on August 27, 1987, with the reactor at 22% of rated thermal power with an equilibrium xenon concentration in the core. The inspector witnessed portions of the test which verified process computer programs OD-18 (LPRM Alarm Trip Recalculation), OD-3 (Core Thermal Power and APRM Calibration) and P4 (10-Minute Core Energy Increment). The inspector also witnessed the initial steps to verify P1 (Periodic Core Evaluation) which were continuing at the conclusion of this inspection.

During the portions of the test witnessed by the inspector, the licensee experience some minor difficulties with the P4 edit. The inspector observed the troubleshooting efforts and the successful resolution of this problem.

Findings

No unacceptable conditions were identified.



3.5 Power Ascension Tests Results Evaluation

Scope

The power ascension test results listed in Attachment B and discussed below were evaluated for the attributes identified in Inspection Report No. 50-410/86-64, Section 2.1.

N2-SUT-5-1, Control Rod Drive System

This test was performed at a reactor power of 17.8% of rated and a reactor pressure of 950 psig in conjunction with the reactor scram of the shutdown from outside the main control room demonstration (N2-SUT-28-1). The objective of the test was to monitor the scram performance of four selected rods and verify no degradation since the initial testing in test condition heatup.

A test exception was identified when it was found that the actual scram insertion times of the control rods could not be determined for comparison with the Level 1 acceptance criterion. This was due to the manner in which the scram was initiated during the shutdown from outside the main control room demonstration (opening of EPA breakers for the scram pilot valve solenoids). To resolve this test exception, the licensee used an alternative analysis method to demonstrate that no degradation had occurred in the scram performance of the selected rods. The method involve calculating the scram times from notch position 45 to three other positions (notches 39, 25 and 5) and comparing these times to those measured during the initial scram tests of the rods in test condition heatup. This method showed a slight decrease in times overall, indicating that no degradation had occurred.

The inspector's review of the GETARS trace for this test and the original scram time test confirmed the licensee's conclusion.

N2-SUT-13-1, Process Computer-Test Condition 1

There were no acceptance criteria associated with this test. The test verified proper TIP axial alignment (established in test condition heatup) relative to the fourth fuel spacer and verified that the process computer edit, OD-8 (Present LPRM readings), agreed with the LPRM instrumentation on the main control room panel (P608). Two minor test exceptions were identified and successfully resolved.



N2-SUT-74-1, Offgas System TC-1

This test was performed twice following interim resolution of problems with the off gas system. The test was first performed at 3.7% of rated thermal power and subsequently at 18.4% of rated thermal power. Both performances of the test revealed problems with system instrumentation (moisture element and hydrogen analyzer) and overall system performance compared to acceptance criteria. The overall system performance differed from the acceptance criteria, in part, due to the acceptance criteria being derived from expected performance at rated conditions. The Level 1 acceptance criterion was, however, easily satisfied with measured release rates of radioactive gaseous and particulate effluents a small fraction of the technical specification limits. The licensee plans to correct identified instrumentation problems and reperform this test in test condition 2 with revised system performance criteria to reflect off-rated operation.

N2-PP-1, Test Plateau 1 Procedure

The inspector reviewed this procedure to insure that all planned testing for test condition 1 had been completed and that all open test exceptions could be safely carried forward to latter test conditions. As discussed in a previous report (Inspection Report No. 50-410/87-27), the licensee had deferred portions of four tests involving the steam condensing mode of the RHR system and one test to complete the confirmation of proper IRM/APRM overlap.

The inspector also reviewed all open test exceptions from test condition 1. The inspector concluded that the identified tests and open test exceptions could be safely carried forward to subsequent test conditions.

N2-SUT-10-1, IRM Performance

This test was performed during the startup to test condition 2 to close plateau exception N2-PP-1-1, which allowed deferral of the confirmation of proper IRM/APRM Overlap to test condition 2. Each APRM was verified to be on-scale prior to the IRMs exceeding their upscale rod block setpoint and the ability of the IRMs to produce a scram with the mode switch in "startup" was confirmed. A level 2 test exception was identified when the data indicated that IRM/APRM overlap was not the desired full decade.

These results were still being reviewed by the licensee and no resolution to the identified test exception had been formally proposed. The inspector's review of the test data confirmed that the technical specification required 1/2 decade of overlap was available. The inspector will follow the licensee's resolution of this test exception during a future routine inspection.



N2-SUT-14-2, RCIC System

This test was performed at a reactor pressure of 153 psig to establish baseline surveillance data with the system in the CST-TO-CST test mode. A level 1 test exception occurred when system time to rated flow exceeded the acceptance criterion of 30 seconds (measured time 38.6 seconds). A level 2 test exception was also documented for minor steam leaks. These results were still being reviewed by the licensee and no formal resolutions have been proposed.

The inspector's review of the GETARS traces revealed that, at 30 seconds, system flow had reached 575 GPM (rated is 600 GPM) with a pump discharge pressure of 282 psig. Steady state flow was 600 GPM with a pump discharge pressure of 300 psig. This discharge pressure is approximately 50 psi higher than the pressure during actual vessel injection. The inspection also determined that the valves in the return line to the CST were fully opened during this test. Based on this review, and results obtained during actual vessel injections, the inspector concluded that the test exception was due primarily to excessive line losses in the CST-TO-CST test mode and is not reflective of a system operability problem.

The inspector will follow the resolution of these test exceptions during a future routine inspection.

Findings

No unacceptable conditions were identified.

4.0 QA Interface with the PATP

The inspector reviewed the QA Surveillance Reports listed below:

QASR-87-10624, Feedwater Test Results Review, Dated August 6, 1987

QASR-87-10631, Remote Shutdown Test Performance, Dated August 10, 1987

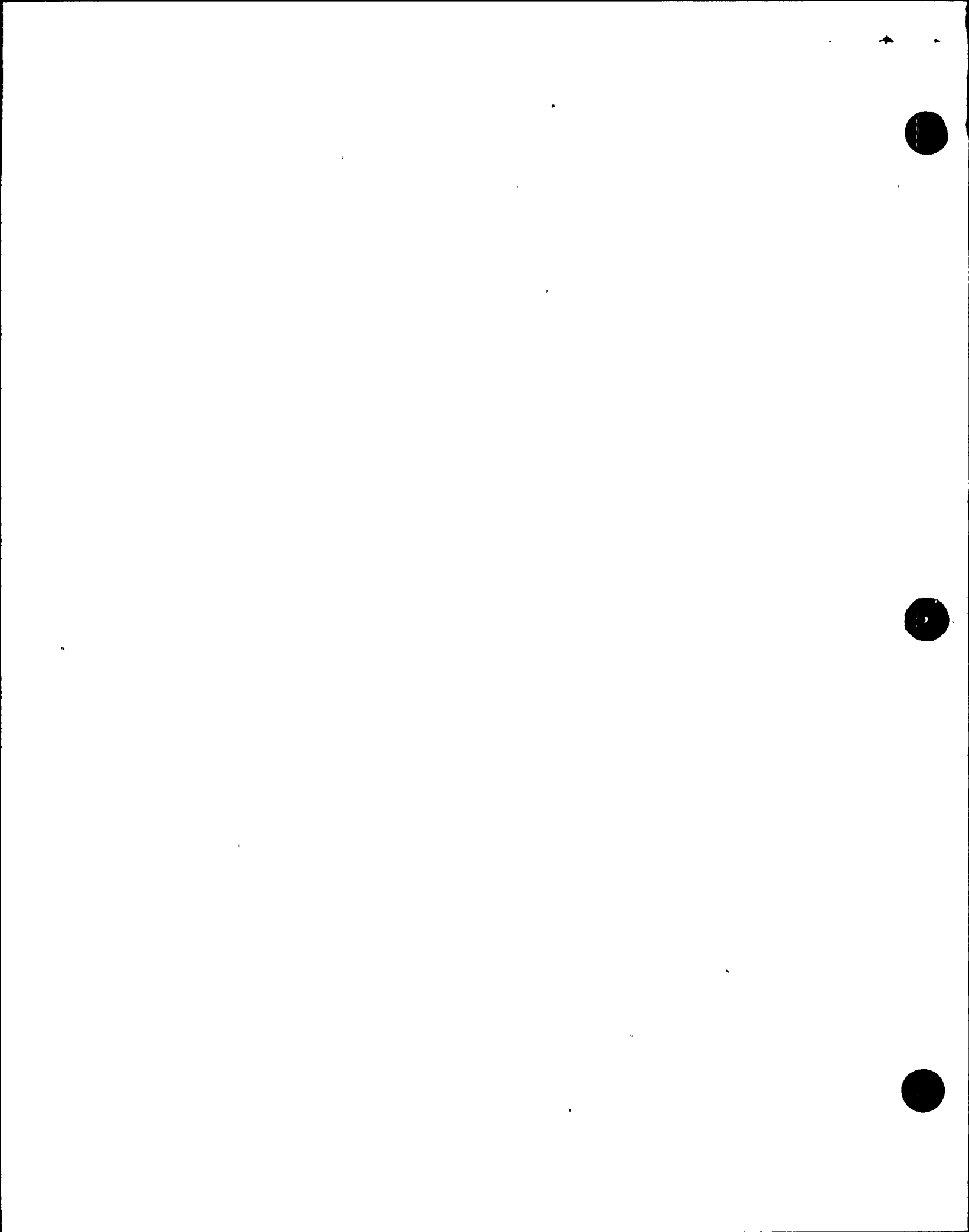
QASR-87-10636, RCIC System Test Performance, Dated August 8, 1987

QASR-87-10637, Remote Shutdown Test Performance, Dated August 9, 1987

QASR-87-10658, Offgas System Results Review, Dated August 13, 1987

The inspector verified that the surveillances were performed in accordance with applicable QA procedures and the commitments made in the surveillance plan for the power ascension test program.

No deficiencies were identified during this review.



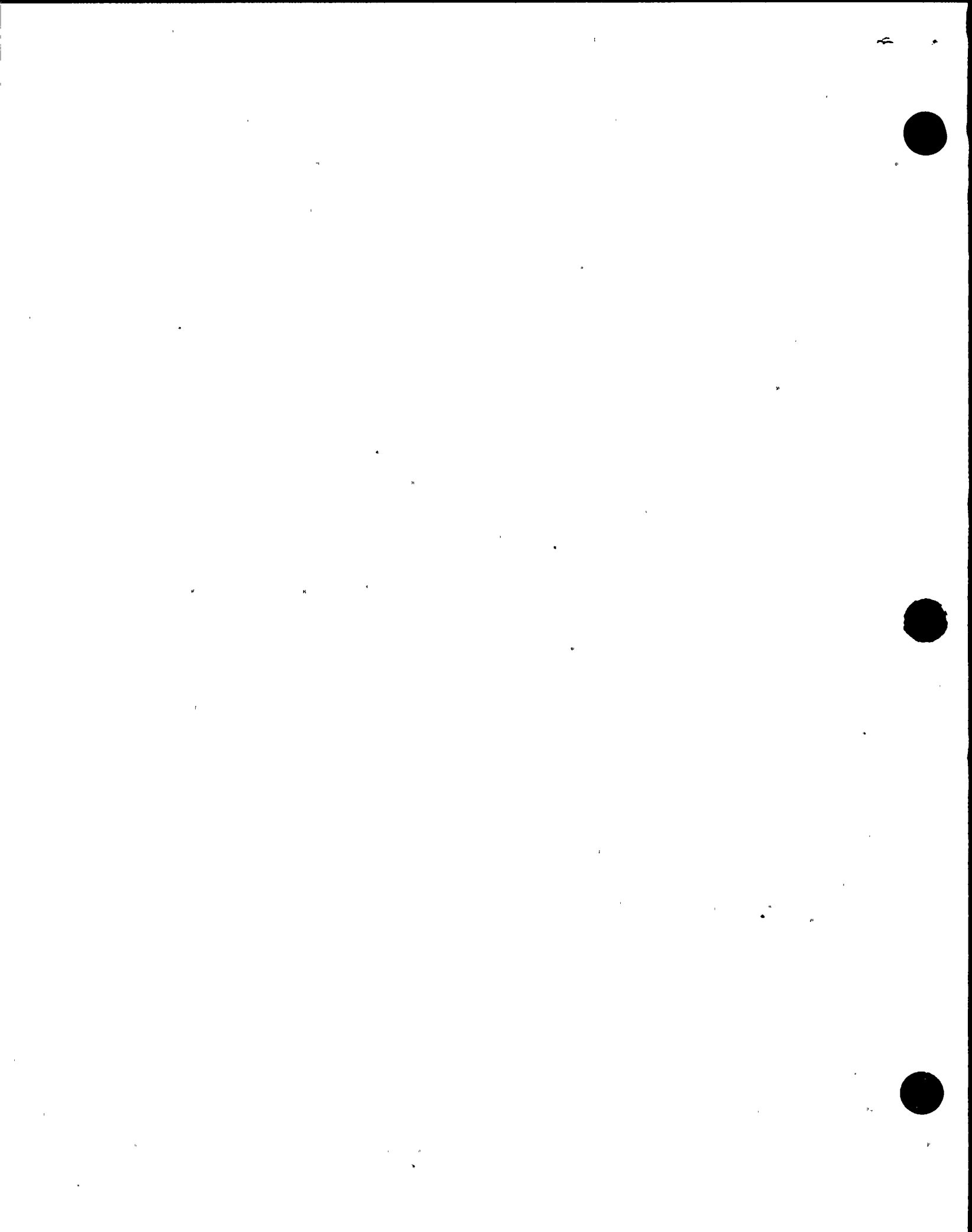
5.0 Independent Measurements and Verifications

During the witnessing of the operations surveillance testing as discussed in paragraph 2.0, the inspector independently verified expected plant and system response during testing and the return of the system to normal following the completion of testing. In addition, during the evaluation of the results of power ascension test N2-SUT-5-1, control rod drive system, as discussed in paragraph 3.5, the inspector measured the scram times of the four selected rods from notch 45 to notches 39, 25 and 5, using GETARS traces, and confirmed no degradation in scram performance from the comparison of these measurements with similar measurements made on traces obtained during test condition heatup. The inspector's measurements and verification agreed with the licensee's.

No unacceptable conditions were noted.

6.0 Exit Interview

At the conclusion of the inspection on August 28, 1987, and exit meeting was held with licensee personnel (identified in Section 1.0) to discuss the inspection scope, findings and observations as detailed in this report. At no time during the inspection was written materials provided to the licensee by the inspector. Based on the NRC Region I review of this report and discussions held with licensee representatives during the inspection, it was determined that this report does not contain information subject to 10 CFR 2.790 restrictions.



Attachment A

Power Ascension Test Procedures Reviewed

- N2-SUT-16-2 Selected Process Temperatures and Water Level Measurements-Test Condition 2, Revision 0, approved August 20, 1987
- *N2-SUT-22-2 Pressure Regulator Test Condition 2, Revision 1, approved August 20, 1987
- *N2-SUT-23-2 Feedwater System, Revision 2, approved August 20, 1987
- *N2-SUT-27-2 Turbine Trip Within Bypass Capacity, Revision 1, approved August 25, 1987
- N2-SUT-70-2 Reactor Water Cleanup System, Revision 0, approved August 20, 1987
- N2-SUT-12-5 APRM Calibration - Test Condition 5, Revision 1, approved February 12, 1987
- N2-SUT-16-5 Selected Process Temperatures and Water Level Measurements - Natural Circulation, Revision 1, approved February 4, 1987
- N2-SUT-19-5 Core Performance - Test Condition 5, Revision 1, approved April 16, 1987
- N2-SUT-22-5 Pressure Regulator-Test Condition 5, Revision 0, approved March 4, 1987
- N2-SUT-23-5 Feedwater System, Revision 1, approved February 18, 1987
- N2-SUT-24-5 Turbine Valve Surveillances, Revision 0, approved October 20, 1986
- N2-SUT-30-5 Reactor Recirculation System, Revision 1, approved December 11, 1986
- N2-SUT-33-5 Drywell Piping Vibration - Test Condition 5, Revision 1, approved December 23, 1986
- N2-SUT-77-5 BOP and Small Bore Piping Vibration, Revision 0, approved October 3, 1986



Attachment B

Power Ascension Test Results Evaluated

Test Condition 1

- N2-SUT-5-1 Control Rod Drive System, Revision 0, results accepted August 15, 1987
- N2-SUT-13-1 Process Computer - Test Condition 1, Revision 1, results accepted August 15, 1987
- N2-SUT-74-1 Offgas System TC-1, Revision 2, results accepted August 15, 1987
- N2-PP-1 Test Plateau 1 Procedure, Revision 0, results accepted August 15, 1897

Test Condition 2

- N2-SUT-10-1 IRM Performance, Revision 2, completed August 22, 1987, in review
- N2-SUT-14-2 RCIC System, Revision 3, completed August 21, 1987, in review

