UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

SEP 12 1986

MEMORANDUM FOR: James G. Keppler, Regional Administrator

THRU: Charles E. Norelius, Director, Division of Reactor Projects 9/12/86

FROM: Edward G. Greenman, Director, Fermi Restart Staff

SUBJECT: FERMI RESTART: NRC FIVE PERCENT POWER HOLD POINT

The purpose of this memorandum is to summarize the current status of the NRC inspection program at Fermi 2 and to document my recommendation that the licensee should be released to proceed beyond the first NRC hold point of five percent power. As I advised you earlier, I have held discussions with Mr. J. Calhoun, Chairman of the Independent Overview Committee. Mr. Calhoun confirmed that on September 8, 1986, the committee provided a favorable verbal recommendation and on September 10, 1986 provided the licensee with a formal recommendation (Enclosure 2) to proceed with power escalation up to the twenty percent level.

Over the past several months, I have met with various licensed and unlicensed personnel, evaluated the Fermi 2 requalification program, and have developed my own confidence in the overall capability of the operations staff. Additionally, I met with shift supervision as a group on September 10, 1986 to discuss their performance and our expectations. While I continue to observe some inexperience in overall knowledge and performance skills, both licensed and non-licensed personnel are performing their duties. As evidence of this, out of the eight reportable events since reactor startup occurred on August 4, 1986, only one safety system challenge was caused by personnel error. While I do not view this as unexpected, it will merit continued NRC attention. Once you authorize operation at increased power levels, the restart staff will scrutinize shift cohesiveness and decisiveness in decision making, the number and in particular, the nature of personnel errors, the handling of operational priorities, the quality of instrumentation and control work, and the performance of health physics personnel. The licensee must also aggressively pursue maintenance activities.

I find that licensee management is oriented towards nuclear safety. Throughout the testing program and low power operations to date, they have demonstrated caution and proceeded at a deliberate pace. The licensee is operating with a philosophy of reviewing and addressing problem areas as they occur. There appears to be no rush to go into power escalation. Further, I am confident with the group vice president and his role in managing and directing facility operations.

Enclosure 1 is a summary of our team assessment of the plant's status and equipment operability, operator knowledge and performance, requalification program evaluation, startup test program status, allegation followup and enforcement action status.

Based on our conclusions, as contained herein, and the unanimous recommendation of the restart staff, I recommend that you authorize the licensee to proceed with operation to the next hold point (completion of the test program at the 20% power level). All members of the restart staff concur and this recommendation is issued with the concurrence of all Region III Division Directors and after consultation with the Offices of NRR and I&E. I have further determined that Mr. B. Ralph Sylvia, Group Vice President Nuclear, is authorized to act for Mr. W. J. McCarthy, Chairman of the Board, with respect to the 5% hold point, contained in NRC Region III Confirmatory Action Letter 85-10 dated July 16, 1985, which is consistent with the utility's 10 CFR 50.54(f) letter response.

Edward G. Greenman

Edward G. Greenman, Director
Fermi Restart Staff

Enclosures:
1. Summary of Assessment
2. Overview Committee Recommendation

cc w/enclosures:
J. Partlow, IE
L. Wheeler, IE
R. Bernero, NRR
E. Adensam, NRR
D. Lynch, NRR
A. B. Davis, RIII
C. J. Paperiello, RIII
N. Chrissotimos, RIII
W. G. Guldemond, RIII
G. C. Wright, RIII
R. DeFayette, RIII
J. Strasma, RIII
R. Lickus, RIII
W. Rogers, SRI RIII

ENCLOSURE 1

ASSESSMENT OF DETROIT EDISON COMPANY

Readiness to Proceed Beyond 5% Power

1. Inspection Coverage

Immediately prior to the August startup, and continuing through the heatup phase (e.g. from "0" power to 5% power) the NRC Restart Staff provided augmented inspection coverage for Fermi 2, which included continuous control room coverage for approximately 48 hours from the time that control rods were started to be withdrawn until the reactor was critical and stable at slightly less than 1% power. Subsequent to the initial coverage and during five percent power operation inspections focused on observations and evaluations of: control room operations; performance of major tests; major maintenance items; instrumentation and control problems; lessons learned from events; and corrective actions. The onsite team and Restart Director subsequently completed the assessment of the utility's readiness to support power escalation and operation up to 20% power on September 11, 1986. A formal request to authorize operation in excess of 5% was received by NRC Region III on September 11, 1986.

2. Testing Program

During the heatup test phase (from startup to 5% power) which was designed to verify the operation of some of the major reactor systems, the licensee completed demonstration runs and surveillance tests of the RCIC and HPCI systems and declared them operable. The south reactor feedwater pump, which failed during operation in 1985 and had been rebuilt, also was tested, vibration measurements made, and the pump and turbine verified to be functioning properly. Similar measurements also were made on the north reactor feedwater pump. Vibration measurements were taken on the main steam bypass lines to verify that the modifications made following discovery of cracks in 1985 corrected the problem. Analyses of the measurements indicated that the bypass lines were satisfactory, however, the lines will continue to be monitored as power is increased. Most of the other startup tests required during the heatup phase, including scram time testing of all control rods, were completed in 1985 following initial criticality and startup. The previously performed tests were not repeated during the present heatup testing phase. The NRC startup team has concluded that the test program has been effective in identifying equipment problems.

3. Plant Status/Equipment Operability

As of 8:00 a.m. September 12, 1986, the plant was operating routinely at 4% power. The licensee had completed its evaluation of test data and equipment performance and was waiting release from the NRC 5% hold point

to proceed to Test Condition #1 (operation up to 20% power). On September 10, 1986, a high differential pressure was identified on the off gas system which rendered the system inoperable The problem involved moisture carryover into the system sand filters. This is the only major piece of plant equipment which prevents the licensee from exceeding 5% power due to its effect on plant operation. Resolution and return of the system to an operable status is expected on or about September 13-14, 1986. This problem is not considered a safety issue nor is it related to the NRC imposed 5% power restriction.

The startup team staff has had a concern with the maintenance program and has so informed the licensee. This concern developed from, among other things, repeat problems with several systems during the heatup phase testing. For example, there were recurring problems with HPCI, the startup level controller, control rod drive accumulators, south reactor feed pump, and steam jet air ejectors. Although the problems were corrected, these and similar problems will undoubtedly continue to occur as unused systems are operated under real conditions for the first time. Although individually the problems may not be significant, collectively they are indicative of a weakness in the maintenance area. The licensee has been advised that additional attention is needed in this area to assure that these and similar problems are effectively resolved. Aggressive handling and prioritization will be required in the maintenance area and in the Instrumentation and Control Group during and beyond Test Condition 1 (20% power hold point). The team will continue to monitor this area closely.

There was an unscheduled reactor shutdown on September 2, 1986, to repair a malfunctioning torus-to-reactor building vacuum breaker isolation valve. The problem was determined to be binding of the valve shaft with a fiberglass bearing (bushing). The valve was repaired, the local leak rate test completed successfully, and the reactor restarted on September 6. This was the third valve to have similar problems (one was in September 1984, and another in November, 1985). The licensee has requested it's Nuclear Engineering Department to evaluate a different type of bearing material and/or a possible reorientation of the valve. The vendor has also recommended the use of stainless steel components in the valve assembly to minimize corrosion. In the short term the licensee is trending valve stroke times as an indicator of pending problems. This is acceptable in the near term.

4. Operator Performance

During the startup, the restart team observed control room operations continuously for approximately 48 hours, focusing on communications among shift personnel; operator adherence to procedures; operator recognition of and response to annunciators; involvement of shift supervisors in plant operations; and congestion in the control room. The startup team and the resident inspectors are unanimous in their belief that the licensee personnel performed in a satisfactory manner in all the areas.

They were aware of plant conditions, communicated with management and with each other, had good shift turnovers, used current procedures, reacted properly to alarms, knew their procedures, and operated well. The team could identify no serious problems with their performance.

Later in the heatup test program there was a reactor operator error when an out of sequence control rod was inserted in a controlled reactor shutdown. The operator noticed the error when he selected the next rod. The operator stopped all rod manipulations and notified the shift supervisor of his mistake. Operations were not resumed until the reactor engineer was consulted and determined that in the condition the reactor was in (only about 25 rods remaining to be inserted) it would not be necessary to withdraw the mispositioned rod to return to the original sequence of rod insertions.

Also during this phase of testing a reactor scram occurred. On August 29, 1986 the operators were transferring the water supply for the north reactor feedwater pump from the east heater feed pump to the center heater feed pump when the north reactor feedwater pump tripped. Subsequent investigation revealed that the discharge valve for the center heater feed pump was closed thus when the east heater feed pump was stopped no water was forwarded to the north reactor feedwater pump and the pump tripped on low suction pressure. During recovery operations the operators adjusted the reactor flow limiter down to 3% which caused the main steam bypass valves to close and pressure to increase above the scram point. During recovery from the scram the cooldown rate exceeded the administrative guidelines of 90° per hour, did not exceed the Technical Specification limit of 100° per hour. Had the operators been more attentive to the available indications and closed the Main Steam Isolation Valves (MSIVs) sooner (this was done about 53 minutes after the scram) the 90° rate probably would not have been exceeded. The startup team has concluded that this scram was avoidable. The utility has been practicing evolutions of this type to avoid recurrence .

Just prior to the initial restart, the NRC conducted requalification examinations for several reactor operators and senior reactor operators. The initial results of the examinations were mixed and indicated that several of the examinees may not have passed the simulator part of the examination. A Confirmatory Action Letter (CAL) was issued to remove these individuals from shift until a reexamination could be conducted. The reexamination was conducted about two weeks later and all examinees passed the test. The CAL then was rescinded and the operators returned to normal shift duties.

Members of the startup team also observed the response of operations personnel to a real emergency caused by a fire in an electrical breaker. The response was calm and deliberate, the emergency plan was followed, the fire extinguished, and the reactor was controlled at all times. The reactor was subsequently shut down voluntarily by the licensee.

The team reviewed records of the licensee's control room audit program and occasionally observed audits in progress. The Team Director also observed one complete audit. The records and observations indicated that audits were being performed on time and were thorough. To date, every shift has been audited at least once. About six unsatisfactory check marks were identified by the audit teams. One of these identified by the Detroit Edison Group Vice President involved the unawareness by a reactor operator of the complete status of some of the systems on one of the control panels he was monitoring. The team views continuation of the audit program and strengthening of criteria as a sound approach.

5. Pending Major Enforcement Issues

There are currently three potential escalated enforcement issues which occurred recently and which must be resolved. These relate to:
1. Miswiring of an isolation valve
2. Wrong size fuse in EDG service water pump
3. Flow switch in sprinkler system to diesel fire pump room.

The issues have been reviewed by the Division of Reactor Projects and the Division of Reactor Safety who concluded that the items are not an impediment to power escalation.

6. Allegations

A review completed on September 12, 1986 indicates there are no outstanding allegations which would impact on power escalation up to 20 per cent power (Test Condition 1).

7. Restart Conditions

All requirements for escalation to Test Condition #1 have been met

7.1.1. HPCI was retested and declared operable.

7.1.2. RCIC was verified operable.

7.1.3. The main steam relief valves and ADS were verified operable by the licensee.

7.1.4. The main steam bypass line was monitored during testing.

7.1.5. The south reactor feed pump performance was verified by test.

7.1.6. The operation and performance of the off gas system was verified by test (Note: a problem developed in this system on September 10, 1986, which must be resolved to support continued power escalation.

7.1.7 The Reactor Operations Improvement Plan (ROIP) goals are being met or are trending toward the established goals. No performance indicators are at the management attention level.

7.2. The IOC has made its recommendation for escalation of power.

7.3. The Chairman of the Board has authorized the Vice President to approve escalation.

7.4. Open item 85043-07 will be completed (this item requires the Regional Administrator to grant permission to increase power).

7.5 The three valves with a potential closing logic problem (discovered during the heatup phase testing) were modified.

7.6. The wiring on the modified Limitorque valves were verified to be correct (a problem with one of these valves was discovered during the heatup phase testing).

7.7. The startup team verified with a regional inspector that open item 85003-01 which is related to certain surveillance procedures, is not a restraint on the licensee.

7.8. The On Site Review Committee has reviewed the results of the heatup phase tests and has approved power escalation.

8. Conclusions

The licensee's testing program up to this plateau essentially has been completed in conformance with their commitments and regulatory requirements. The material equipment status of the plant remains acceptable. Although some minor deficiencies exist, none would affect safe power operations. As of September 10, 1986, the only equipment problems which would impact on operation above five percent is resolution of a moisture carry over in the offgas system. Based on the above results and information, the startup inspection team recommends that Fermi 2 be given approval to proceed to Test Condition 1 which will allow operations up to 20% power.

GENERAL PHYSICS CORPORATION

MEMORANDUM

DATE: September 10, 1986
GP-M-200722

TO: B. Ralph Sylvia

FROM: Jack R. Calhoun, Chairman Independent Overview Committee

SUBJECT: Fermi 2 Power Increase

We have received and reviewed your memoranda dated September 2, 1986 and September 5, 1986 and have been briefed by Messrs. Lessor and Neely regarding their discussions with you and your staff.

We consider that the issues raised in my memorandum to you dated August 15, 1986 are fully resolved. It is our understanding that the Quality Assurance Department is performing an audit of Personnel Qualifications and Training. We will plan to review that audit as part of our ongoing evaluations.

At this time, the Independent Overview Committee has determined that it has no other issues which restrain your increasing Fermi 2 power to 20% and performing the related startup tests.

Jack R. Calhoun

JRC/pc

CC: Murray Miles
Sol Levy
Jim Green
Jim Neely
Leo Lessor
Walter McCarthy
Charles Heidel
Tom Randazzo
Frank Agosti
Robert Lenart