



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report No. 50-369/81-03

Licensee: Duke Power Company
422 South Church Street
Charlotte, NC 28242

Facility Name: McGuire Nuclear Station

Docket No. 50-369

License No. NPF-9

Inspection at Lake Norman, North Carolina

Inspectors:

T. J. Donat

2/2/81
Date Signed

M. J. Graham

2/2/81
Date Signed

Accompanying Personnel: Commissioner V. Gilinsky and Commissioner's Aide
J. Austin (Tour of plant on January 31, 1981)

Approved by:

J. C. Bryant Section Chief

3/3/81
Date Signed

SUMMARY

Inspection on January 1 - February 4, 1981

Areas Inspected

This routine inspection involved 300 resident inspector-hours on site in the areas of Preoperational Test Review, confirmation of license conditions for initial Fuel Loading, Initial Fuel Load witnessing and closeout of preoperational inspection program.

Results

Of the four areas inspected, no violations or deviations were identified in two areas; three items of noncompliance were found in two areas (Initial fuel loading operations, and confirmation of license conditions.)

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DETAILS

1. Persons Contacted

Licensee Employees

- *M. D. McIntosh, Plant Manager
- *G. W. Cage, Superintendent of Operations
- T. L. McConneil, Superintendent of Technical Services
- S. Frye, Operations
- *G. D. Gilbert, Operations Engineer
- *B. Hamilton, Reactor Engineer
- *D. M. Franks, QA Engineer, Steam Production
- *J. W. Foster, Health Physics
- *W. M. Sample, Projects and Licensing
- *D. B. Lampke, Projects and Licensing
- G. A. Copp, Nuclear Engineer
- S. G. Crews, Design Engineering
- *A. P. Cobb, Design Engineer, Construction
- *E. B. Abrams, Project Manager, Hangers
- *J. W. Wills,
- *E. B. Miller, Senior QA Engineer, Construction
- *G. B. Robinson, QA Engineer, Mechanical, Construction

Other licensee employees contacted included engineers, technicians, operators, security force members, and office personnel.

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on February 5, 1981 with those persons indicated in Paragraph 1 above. Also discussed at the exit was a licensee commitment to provide a swifter badging process for NRC inspectors. Duke Power had previously committed to have an abbreviated health physics course available at Oconee by July 1981. At the exit interview, the licensee committed to have this course at McGuire by the same date. This short course will allow inspectors to be badged for unescorted access in a more timely manner.

3. Licensee Action on Previous Inspection Findings

Licensee actions on previously identified items of noncompliance, deviations, and unresolved items are included in paragraph 9.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. FSAR/TS Updates

In accordance with 10 CFR 50.55d, the licensee issued a revision to his FSAR at the time of completion of the facility to bring his license application up to date. The inspectors reviewed portions of this revision, No. 41 dated January 26, 1981. As a result of this review, the following Inspector Follow-up Items are closed.

- a. (Closed) IFI - 78-38-08 Update FSAR drawings to reflect as-built systems. The inspectors reviewed a sampling of drawing changes and verified incorporation of as-built drawings previously walked down.
- b. (Closed) IFI - 80-02-01 Update of HP Organization in FSAR. The inspectors noted that the revision describes the current health physics organization.

Other Inspector Followup Items opened as a result of discrepancies found in FSAR prior to this update will be reviewed by region-based inspectors at a later date.

The inspectors also compared portions of the Precautions, Limitations and Setpoints (PLS) list with the FSAR and Technical Specifications. Discrepancies were found to be conservative. Differences were identified to NRR for followup in future Technical Specifications if desired. This review of the PLS closes IFI 78-38-04, Differences between draft TS and PLS.

6. Followup on IE Circular

The inspector reviewed the licensee's response to IE Circular 80-22, Confirmation of Employee Qualification. The personnel and administrative staff described verifications performed of education and recent experience of applicants for positions in the plant. The inspector has no further questions in this area. This circular is closed.

7. Preoperational Test Program Records

The inspector reviewed the systems for preoperational test document storage, retrieval and retention. Station Directives and the Administrative Policy Manual were inspected to verify the existence of a program to implement the commitments of the FSAR (ANSI N.45.2.9) and described in Technical Specification Section 6. The inspector also observed operations in the Master File and discussed document retention and retrievability with members of the licensee staff to verify implimentation of the program. No items of non-compliance were found in this area.

8. Containment Integrated Leak Rate Test Report Review

The inspectors reviewed the Reactor Containment Building Integrated Leak Rate Test (ILRT), compared the licensee's test methods with ANSI N45.4, and reviewed the data and results. Also inspected was the Containment Vessel Integrated Leak Rate Test Followup Report, dated January 27, 1981, which

discussed the resolution of problems identified in the original test. Included in this supplemental report were the results of retesting of the airlocks. Retesting of both airlocks was observed by the inspectors. As a result of review of the Followup Report, four inspector Followup Items related to add-on leakage and the airlock seals can be closed. These items are:

- a. (Closed) IFI - 79-29-02
- b. (Closed) IFI - 79-29-03
- c. (Closed) IFI - 80-23-01
- d. (Closed) IFI - 80-24-03

This review of the ILRT and airlock test results also closes license condition 2.c.(7).

9. Fire Protection

The inspectors reviewed all items remaining open in the areas of fire protection as a part of their inspection of license condition 2.c.(10). The following items were reviewed for Unit 1 only.

- a. (Closed) INF - 80-25-02 Inadequacies in construction welding procedures and implementation of those procedures. This item is closed for Unit 1 only, based on the fact that all welding in Unit 1 is now done by Steam Production craft, in accordance with the Steam Production welding procedure. The item remains applicable to Unit 2, and will be reviewed by a region-based inspector at a later date.
- b. (Closed) DEV-80-11-01 Substandard Sprinkler Systems. Two items in this deviation remained open.

(1) Sprinkler system drain lines for testing of flow alarm devices

(2) Self indicating valves

Both of these items were addressed in a letter from W. O. Parker to J. P. O'Reilly dated January 27, 1981. For item (1), this letter stated that test connections would be installed prior to full power, and that in the interim, lack of test connections did not effect system operation. For item (2), the letter stated that the only non-indicating valves that could be changed were in an interim system, soon to be superceded. The licensee contended that work in this area was therefore, unwarranted. The Region II inspection staff found the licensee's response in both areas to be adequate. Inspectors will follow up on installation of the test connections at a later date (Inspector Followup Item - 50-369/81-03-01) The deviation is closed.

- c. (Closed) DEV-80-25-03 Inadequate fire barriers for duct shafts. NRR reviewed this item and found it adequate. This deviation is closed.

- d. (Closed) DEV-80-25-04 Diesel fuel day tanks. NRR reviewed this item and found it adequate. This deviation is closed.
- e. (Closed) DEV-80-25-08 Fire suppression systems in reactor building do not meet single failure criteria. NRR reviewed this item and found it adequate. This deviation is closed.
- f. (Closed) URI-80-11-02 Battery powered emergency lighting in pump rooms. NRR reviewed this item and found it adequate. This unresolved item is closed.
- g. (Closed) URI-80-25-05 Inadequate fire detectors in the fuel pool area. The licensee has committed to install additional fire detectors over the new fuel vault and the center line of the spent fuel pool prior to receipt of the next shipment of new fuel. As an interim measure, the licensee has required the guard staff to use the security television camera to do a complete pan of the fuel pool building once per hour. The licensee has indicated that the additional detectors should be installed within a few weeks. The inspectors will followup on installation in a future report (Inspector Follow-up Item 50-369/81-03-02). The Unresolved item is closed.
- h. (Closed) URI-80-25-06 Administrative Procedures. Two items related to this unresolved matter remained to be completed.
 - (1) Cutting and welding procedure. The inspector reviewed MP/O/B/ 7650/09 CUTTING, WELDING, OPEN FLAME SAFETY to verify that it had been revised to include open flame safety.
 - (2) Reactor Building Fire Strategies. The inspector reviewed the McGuire Nuclear Station FIRE PLAN AND RELATED STRATEGIES to verify that a new section on the Reactor Building had been incorporated into the fire plan. This unresolved item is closed.
- i. (Closed) URI-80-37-01 Purchase of an air compressor to refill self-contained breathing apparatus. The licensee has made two commitments ;
 - (1) Prior to commercial operations, to purchase an air compressor and have it on site available for use.
 - (2) In the interim, to have 80% of all bottles full and available at any given time. If bottles are used, they will be taken offsite, refilled, and returned. The inspectors will verify purchase of the air compressor at a later date (Inspector Followup Item 81-03-03). The unresolved item is closed.
- j. (Closed) IFI 80-37-02 Astragals on fire doors. The licensee's evaluation of the need for astragals on double fire doors resulted in their installation. The inspector observed the new astragals in place on several fire doors. This item is closed.

- k. The inspectors also reviewed licensee progress in all items remaining open on the table in Inspection Report 80-37. This table was extracted from the requirements of Supplement 2 to the Safety Evaluation Report, Appendix D and Table 9.5.1. The numbers in parentheses refer to the number assigned the item in the original table.

(2A) Annulus sprinkler system -

(2B) Pipe corridor sprinkler system -

For both of these items, the installed system does not match the SER. The annulus system is local manual rather than remote, and the pipe corridor system is remote manual rather than automatic. As an interim measure, to satisfy the license condition, the licensee has opened the isolation valves for these systems, making both effectively automatic systems. With this temporary fix, the licensee cannot go to Mode 4. If the licensee chooses to close the isolation valves to maintain containment integrity, he will: assign operators, with no other duties, to the valves; and prepare procedures on the valve operation for operator use and inspector review. Final resolution of this problem will be made with NRR. Thus, these items remain open.

(2C) RC Pump sprinklers -

(2D) Charcoal filter - lower containment sprinklers -

(3A) Pipe corridor hose stations -

(3B) 725 ft and 738 ft RB hose stations

These four items are also in disagreement with the SER. However, these are not fuel load commitments. They will be resolved by NRR, and remain open.

(9) Emergency lights - RHR pump room - Closed. See paragraph 9.f.

(14) Cable tray fire barriers/turbine AFWP instr. - Closed. Observed in place by inspector.

(17) Fire wall - Nuclear service water pumps closed. Observed in place by inspector.

(22) D.G. room fire detection - Closed. Design changes documented.

(41) Fire wall - KC pumps - Closed. Observed in place by inspector.

(46) Emergency lights - 733' - Closed. See paragraph 9.f.

(50) Fire proofed angle iron ceiling support between cable spreading rooms - Closed. Observed in place by inspector.

- (63) Fire wall - CCW pumps - Closed. Observed in place by inspector.
- (68) Emergency lights - 750' - Closed. See subparagraph f.
- (76A) Fire ceiling in offices off control room - Open. Not a fuel load item. Resolution by NRR.
- (93) Self contained breathing apparatus -
- (94) Refill capacity -

These two items remain open per paragraph 9.i. Not fuel load items.

- (95) Administrative control. - Closed. See paragraph 9.h.
- (96) Fire doors locked/alarmed. - Closed. Observed by inspector.

1. Supplement 2 to the Safety Evaluation Report describes the licensee's commitment to have a procedure for taking the plant to hot shutdown in the event of a fire in the control room, cable spreading room, or battery rooms. The inspector observed the auxiliary shutdown panel and reviewed procedure AP/1/A/5500/17 "Loss of Control Room". The inspector noted that the procedure included alternate actions dependent on the location and magnitude of the fire. This item in the SER is closed.

10. Initial Fuel Load

Core alterations began on January 28, 1981, and were completed February 2. The inspectors observed fuel handling activities on all shifts; including, in the control room, the Reactor building, and the spent fuel pool area. The conduct of shift turnovers, fueling crew composition, and operator familiarity with fueling activities were noted. The inspectors compared the core verification map to the procedure map after fuel loading was completed. No discrepancies were noted.

Procedures and logs were reviewed to verify completion of technical specification surveillance requirements. All changes to TP/1/A/2650/01 "Initial Fuel Load" were reviewed to verify proper completion of the licensee review process. The inspector noted that changes in the fuel crew were incorporated as required by IE Circular 80-21. The procedure requires a licensed operator to be on the refuel floor, and a licensed individual to monitor source range indication. This circular is closed.

The inspector noted that due to recent changes in numbering of Technical Specifications and surveillance procedures, the original enclosure 13.11 "Surveillance items to be covered within seven days of fuel loading" had become outdated. In replacing the enclosure, the timing required for the surveillances was omitted. A typographical error was carried through, calling for completion of a non-required surveillance rather than the source

range channel check. However, knowledge of the surveillance requirements by those performing the test, and other systems for tracking the surveillance requirements got the required testing completed and documented. The inspector discussed with the licensee the importance of having a test procedure accurately reflect the special test conditions of operation. The licensee committed to:

- a. Include accurate CORE ALTERNATIONS requirements in the procedure for refueling
- b. Review the zero power test procedures to verify that special surveillance requirements are fully and accurately reflected in the procedures.

The licensee failed to meet a Technical Specification surveillance requirement from January 28 - January 30 in that the licensee operations staff reported that containment integrity, for core alteration purposes, had been verified. This report was based on a review of systems removed from service rather than a valve line-up. On January 30, 1981, the licensee realized that this review was not complete enough to verify containment integrity. This represents a violation of Technical Specification 6.8.1, requiring written procedures to be established, implemented and maintained for surveillance activities of safety related equipment (Violation - 81-03-04). Core alterations were suspended a procedure was prepared, and a valve line-up verification completed. It was discovered that 1-VX-40 and 1-VX-41, containment air sampling valves, were open, and the pipe cap for the vent line was removed. This provided a leakage path via a leaking check valve from the containment. This represents a violation of Technical Specification 3.9.4.c, which requires containment penetrations providing direct access from the containment atmosphere to the outside atmosphere to be either closed by valve or blind flange or to be exhausting through containment purge. (Violation - 81-05-05). Both violations were identified to the NRC by the licensee.

11. Review of TMI-2 Action Plan Items

The following licensee actions from NuReg 0660 which were identified for completion prior to fuel loading, were reviewed by the inspectors:

- a. Shift Technical Advisors (Task I.A.1.1)

The inspectors verified that Station Directive 3.1.31 had been issued which established the duties, responsibilities and qualifications of the Shift Technical Advisor and verified the qualifications of the interim STA's and the training program content for the final STA's. The inspectors find the program properly implemented and close item 80-RD-01.

b. Operator Training Program (Task I.A.2.1)

The fact that the operators, whose written exam did not include the additional section on heat transfer and thermodynamics, had received special classes on these subjects was verified. This verification included a review of the attendance sheets for these classes as well as discussions with members of the class and instructors. The inspectors also reviewed the present operator course content and typical lesson plans. Based on this review, this task action item is considered complete. (80-RD-37).

c. Instructor Training (Task I.A.2.3)

Based on discussions with the licensee's training center management and instructors and on a review of training center records, the inspectors determined that (a) all systems instructors are either SRO licensed or have taken the SRO exam, (b) the instructors are on distribution for all plant modifications and based on their review of these, changes are made to the simulator, (c) once the plant goes into operation, a program has been developed to rotate instructors into the plant for periods of time to gain actual operating experience. They are also listed on the distribution for LER's and other material disseminated by the Onsite Safety Engineering Group. Based on this review the item is considered satisfactorily met and 80-RD-05 is closed.

d. Shift Supervisor Duties and Responsibilities (Task I.A.1.2 and I.C.3)

The inspectors reviewed Station Directive 3.1.4, Revision 2, dated January 13, 1981, which defines the duties and responsibilities of the shift supervisor under normal and abnormal conditions. Numerous operators and shift supervisors were interviewed to ascertain that these items were also known and practiced by the staff. The inspectors had no comments and consider these items as closed (80-RD-02 and 80-RD-07).

e. Shift Manning (Task I.A.1.3)

The inspectors verified that Station Directive 3.1.4, "Conduct of Operations", Revision 2 provides for a minimum shift crew composition consistent with Section 22 of Supplement No. 4 to the McGuire FSAR. The inspectors verified that crew composition during fuel loading operations was consistent with the commitments. This item (80-RD-03) is considered closed.

f. Management Review for NTOL Applicants (Task I.B.1.2)

The review of the licensee's management organization was performed in June 1980 and is discussed in IE Inspection Report 50-369/80-15 and Section 22 of Supplement No. 4 to the McGuire SER. This item is considered closed (80-RD-04).

g. Shift Turnover Procedures (Task I.C.2)

The inspectors reviewed Station Directive 3.1.9, "Relief at Duties of Power Operation", Revision 6, dated January 13, 1981, which provides separate check lists for shift supervisor and operator turnovers. The usage of these lists was confirmed during the initial fuel loading and subsequent turnovers. The system is considered implemented and item 80-RD-06 is closed.

h. Control Room Access (Task I.C.4)

The limitations on who has access to the control room during normal operations, as well as in the event of an emergency, are defined in Station Directive 3.1.4, "Conduct of Operation". The presence of rope barriers was verified, and knowledge of who could authorize access in the control room was discussed with operators and supervisors. The item, 80-RD-08, is considered closed.

i. Feedback of Operating Experience (Task I.C.5)

The licensee's onsite safety engineering group was officially organized on January 21, 1981. Its composition, responsibilities, authority and reporting requirements are specified in a charter issued and approved by the Vice President Steam Production. The initial group of four members and a chairman began their new positions on January 26, 1981. This item is considered closed - 80-RD-09.

j. Verification of Operations Activities Related to the Safety of Nuclear Plants (Task I.C.6)

The licensee presently does not have procedures to require double verification of valve or breaker lineups when performing work on safety-related equipment or returning it to service. Similar dual verification is also not required for the initial system lineups required by the licensee's operating procedures. At the exit meeting the licensee representative committed to provide the NRC, by February 9, 1981, a schedule for the issuance and implementation of dual verification procedures for equipment removal, equipment restoration, and initial system valve lineups. Until the procedures have been reviewed and implementation verified, this item (80-RD-38) remains open.

k. NSSS Vendor Review of Licensee Procedures (Task I.C.7)

The inspectors reviewed the letter from the NSSS vendor which stated that the initial fuel loading, initial criticality, and zero power physics test procedures had been reviewed and that they were acceptable. Based on this letter, the item is considered closed for the duration of the present license, but a similar review of the plant's power ascension test procedures, and of its emergency (EP and

AP) procedures is required before a full power license is issued. Item 80-RD-10 remains open.

1. Control Room Design Review (Task I.D.1)

The licensee's preliminary control room design assessment was found acceptable in Section 22 of Supplement No. 4 to the McGuire SER. The inspector reviewed the assessment and noted that the recommended changes have been completed. Item 80-RD-39 is closed.

m. Training During Low Power Testing (Task I.G.1)

The licensee submitted a low power special test program consisting of six tests. The program, which is similar to that approved for North Anna Unit 2, was reviewed and found acceptable in Section 22 of Supplement No. 4 to the SER. Therefore, item 80-RD-11 is closed.

n. Shielding to Allow Access to Vital Equipment (Task II.B.2)

In accordance with Duke Power Company commitments, as detailed in their "Response to TMI Concerns", interim procedures have been written on how and where to sample and survey in the event highly activated coolant is present in the auxiliary building. These interim procedures were reviewed by a regional inspector and found acceptable for fuel loading. His specific comments were telephoned to the licensee for inclusion. The regional inspector committed to rereview the procedures prior to initial criticality. Therefore item 80-RD-12 remains open.

o. Post Accident Sampling Capabilities (Task II.B.3)

The licensee has modified the original sampling procedure to contain a section on sampling highly contaminated reactor coolant water. The procedure has been reviewed by regional inspectors who found it acceptable for fuel loading but requested some comments be incorporated prior to initial criticality. The regional inspector will followup on this, and item 80-RD-13 remains open.

p. Training in the Use of Installed Instruments for Inadequate Core Cooling (Task II.B.4)

The inspectors verified that all licensed operators had been given class room and simulator training on use of the incore thermocouple and T-SAT/P-SAT instrumentation, possible false indication of installed instrumentation in a degraded core mode, and plant procedures for detecting and correcting an inadequate core cooling situation. Based on the course review and interviews, item 80-RD-14 is closed.

q. Pressurizer Relief and Safety Valve Testing (Task II.D.1)

The licensee has committed to participate in the EPRI test program and has already tested the pressurizer power operated relief and safety valves for Unit 1 in 1980. This item is closed (80-RD-15).

r. Pressurizer Relief and Safety Valve Indication (Task II.D.3)

The inspectors reviewed preoperational test procedure TP/1/A/1150/15 which documented cycling of the PORVs during hot functional testing and verification of correct valve position in the control room. The inspectors verified the installation of the sonic flow indication system sensors on the Pressurizer Safety valves' discharge piping, the conditioning electronics in the Auxiliary Building and the status light in the control room. Item, 80-RD-16, is closed.

s. Auxiliary Feedwater Automatic Initiation and Flow Indication (Task II.E.1.2)

The system, as presently installed in the plant, was found satisfactory in Supplement No. 4 to the SER for fuel loading. The verification of automatic start capability was accomplished in TP/1/A/1250/04 which was reviewed by the inspectors. The licensee's commitments to upgrade the system to safety grade and the schedule for modification, if any, will be in Supplement No. 5 to the SER. Therefore, 80-RD-18 remains open.

t. Emergency Power Supply for Pressurizer Heaters (Task II.E.3.1)

The inspector verified that two banks of pressurizer heaters are connected to the vital switchgear buses. Backup heater group, 1A(416KW), is connected to bus 1ETA and group 1B(416KW) is connected to bus 1ETB. Therefore, 80-RD-19 is closed.

u. Dedicated Penetration for Hydrogen Recombiners (Task II.E.4.1)

Since both of Unit 1's hydrogen recombiners are already located inside the containment, this item is not applicable. Therefore, 80-RD-20 is closed.

v. Diverse Signals for Containment Isolation (Task II.E.4.2)

The inspectors verified that all four methods of initiating containment isolation were verified in preoperational test TP/1/A/1600/03, i.e.,

- (1) low steamline pressure (2/3 on any steamline)
- (2) low pressurizer pressure (2/4)
- (3) high containment pressure (2/4)
- (4) manual

The presence of an independent reset feature for all of the equipment isolated will be demonstrated prior to initial criticality. Item 80-RD-21 is closed.

w. Containment Purge Limitation (Task II.E.4.4)

Technical Specification 3.6.1.9 limits containment purge time to less than or equal to 90 hours per three hundred and sixty-five days. Therefore, item 80-RD-22 is closed.

x. Additional Accident Monitoring Instrumentation (Task II.F.1)

As an interim measure, the licensee committed to establish procedures for estimating concentrations of noble gases, radioiodine, and particulate releases in the event that the installed effluent instrumentation registers off scale. The licensee's procedures were reviewed by a regional inspector and found acceptable. Item 80-RD-23 is closed.

y. Identification and Recovery From Inadequate Core Cooling (Task II.F.2)

The inspectors reviewed the Inadequate Core Cooling Procedure (AP/1/A/5500/05) and the Immediate Action and Diagnostics Procedure (EP/1/A/5500/01) and had no comments. Also, verification of operability of the subcooling meter display and incore thermocouple display on the Operator's Aide Computer (OAC) was completed. This closes item 80-RD-24.

z. Emergency Power for Pressurizer Power Operated Relief and Block Valves (Task II.G.1)

The inspectors verified that the power operated relief valves (PORV) are supplied from different buses, 1NC32 and 1NC36 from one 600 VAC bus and 1NC34 from the other. The PORV block valves are solenoid controlled-air operated valves. The block valves, 1NC31 and 1NC35 are supplied from one station battery bus, while 1NC33 is supplied from the other. Pressurizer level instrumentation is safety grade, in that it provides signals for reactor protection as well as PORV control. Therefore, 80-RD-25 is closed.

aa. Final Recommendation of Bulletins and Orders Task Force for Westinghouse Plants (Task II.K.1)

The inspectors accomplished the following review:

- (1) Verification of Operable ESF Systems by Use of the Operations Aided Computer (OAC) was considered acceptable per Supplement No. 4 to SER.
- (2) Verification of removal and restoration of equipment - see Task I.C.6, paragraph J.

- (3) Pressurizer Pressure Low/Safety Injection - Low Pressurizer Pressure Safety Injection operation was verified in preoperational test TP/1/A/1600/03.

This item, 80-RD-29, is closed with respect to Fuel Loading only.

- bb. Final Recommendations of Bulletins and Orders Task Force with respect to B&W plants (Task II.K.2)

Not applicable, therefore, item 80-RD-42 will be closed.

- cc. Upgrade Emergency Preparedness (Task III.A.1.1)

The facility was inspected against the requirements of NUREG-75/111, in November 1980, and found acceptable as documented in IE Report 50-369/80-37. The facility will be reinspected against the requirements of NUREG-0654 prior to the granting of a full power license. This item is closed for Fuel Loading but remains open for full power (80-RD-30).

- dd. Upgrade Emergency Support Facilities (Task III.A.1.2)

The same discussion for facilities as for Emergency Preparedness. The item, 80-RD-31, will stay open until after full power licensing.

- ee. Inplant Radiation Monitoring (Task III.D.3.3)

The licensee provided copies of health physics procedures for determining inplant radiation exposure, specifically airborne radioiodine, to regional inspectors for review. There were no comments and this item, 80-RD-36, is considered closed.

In the process of reviewing the licensee's activities with respect to TMI-2 action plan items, the following fuel load license conditions were also verified 2.C.(13)a., 2.C.(13)b., 2.C.(13)c., 2.C.(13)d, 2.C.(13)e, and 2.C.(13)f.

12. Preoperational Test Procedure Review

- a. General Review of all Completed Preoperational Tests

A general review was performed on all preoperational test procedures listed in the licensee test procedure index which includes those listed in Chapter 14 of the FSAR. The review verified that all tests had either been completed or that specific commitments had been made concerning when they would be completed. The following specific items were checked by the review:

- (1) that the procedure had been approved for performance,
- (2) that a supervisor had signed indicating that the final package had been reviewed and found acceptable,

- (3) that all discrepancies had been resolved,
- (4) that test steps had been signed and dated and test data sheets were completed,
- (5) that the chronological test log was included.

This review satisfied fuel load license requirement 2.C.(II).

b. Detailed Review of Specific Completed Preoperational Tests

- (1) A detailed review, including verification that test data met acceptance criteria and that the criteria was consistent with the FSAR and the proposed technical specifications, was performed on the following Emergency Power Source Preoperational Tests:

TP/1/A/1350/09A D/G1A Load Sequencer Functional Test
 TP/1/A/1350/09B D/G1B Load Sequencer Functional Test
 TP/1/A/1350/13 Vital I&C Power Supply Preoperational Test
 TP/1/A/1350/13A Vital I&C Power Supply Preoperational Test
 TP/1/A/1350/16 4160VAC Essential Power System Preoperational Test
 TP/1/A/1350/19 125VDC Vital I&C Power System Preoperational Test

TP/1/A/1350/30A D/G1A Blackout Loading after D/G Breaker Overcurrent

TP/1/A/1350/30B D/G1B Blackout Loading after D/G Breaker Overcurrent

The inspector had no comments on the procedures.

- (2) A similar detailed review was also performed on test procedures TP/1/A/1600/03, "Reactor Protection System Functional Test", and TP/1/A/1600/05, "Rod Control System Functional Test". Based on this review, IP/0/B/3012/09, "Full Length Rod Control System Checkout", was added to the test package for the latter preoperational test.

- (3) The following preoperational tests were reviewed to close associated Inspector Followup Items or Open Items:

Closed - Inspector Followup Item - IFI-78-24-04 - Seismic Instrumentation Checkout per IP/1/A/3150/01, 3150/02, 3150/03, 3150/03A, and 3150/04 was verified to be complete. The control room modification to show maximum displacement was also verified. This item is closed.

Closed - Inspector Followup Item - IFI-78-24-08 - Completion of Communications System Testing. Reviewed completed preoperational test TP/1/B/1350/01. This item is closed.

Closed - IFI-78-24-09 concerning performance of an Emergency Light Test. This item is closed, based on a review of completed preoperational test TP/1/B/1350/23.

Closed - IFI-78-24-11 concerning testing of the plant's process and area radiation monitors. The inspector reviewed completed preoperational tests TP/1/B/1600/01A and TP/1/B/1600/01B and considers the item closed.

Closed - IFI-80-24-01 concerning the method used to perform the Air Return Fan capacity measurement. The completed test procedure, TP/1/A/1200/11 was reviewed and the inspector's comments had been incorporated into the test procedure. This item is closed.

Closed - IFI-80-24-02 concerning the resolution of a test discrepancy. The inspector reviewed the completed test package for TP/1/A/1350/03, "Unit Protective Relaying Functions Preoperational Test", and confirmed that a test procedure change had been approved which changed the alarm typer output requirement, in the procedure, to be consistent with the hardware design. This closes the item.

The inspector made the overall evaluation of the preoperational test program that it had been long and slow and sometimes difficult, but is now finished.

13. Close out on Previous Inspection Findings

- a. Closed - Open Item 79-16-02 the licensee should have procedures periodically reviewed via Periodic Tests. The licensee has issued and implemented the following periodic tests to document the reviews:

PT/O/A/4700/01 Review of Operating Procedures
 PT/O/A/4700/02 Review of Emergency Operating Procedures
 PT/O/A/4700/02 Review of Emergency and Abnormal Procedures and Station Directives (Site)
 PT/O/A/4700/03 Review of Periodic Test Procedures
 PT/O/A/4700/04A Review of Instrument and Electrical Procedures
 PT/O/A/4700/04B Review of Maintenance Procedures
 PT/O/A/4700/11 Review of Chemistry Controlled Procedures
 PT/O/A/4700/12 Review of Periodic Review Procedures

This item is closed.

- b. Closed - Open Item 79-17-04 concerning POR valve testing requirements. The inspector verified that the opening and closing time for each POR valve is measured in PT/1/A/4151/02, "NC Valve Stroke Timing (Quarterly)". The item is closed.

- c. Closed - Inspector Followup Item 78-28-03 and 78-28-04 concerning the relationship between the NSRB and the site PRC concerning authority and transmittal of findings. With the establishment, by charter, of the Station Safety Engineering Group (SSEG) on January 21, 1981, this item can be closed.
- d. Open - Inspector Followup Items
 - 78-35-02 - Temperature Effects on Snubber Calibration
 - 78-35-03 - Verification of Snubber Calibration via Test Program
 - 78-35-06 - Verification of Snubber Installation

The inspector reviewed licensee design engineering memorandum "SRG-81M-0059" dated January 20, 1981 concerning the effects of temperature induced variation in hydraulic snubber lockup and bleed rate when compared with the spectrum of piping velocities induced during seismic and LOCA events. The inspector next reviewed Pacific Scientific letter dated December 19, 1980, certifying that all mechanical shock arrestors had been tested and found acceptable prior to shipment to Grinnell for eventual shipment to the site. Next PT/O/A/4200/06, "Inservice Visual Inspection of Safety-Related Snubbers", was reviewed to determine if all Mode 6 arrestors had been examined. Finally, as part of the review done on the construction of structural restraints, see paragraph 14.a, several structural restraints were examined throughout the plant. The item 78-35-02 and 78-35-06 will be closed, but item 78-35-03 will remain open until the results of the testing of the hydraulic shock arrestors has been reviewed.

14. Review of Structural Restraint Program

- a. Review of Licensee Response to IE Bulletin 79-02

The licensee's memorandum SRG-81M-0075, dated January 23, 1981, listed 13 structural restraints which were changed because of anchor bolt installation which had original safety factors (SF) less than 4.0.

The inspectors reviewed the work packages for each of these restraints and found that the drawing for restraint MC-AA-3730(RO) had been marked "No Structural or Hardware Changes between MC-1683-VI.22-R10(R6) and MC-AA-3730(RO)". Contrary to this, an additional sway bar had been added when the drawing MC-AA-3730(RO) had been generated. Based on this hand written note, no Q/C inspection was performed and the modification was not made. This is a violation in that it is a failure to follow procedures affecting the quality of construction (Violation 81-03-07).

The licensee has taken the following corrective actions:

- (1) the affected structural restraint drawing was corrected by having the note deleted. The construction Q/C department, using the new drawing, verified proper installation after having the additional sway restraint installed. The inspector reviewed the final

package on this restraint on January 26, 1981, and found it satisfactory.

- (2) The construction Q/C department issued NCI Report 12,727 concerning inadequate verification of restraint installation. This NCI was resolved by requesting that Design Engineering delete the note from drawing MC-AA-3730(RO).
- (3) The Design Engineering Department issued nonconformance DNC-0009. This nonconformance was resolved by:
 - (a) counseling the particular engineer on the need to perform adequate reviews prior to issuing drawings,
 - (b) reviewing all reanalyses performed since October 1980 which could have resulted in restraints being changed from typical to special designs. This group of reanalyses included Bellow Penetrations, LOCA Dynamic Loads, and LOCA Load/Mismatches. This group contained a large portion performed by the "Alternate Analysis" method of reanalysis. This method used typical designs and could have lead to more changes in restraints from typical to special,
 - (c) establishing that all structural restraints being installed in Unit 2 are being done by using only special, "individual", designs.

The inspector reviewed the licensee generated list of thirty-one structural restraints, and performed a detail review of nineteen. The inspector also reviewed the thirty-one mathematical models used in the first two reanalyses to ensure that the list of affected structural restraints was complete. The inspector's findings were satisfactory in both areas; items on the list and completeness of the list.

The licensee's actions with respect to this violation will be further reviewed after acceptance of a satisfactory response. (Violation 81-03-07)

b. Review of IE Bulletin 79-14 Response

The inspector reviewed twenty-two mathematical models for portions of the ND and NI systems in addition to the thirty-one models associated with the reanalyses discussed in paragraph 14.a. The review included verification that the licensee had performed a system walkdown to confirm that the restraints were installed in accordance with the mathematical model. Also, the formal licensee response to IE Bulletin 79-14, Revision 1, dated January 26, 1981 which, in Section 2, detailed the inaccessible hangers by system location and the basis for being declared inaccessible. The inspector's findings were clear with respect to this Bulletin.

Based on these reviews the bulletins are considered as having been met for the purposes of fuel loading and license condition 2.C.(9) is satisfied. Final closeout of the bulletins will be accomplished by the regional office following submittal by the licensee of committed written reports.

15. Review of Licensee Identified Items

- a. Closed - LII 79-22-02 on pipe hanger deficiencies - Based on reviews conducted (See paragraph 14.a) of structural restraints, this item is considered closed.
- b. Closed - LII 80-10-01 on purchase of Rotork operators as nonsafety grade - The inspector reviewed NCIs 9578, 9580, 9582 and Valve Repair Process Control Sheets and considered that all affected operators have been changed out. This item is closed.
- c. Closed - LII 80-10-06 on inadequate PORV Block Valve Operators - Based on tests performed at the Marshall Steam Station, two modifications were recommended for the PORV block valves. One was a modification of the disc guides and the second was to increase the valve operator size. All operators were replaced and have been retested. This item is closed.
- d. Closed - LII 81-03-08 on incorrect valve orientation being shown on piping drawings used in stress analysis. The licensee issued NCI reports 10776 and 11884. These reports identified 76 valves in the CA, RV, YC, and YH systems which were oriented differently from that used in stress analysis. The licensee revised the stress analysis as well as the drawings and the item is closed.
- e. Open - LII 81-03-09 and 81-03-10 concerning improper loads used in structural restraint design (licensee's Significant Deficiency 369/80-20, 370/80-15) and "LOCA effects not considered in analysis of Cold Penetration Piping" (licensee's Significant Deficiency Report 369/80-21, 370/80-16). The licensee has issued a supplement to the later item, dated January 9, 1981 expanding the scope of the investigation. The licensee issued a letter on January 28, 1981, stating that all action with respect to these reanalyses had been completed for all mode 6 systems. The inspector reviewed installation packages for the 137 structural restraints which were installed on Mode 6 systems and which were affected by the reanalyses. This item will stay open until the remaining restraints have been reviewed.

16. Assistance to Other Offices Within NRC

On January 31, 1981, Commissioner V. Gilinsky and his Technical Assistant, J. Austin toured the site. During the tour, Control Room activities and fuel handling in the spent fuel pool and in the Reactor Containment were observed. The adjacent training center was also toured.