NUCLEAR SAFETY AND COMPLIANCE COMMITTEE

SEMIANNUAL REPORT

For the period

October 1, 1985 Through March 31, 1986

April 15, 1986

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1.0 SUMMARY

This report provides an assessment of safety and compliance at the GPUN Oyster Creek and TMI-1 facilities, based on independent observations by the Nuclear Safety and Compliance Committee (NSCC) of the GPU Nuclear Board of Directors and NSCC Staff during the period October 1, 1985 through March 31, 1986.

Oyster Creek and TMI-1 activities were conducted safely and with a positive attitude toward nuclear safety and compliance. A few instances of non-compliance with administrative requirements were noted; however, they did not constitute an overall trend or significant safety concern.

Section 2.0 of this report provides the NSCC's assessment of safety and compliance, segregated by functional area. Evaluations are based upon investigations and observations throughout the period. Unless noted otherwise, conclusions apply to both TMI-1 and Oyster Creek. Evaluations generally discuss conditions existing at the time of the evaluation. Where the Committee is aware of subsequent corrective actions that have been taken, or are in progress, this is also noted. In all cases, items of significance have been discussed between the Staff and the Committee and reported by the Committee to the GPUN Board of Directors and corporate management at regular monthly meetings.

The NSCC reviewed the February 21, 1986 GPUN response to NSCC Report Number 3 and the February 28, 1986 GPUN status update to commitments made to NSCC Reports Number 1 and 2. These responses are considered satisfactory except for one item discussed in section 3.0 herein.

Section 4.0 describes the Committee's methods of discovery by providing detailed information on Committee and Staff activities during the period.

2.0 ASSESSMENT OF SAFETY AND COMPLIANCE

2.1 OPERATIONS

Committee and Staff observations have concentrated on performance of licensed operators and procedural compliance during a period in which both units were operating for the majority of the time. This period is significant from an operations standpoint in that TMI-1 returned to operation and successfully completed the power escalation testing program in an expeditious manner and Oyster Creek operated during most of this time period. The exceptionally smooth return to operations at TMI-1 is noteworthy. In general operators have performed satisfactorily, demonstrating good knowledge and training. They are alert and attentive to plant conditions and have responded well to abnormal situations, e.g. scrams, loss of electrical power sources, etc.

Some problems have been noted, however. During a scram on March 6, 1986 at Oyster Creek the operator apparently focussed on previous problems experienced with reactor vessel water level and failed to conduct the immediate actions of inserting a manual scram and placing the mode switch in shutdown. (Reactor vessel water level control problems following scrams from power have been repetitive.) This resulted in a reactor vessel isolation and a more severe transient with level control problems. Operations and Plant Analysis are to review appropriate priorities for operator action and the need for procedure revision. Consideration is also being given to increasing the number of operators "at the controls". The Staff will monitor corrective actions for appropriate resolution.

One instance was noted at Oyster Creek when the Control Board was inappropriately manned by the Senior Reactor Operator licensed Shift Technical Advisor. TMI-1 has been meticulous towards "Operator at the Controls" requirements.

Management and Supervisory involvement during plant evolutions at TMI-1 has been substantial. During the Power Escalation Test Program, the Manager, Plant Operations was extensively involved in all operations. With the return to commercial operation, the Shift Supervisors and Shift Foremen have effectively assumed more of the responsibilities associated with normal operation.

Performance of non-licensed operators was evaluated as satisfactory based on observations during plant tours.

The Staff reviewed all 1985 reports of off shift tours by management at TMI-1. As noted in previous reviews, tours were comprehensive and effective in maintaining management presence during operation. It was also noted that, in contrast to earlier reviews, tours were not as concentrated in the hours just prior to and after normal day shift and represented a more realistic "off shift" tour program. Off shift tours at Oyster Creek are also effective and represent a true "off shift" tour program.

While utilization of existing procedures at TMI-1 has been very good, some concerns regarding the implementation of procedural requirements are noted. The biennial review process, which was previously noted as deficient, still requires management attention to bring the program into total compliance with plant procedures. Apparent failure to comply with review and approval requirements for procedure changes has been noted twice. QA has noted that exception and deficiency sheets for surveillance procedures are bypassing review and approval requirements, and an Operations Memo was used improperly to implement changes in the operation of the Emergency Feedwater system. These incidents represent variances from a generally effective program for administrative control of procedures. Management attention is needed to ensure that these controls are not subordinated to operational expediency.

Post trip review meetings were attended by the Staff at TMI-1. After the initial shakedown of the process, it appears to be working well. Post trip review meetings also appear to be effective at Oyster Creek.

TMI-1 Plant Incident Reports (PIRs) were evaluated individually as published and then as a whole at the end of the year. The TMI-1 staff investigations and corrective actions are appropriate, however the system does not appear to be as thorough for non-operational events. There was also no indication that PIRs are periodically reviewed by the plant staff for adverse trends.

Deviation Reports (DRs) at Oyster Creek indicate an increased sensitivity to safety concerns in addition to reportability determination. DRs are presently trended by two separate groups. A consolidation of this effort would reduce duplication of efforts.

The Committee notes with approval that performance trending by GPUN has commenced at TMI-1 by issuance of monthly Performance Monitoring Management Information Reports.

2.2 MAINTENANCE

Evaluation of maintenance activities primarily consisted of monitoring ongoing activities.

Maintenance systems at TMI-1 were considered with few minor exceptions to be satisfactory. The evaluation of the Work Management System (WMS) at Oyster Creek raised several concerns. The system appears to be more complex than necessary to accomplish plant maintenance. This is demonstrated in part by a growing backlog of maintenance items. It appears that the classification of jobs according to funding source (Functional Maintenance vs. Specific O&M) sometimes determines whether GPUN or contractor personnel are assigned to the task. Assignment of work should be based on complexity, safety significance and qualifications of personnel rather than its classification.

Outages at both sites occurred and were closely monitored. There were indications that some of the lessons learned from the 1983-1984 Oyster Creek outage were being applied in the 10M outage. The scope of work in the 10M outage was well controlled resulting in the objectives of the outage being satisfied. The application of lessons learned appears to be continuing in the preparation for the 11R outage. The outages at TMI-1 were well organized and efficiently run. The preparations for the eddy current outage, which began at the end of this report period, appeared to be very good.

Concerns previously noted in NSCC Report #2 regarding the updating of the Corporate Welding Manual have been corrected with the issuance of the rewritten manual.

Although specifically identified at TMI-1, a possible generic concern regarding shelf life determinations was noted in that the program does not appear to include items internal to preassembled spare parts. GPUN should evaluate this concern to determine the potential effect on safety related equipment.

The GPUN Heavy Loads program addresses all of the regulatory requirements. Although mobile cranes are not included in the regulatory requirements for heavy loads, the use of mobile cranes at the Oyster Creek intake structure may not meet the intent of the regulatory requirements. GPUN should evaluate its practices regarding the use of mobile cranes. Also the procedures at Oyster Creek are not consistent in the definition of a heavy load.

There remains a high number of deficiency tags in the Control Room at Oyster Creek. An effort to reduce these has been noted, however progress has been slow.

Problems with the Oyster Creek Augmented Off Gas (AOG) system continued. A high level of operator attention has been required due to control and control valve problems. Other problems include: system leakage and attendant high activity levels in the AOG building; electrical power interruptions; and system bypass valve leakage. These problems are all being addressed.

2.3 PLANT ENGINEERING

Plant Engineering at TMI-1 was evaluated and found to be appropriately manned and organized to support operations and maintenance. The recent institution of the "mini-mod" program appears to be improving the implementation of minor modifications.

2.4 TECHNICAL FUNCTIONS

Technical Functions support of plant activities was evaluated in several areas. Performance of the Shift Technical Advisors (STA) at TMI-1 has been monitored since the unit began operating. They

have displayed good plant knowledge, professional demeanor, and are an asset to the operating crew. STAs at Oyster Creek continue to perform well.

The Transient Assessment Report (TAR) for trips occurring at TMI-1 and Oyster Creek were reviewed. In general, the TARs provide a thorough evaluation of the events and contain appropriate recommendations for corrective action. The GPUN corporate procedure governing Analysis of Plant Transients requires TARs to be issued within 30 days of the trip. In general, TARs are issued two to three months after an event. GPUN should weigh the needs for thorough analysis and providing timely results and then enforce or revise this 30 day requirement, as appropriate.

The Industry Operating Experience Review Program for TMI-1 and Oyster Creek results in timely reports to management and is appropriately manned and organized.

An improvement in the management of Licensing Action Items and Preliminary Safety Concerns is apparent. An evaluation of whether license conditions for TMI-1 were being satisfied indicated that these conditions were receiving adequate management attention.

The Heat Sink Protection System (HSPS) modification at TMI-1, which is scheduled for completion during the next refueling outage, was reviewed. Following the Davis-Besse incident the Staff evaluated this modification and the GPUN analysis of the event. No safety concerns were identified, but the Committee recommended performance of a broader analysis of HSPS and system interactions for other possible failure modes. In response, GPUN commissioned an independent review of the modification. Recent industry events involving feedwater problems (section 2.7) prompted a reevaluation. The Staff again reviewed the HSPS Design Document and interviewed TMI-1 Operations and Plant Engineering personnel. Plant personnel are sensitive to the possibility of undesirable interactions caused by added system complexity, but no specific safety concerns were identified. At the end of this period, an NRC Performance Appraisal Team evaluated the emergency feedwater system and found a previously unidentified single failure in an interconnected system which could compromise both EFW trains. There is an apparent need for validation of the safety analysis for HSPS, and to bring Technical Functions and TMI-1 Division together into closer agreement on the need for and the usefulness of this change.

2.5 NUCLEAR ASSURANCE

Nuclear Assurance support of plant activities was evaluated for Quality Assurance, Emergency Preparedness, Independent Onsite Safety Review Group, and Training.

2.5.1 Independent Onsite Safety Review Group (IOSRG)

The IOSRG at Oyster Creek was evaluated during this period and was found to be fulfilling its review functions. The TMI-1 IOSRG is presently revising procedures in response to an NRC Notice of Violation. When the procedure revisions are complete, they should be evaluated for applicability at Oyster Creek.

2.5.2 Emergency Preparedness

The frequent exercising of the Emergency Plan at each site has demonstrated the capability to protect public health and safety. Both sites have exhibited improved responsiveness in the drills working up to the annual graded exercises. A concern was noted during the TMI-1 Observation meeting in that it appeared that the same key players were always used to fulfill management functions.

It was noted at Oyster Creek that Emergency Operating Procedures and Abnormal Operating Event Procedures do not include specific guidance to assist the operator in determining Emergency Action Levels. Oyster Creek personnel stated they were considering inclusion of guidance in future revisions.

2.5.3 Quality Assurance

QA/QC Corrective Action systems were reviewed in depth at TMI-1 and were found to be comprehensive and effective. Some of the programmatic deficiencies pointed out by QA/QC appear to take a long period to correct, however all open issues appear to be presently receiving appropriate attention. Some MNCRs requiring only documentation to complete the corrective actions, appear to take excessive time. Increased management attention is appropriately being applied to close out long standing MNCRs.

2.5.4 Training

The Staff evaluated training programs, progress towards INPO accreditation of Training programs, and the instructor evaluation process.

Progress towards INPO accreditation appears to be good. Minor problems are corrected as occurring and sufficient management attention is being applied.

When six of seven candidates failed a GPUN administered simulator operational examination conducted at the B&W simulator, the Staff reviewed the design and implementation of the Control Room Operator Training Program at TMI-1. A need for improvement in the coordination between classroom and On The Job Training was indicated. The preoccupation of the plant staff with startup may

have contributed to the inadequate preparation of these candidates. Immediate corrective actions by GPUN were appropriate since all license candidates who successfully completed the remainder of the program passed the NRC administered simulator exam. The Committee transmitted the Staff observations to GPUN for use in its evaluation of this training program and potential application to future programs.

Some minor concerns regarding failure to comply with internal schedule requirements for instructor evaluations were noted. A meeting between the Staff and Training and Education Department management was conducted to discuss these items.

Maintenance training at Oyster Creek appears to be progressing satisfactorily. Some minor problems which were noted early in this period, have subsequently been corrected.

The STA training programs at both sites are in compliance with NUREG 0737 and INPO recommendations. The TMI-1 program has been accredited by INPO, and the Oyster Creek program is satisfactorily progressing towards accreditation.

2.6 RADIOLOGICAL CONTROLS

Radiological controls were primarily evaluated by following plant operations and maintenance. Specific evaluations of the volume reduction program and contamination control program at Oyster Creek were conducted. No major concerns were noted.

Significant progress over the last two years in volume reduction at Oyster Creek has been noted. Attitudes towards contamination controls at Oyster Creek appear to be improving.

2.7 INDUSTRY SIGNIFICANT EVENTS

Three industry events of significance occurred at Pressurized Water Reactor plants during this period. Rancho Seco experienced an overcooling event initiated by a complete loss of ICS/NNI power. San Onofre-1 experienced a loss of feedwater initiated by a loss of AC power. Due to back leakage through several check valves, a severe water hammer was experienced when feedwater was restored. Turkey Point experienced a loss of the Auxiliary Feedwater pumps and inoperability of associated valves.

In each case the event was evaluated by the Staff for applicability to TMI-1. The design of TMI-1 appears to be safer when examined with respect to these individual occurrences. Training and procedures also appear to be better at TMI-1 than as described in the other plants. The issue of check valve back-leakage is being addressed by the NRC and the Owner's Groups. The Staff is presently evaluating other actions taken by GPUN in response to these events.

3.0 REVIEW OF RESPONSES TO PREVIOUS NSCC REPORTS

The NSCC reviewed the February 21, 1986 GPUN response to NSCC Report Number 3 and the February 28, 1986 GPUN status update to commitments made to NSCC Reports Number 1 and 2. The status report was considered satisfactory and the responses to Report Number 3 were satisfactory except for one item.

The response regarding biennial review of MCF procedures at Oyster Creek is satisfactory, however, it is noted that biennial review of these procedures is still in arrears, and to date MCF has not issued a procedure to implement biennial review.

4.0 ACTIVITIES OF COMMITTEE AND STAFF

4.1 GENERAL

The Committee guides the Staff's investigations and approves Staff schedules and expenditures. NSCC Staff activities involve both routine monitoring and special reviews. Routine monitoring covers all functional areas at each site and at corporate headquarters. A long range schedule of monitoring activities is developed every six months. Additional activities are added at the request of the committee whenever plant events or industry occurrances (e.g., TMI restart, Rancho Seco) dictate. The Committee reviews various corporate reports such as those listed in Table 4-1. Upon occasion these result in special tasks for the Staff.

4.2 COMMITTEE ACTIVITIES

In addition to the activities described above, the Committee meets with the GPUN Board of Directors at regular monthly meetings and reports on any items with safety or compliance significance. Questions or concerns which may arise between Board meetings may be conveyed to the Chairman or President, GPUN.

During this report period, one additional meeting (Observations Meeting) between the Committee, Staff, and GPUN executives was held. The Observations Meetings provides a forum for the Staff to present additional observations and comments on plant activities, which were obtained in the course of performing safety and compliance evaluations, but which do not have safety significance.

NSCC Members attended two TMI-1 GORB meetings and one Oyster Creek GORB meeting during the period. Dr. Witzig toured TMI-1 during this period and the Committee toured TMI-1 prior to the annual Emergency Preparedness exercise. Tours were also conducted at both sites as a part of the Board of Directors meetings.

4.3 STAFF ACTIVITIES

The Staff, permanently located at the plants, gathers information on plant activities in many ways. Plant tours, monitoring of activities, attendance at meetings, interviews with GPUN personnel, and review of reports, correspondence and other documents are all used in conducting evaluations. Plant operations and maintenance activities receive the most attention. The NSCC Staff at each site has an operations and a maintenance Staff Specialist. Additional Staff members have training and licensing/safety review specialties, and spend much of their time reviewing support functions.

Evaluations during this period concentrated on areas and activities described in Section 2.0. Table 4-2 lists activities and information sources used in Staff evaluations. Table 4-3 indicates the types and numbers of GPUN personnel contacted during this period.

In addition to activities listed previously, the Staff increased monitoring of plant activities at TMI-1 during the Power Escalation Test Program. The Staff monitored overall progress and specifically observed significant milestones and tests including; initial criticality; initial synchronization to the grid; low power physics testing; natural circulation testing; and planned unit trips of 48% and 88% power. The Staff also reviewed the Power Escalation Test Program requirements and procedures. Communications between the Staff and NSCC was frequent and significant occurrences were relayed to the NSCC as occurring.

During this period, one Staff member attended a training seminar on use of the Management Oversight and Risk Tree (MORT). MORT analysis provides a systematic, structured methodology for investigating incidents, and should be useful in conducting Staff evaluations. Four Staff members attended earlier sessions and one Staff member will attend a future session.

The Staff also escorted the GPUN Chairman of the Board during his tours of TMI-1 and Oyster Creek.

4.4 NRC AUDIT OF NSCC STAFF

The NRC audited NSCC Staff activities at TMI-1 in October 1985. All Staff activities were found to be in compliance with the NSCC Charter and the TMI-1 Restart Order.

TABLE 4-1

NSCC DOCUMENT/INFORMATION SOURCES

GPUN Sources (both sites unless otherwise noted):

Plant Incident Reports (TMI-1)
Deviation Reports (OC)
Licensee Event Reports
Licensing Correspondence
Biweekly Significant Events Reports
Off Shift Tour Reports
Post Trip Review Group Reports
Transient Assessment Reports
IOSRG Evaluation Reports
GORB Meeting Reports
QA Monthly Assessment Reports
QA Quarterly Trend Reports
Attendance at GORB Meetings
Plant Tours
Meetings with GPUN Management

Other Sources:

NRC Notices
NRC Generic Letters
NRC Regulatory Guides and NUREGs
NRC SALP Reports
Industry Periodicals (Inside NRC, Nucleonics Week, etc.)
NRC Inspection Reports
INPO Evaluation Reports
INPO Nuclear Power Plant Operational Data Report
ACRS Meeting Transcripts

TABLE 4-2

NSCC STAFF ACTIVITIES/INFORMATION SOURCES

(Both sites unless otherwise noted)

PLANT TOURS

General Walk-through/Housekeeping Inspection
Off Shift Tours
Control Room Observations
Maintenance Observations
Surveillance Test Observations
Rad Waste handling Observations

MEETINGS

Daily Plant Status Meetings
Weekly Plan of the Day Meetings
Outage Planning Meetings
NRC Entrance/Exit Meetings
INPO Training Evaluations
GORB Meetings
Post Trip Review Group Meetings
Incident Critiques
Maintenance Critiques (OC)

DOCUMENT REVIEW

GPUN Sources:

Plant Incident Reports (TMI-1)
Deviation Reports (OC)
Licensee Event Reports
Licensing Correspondence
Biweekly Significant Events Reports
Off Shift Tour Reports
QA Audit Reports
QA Monthly Assessment Reports
QA Quarterly Trend Reports
QA Annual Assessment Reports
Operations QA Monitoring Reports
Shift Monitor Reports (TMI-1)
Operations Daily Reports (OC)
STA Daily Reports
Operations Night Order Book
Log Books (Operations, STA, Chemistry, Maintenance, Rad Waste)
Shift Turnover Forms

Radiation Awareness Reports
Post Trip Review Group Reports
Transient Assessment Reports
Maintenance Work Order Packages
GPUN Administrative Policies and Procedures
Station Procedures (Admin, Operations, Maintenance, etc)
Operations QA Plan
Technical Specifications
Training System Descriptions
Training Lesson Plans
Plant Drawings
IOSRG Evaluation Reports
GORB Meeting Reports

Other Sources:

NRC Notices
NRC Generic Letters
NRC Regulatory Guides and NUREGs
NRC SALP Reports
INPO Evaluation Reports
INPO Guides
ANSI Standards
ASME Codes
Code of Federal Regulations (10CFR)
Industry Periodicals (Inside NRC, Nucleonics Week, etc.)
ASLB Hearing Transcripts (TMI-1)
ACRS Meeting Transcripts

TABLE 4-3

PERSONS INTERVIEWED/CONTACTED

BY NSCC STAFF DURING THIS PERIOD

Site Personnel (both sites unless otherwise noted):

Vice President/Director-TMI-1
Vice President/Director-OC
Deputy Director-OC
Operations and Maintenance Director (TMI-1)
Plant Operations Director (OC)
MC&F Director (OC)
Department Managers, Supervisors, and personnel of the Following:

- Plant Operations
- Plant Maintenance (TMI-1)
- Plant Material (OC)
- Maintenance, Construction and Facilities (OC)
- Plant Engineering
- Plant Chemistry
- Special Projects (OC)
- Plans and Programs
- Safety Review Group (OC)
- Plant Review Group (TMI-1)
- Technical Functions
- Licensing
- Plant Analysis and STA
- Startup and Test
- Nuclear Assurance - QA/QC
- Training and Education
- Emergency Preparedness
- Core Group - Operations Engineering (OC)
- Radiological Controls
- IOSRG

Corporate Personnel:

Vice President - Technical Functions
Vice President - Radiological and Environmental Controls
Director - Licensing and Regulatory Affairs
Director - Engineering Projects
Director - Training and Education
NSAD Director
Managers and other personnel of the following:

- Licensing
- Training and Education
- Safety Analysis and Plant Control
- Quality Assurance
- Technical Functions
- Maintenance, Constructions, and Facilities