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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Gentlemen:

Subject: Three Mile Island Nuclear Generating Station
Operating License No. DPR-50
Docket No. 50-289
Nuclear Safety and Compliance Committee
Semiannual Report No. 21

On October 19, 1994, I provided the Semiannual Report of the Nuclear Safety and Compliance Committee (NSCC) to the GPU Nuclear Corporation Board of Directors.

Mr. James R. Leva, Chairman of the Board, GPU Nuclear Corporation, has requested that I provide the NSCC's Semiannual Report No. 21 for the period April 1, 1994 through September 30, 1994 a copy of which is enclosed.

I would be pleased to provide additional information or respond to any questions you have.

Sincerely,

P. R. Clark
P. R. Clark
President

Enclosure
/crb

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c: Administrator, Region I
NRC Resident Inspector
TMI NRC Project Manager

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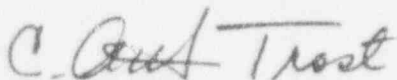
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NUCLEAR SAFETY AND COMPLIANCE COMMITTEE

SEMIANNUAL REPORT NUMBER 21

APRIL 1, 1994 THROUGH SEPTEMBER 30, 1994

OCTOBER 15, 1994



ADM C. A. H. TROST



LAWRENCE L. HUMPHREYS



WILLIAM A. WILSON

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Safety and compliance at the Oyster Creek, Three Mile Island (TMI-1 and TMI-2), and Saxton facilities of the GPU Nuclear Corporation (GPUN) were the object of independent evaluations by the Nuclear Safety and Compliance Committee (NSCC) of the GPUN Board of Directors and the NSCC Staff during the period April 1, 1994 through September 30, 1994. These evaluations focused on operator performance, procedure utilization, and maintenance activities as they relate to compliance and safety. The Committee believes that during this period all facilities were operated safely and, with the exceptions noted herein, in compliance with relevant requirements and good practices.

TMI-1 and Oyster Creek maintained strong performance indicators due to the commendable efforts of both plant operators and support organizations.

Materiel deficiencies were the primary cause of outages and power reductions. Corrosion product buildup in TMI-1 control rod drives, and biological fouling of Oyster Creek Containment Spray heat exchangers were significant contributors and each will require continued evaluation of corrective measures.

The accomplishments of the initial weeks of the Oyster Creek 15R Refueling Outage attested to the significant planning and preparation by the Outage Management organization. The major delays encountered were again primarily due to equipment problems. The outage work scope includes many modifications to correct previously identified design deficiencies and operational problems.

Although materiel deficiencies had the greatest effect on plant operation, human performance deficiencies occurred at an undesirable rate. GPUN management focused on correcting this problem. In particular, TMI recognized the need to improve its methods for identifying, evaluating and trending human performance deficiencies, and instituted a new program to accomplish these objectives.

Staff reductions and functional reorganizations were initiated during this period with no apparent detriment to safe operation. Monitoring and evaluation of the impact of these changes on safety should continue.

2.0

EVALUATION OF SAFETY AND COMPLIANCE

The following is an evaluation of GPUN performance from April 1, 1994 through September 30, 1994. The division into topics does not necessarily correspond to GPUN's organizational units. Statements pertain largely to conditions existing at the time of the evaluation. Corrective actions of which the Committee is aware are also noted. All items have been discussed by the Committee and the Staff and, if appropriate, have been reported by the Committee to the GPUN Board of Directors and corporate management at scheduled meetings.

The Committee has reviewed the GPUN response to its previous report (No. 20). Where pertinent, these responses are commented on in this report.

2.1

FACILITY OPERATION

GPUN continued to operate its facilities safely, while maintaining excellent availability. TMI-1 had two short outages during the period; Oyster Creek had three. On September 10, Oyster Creek commenced the 15R Refueling Outage. TMI-2 continued in the Post Defueling Monitored Storage mode, and removal of unused and unneeded structures continued. Arrangements for shipment of low-activity soil from the Saxton site were completed and shipments commenced during this period. Also, refurbishment of the Saxton polar crane commenced in preparation for decommissioning of the containment structure.

Operators at TMI-1 and Oyster Creek generally performed their duties in a proficient and professional manner. However, there were several events at each plant which indicate a need for continued improvement in human performance and communications. At TMI, for instance, there were repeat occurrences of improper log keeping and failure to obtain required samples before a liquid radioactive waste release. Also, there were Technical Specifications violations for failure to maintain proper control rod overlap during a startup, and an unplanned reduction in the Sodium Hydroxide Tank level during a surveillance. At Oyster Creek, a control rod was tagged out for maintenance without proper consideration of shutdown margin requirements; and on another occasion, a control rod was mispositioned during a plant shutdown. Other errors resulted in overflowing a liquid radioactive waste tank and unplanned emptying of the Demineralized Water Storage Tank.

Maintenance departments at both sites have been responsive to plant needs, which contributed significantly to the high availability factors of TMI and Oyster Creek.

There were several occasions at each site where prompt and effective maintenance prevented or minimized outage time. Examples include Containment Spray heat exchanger cleaning and Service Water Pump motor replacement at Oyster Creek, and Control Rod Drive replacement and Integrated Control System module replacement at TMI.

On the other hand, maintenance personnel also exhibited some performance deficiencies. For example, at TMI two radiation monitors were not calibrated within the required period, and six months of sample data from the TMI-2 breather system was lost due to not installing the filter paper. At Oyster Creek, errors were noted in air compressor overhauls, replacement of solenoid valves on control rod hydraulic control units, and reactor level surveillance. Ineffective control of switchyard maintenance resulted in a scram at Oyster Creek in May.

Maintenance planning and scheduling has been very effective at both sites. Use of an integrated schedule and planned system outages has improved efficiency and kept the maintenance backlog at a manageable level.

The 15R outage at Oyster Creek began in September. The accomplishments of the first few weeks indicate that the significant planning and preparation by the Outage Management organization were successful. One notable exception was delays caused by several problems with the refueling bridge despite extensive maintenance and surveillance prior to the outage.

Although two outages at each site during this report period were the result of equipment failures, the high availability factors of TMI-1 and Oyster Creek indicate that their overall materiel condition is good.

Areas of concern to the Committee at TMI-1 include control rod drive mechanism (CRDM) fouling, boron/erosion control programs, steam generator tube leakage and main condenser tube leakage. Changes in chemistry control were initiated and the worst CRDMs were replaced in order to reduce CRDM fouling and improve control rod drop times.

At Oyster Creek, fouling of Containment Spray heat exchangers continues to be a concern. The plant recognizes this by making it a key issue in the Safety Issue Assessment Program, and engineering evaluation to provide a solution continues. Air compressors and radioactive waste processing equipment have had

marginal availability and consumed extensive maintenance resources. Age-related degradation such as piping erosion and corrosion, and tank bottom corrosion, continues to occur.

The installation of a digital feedwater and recirculation control system at Oyster Creek will be completed during 15R and should provide corrective action for many past operating transients.

2.3 TECHNICAL SUPPORT

Technical Functions, Site Engineering and other technical support organizations have responded to plant needs and contributed to the excellent operating record of each plant.

There was extensive preparation for modifications and inspections planned for the Oyster Creek refueling outage, such as core shroud inspection, reactor vessel level instrument modifications, 4160V Bus undervoltage modifications and the digital feedwater/recirculation control system modification.

2.4 TRAINING

INPO renewed the accreditation of several Oyster Creek programs in May. The remaining programs were evaluated in June and renewal of accreditation appears reasonably assured.

Both sites successfully completed annual requalification programs for licensed personnel. Two SRO candidates at Oyster Creek were successful in license upgrade exams in April.

Although there were staff reductions in the Oyster Creek General Employee Training section, a large number of temporary outage personnel were processed by augmenting the GET training staff with personnel from other company locations.

2.5 RADIOLOGICAL CONTROLS AND ENVIRONMENTAL CONTROLS

At this point in the operating cycle, cumulative exposure at TMI is higher than predicted. Two fuel pin failures and two outages have contributed to the higher exposure. Cumulative exposure at Oyster Creek prior to the 15R Outage was lower than predicted. Based on emergent work identified in the first few weeks, aggressive efforts to reduce exposure will be needed to meet the outage goal.

Radiation Controls personnel have been very proactive in looking for ways to reduce exposure and improve efficiency of doing work. At Oyster Creek, many areas of the plant have been released from radiological posting. In August, an automated RWP log-in system

was placed into operation. TMI plans to reduce the frequency of calibration of certain radiation monitors, which will reduce exposure and require less resources. Relief from some monitoring requirements around TMI-2 has been obtained.

Availability of an off-site facility for burial of low level radioactive waste (LLRW) ended in June. Since then each plant has been using its on-site storage facility. Management at both plants strongly emphasized the need to minimize the volume of LLRW. Both sites are also investigating methods for off-site volume reduction of liquid waste before on-site storage.

The concrete pad for the Independent Spent Fuel Storage Facility at Oyster Creek was completed in September.

2.6 EMERGENCY PREPAREDNESS

Both sites had successful annual drills.

Third quarter drills at each site combined accident scenarios and security-based events. These proved to be very challenging to the emergency response organizations and identified several areas for improvement in emergency management.

In drills during June and August at TMI, personnel failed to declare appropriate activation levels. This may indicate a need for more training.

2.7 MANAGEMENT/SAFETY ATTITUDE

All GPUN facilities continued to be managed with integrity and a conservative safety attitude.

Human performance deficiencies have been noted in Sections 2.1 and 2.2 above. Management at both sites continued to seek improvement. Top level involvement at both sites is essential to success.

TMI recognized that it did not have a good program for identification, analysis and correction of human performance events. In April, a Human Performance Review Board comprised of Directors and senior managers was established to recommend ways to improve. They developed a Human Performance Evaluation Standard to ensure an appropriate level of evaluation of events. A system for reporting minor events and near misses was established, and a data base was created to track and trend events.

Oyster Creek filled the Human Performance Enhancement System Coordinator position, which had been vacant for several months.

The outage risk management program was upgraded prior to the 15R outage. Also, a computer-based system for evaluating outage risk is being used on a trial basis. If successful, it will be used in future outages.

Oyster Creek personnel surpassed one million work hours without a lost time accident during this period.

In keeping with corporate goals for greater efficiency, reductions in personnel through a voluntary early retirement program were initiated during this period. Also, several functions were consolidated (e.g., Quality Assurance and Independent On-Site Safety Review). While these measures were initiated with appropriate consideration for maintaining the goal of nuclear safety, they should be periodically evaluated to ensure the desired results are achieved.

3.0 ACTIVITIES OF COMMITTEE AND STAFF

3.1 GENERAL

There were no changes in Committee membership or site support staffing during this period.

The NSCC guides the NSCC Staff's investigations and approves its schedules and expenditures. Staff activities involve both routine monitoring and special reviews. Routine monitoring covers all functional areas at each site and at corporate headquarters. Special reviews are initiated in response to Committee requests, or as plant events or industry occurrences dictate. The Committee reviews various sources of information noted in Exhibit 1. On occasion these reviews result in special tasks for the Staff.

3.2 COMMITTEE ACTIVITIES

In addition to the activities described above, the Committee meets with the GPUN Board of Directors at scheduled meetings and reports on any items of significance with respect to safety or compliance. Questions or concerns arising between board meetings may be directed to the Chairman of the Board or the President of GPUN. The Committee may also meet with GPUN executives when appropriate. One such meeting, to discuss the 1993 NSCC assessment of safety at GPUN facilities, was held in May. The Committee meets with members of the Staff prior to the meetings of the Board of Directors. Between meetings, there is a regularly scheduled conference call to discuss the status of each plant.

The meetings of the NSCC and its staff frequently include presentations by, and discussions with, selected GPUN personnel on subjects of interest to the Committee. During this report period, discussions were held with the Vice-President/Director, Oyster Creek; the Vice-President/Director, TMI-1; the Director, Independent Safety Review; the Director, Operations and Maintenance, Oyster Creek; the Radiation Controls/Safety Director, TMI; the Manager, Component Maintenance Team, Oyster Creek; the Manager, Design and Drafting; the Manager, Nuclear Safety Assessment, TMI; and members of the Oyster Creek PREP Team. Additionally, in April, a representative of the Oyster Creek Operator Training section conducted a training session on reactivity control, reactor pressure and level control, and associated systems.

All Committee members completed Site Access regualification training during this period.

Committee members toured the TMI-1 and Oyster Creek sites in

conjunction with meetings of the Board of Directors and General Office Review Boards (GORB). Admiral Trost attended one GORB meeting at TMI; and Mr. Wilson attended one GORB meeting at Oyster Creek. Also, in May, the Manager, Construction Management, conducted a tour of TMI-2 for the Committee and the Staff. In September, they toured the TMI Low Level Rad Waste Storage Facility.

3.3 STAFF ACTIVITIES

The Staff, which is permanently stationed at the TMI and Oyster Creek plants, gathers information on plant activities from many sources: plant tours; the monitoring of activities; attendance at meetings; interviews with GPUN personnel; and reviews of reports, correspondence, and other documents. Plant operations and maintenance activities receive primary attention, but support functions are also evaluated. The NSCC Staff has expertise in management, operations, maintenance, engineering, licensing, training, radiological controls, environmental controls, quality assurance, and emergency preparedness. During this period, one Staff member attended an EPRI sponsored Operational Reactor Safety Engineering and Review Groups Workshop.

Evaluations during this report period concentrated on the areas and activities described in Section 2.0. Information sources to which the Staff avails itself and a list of activities and information sources used in the Staff evaluations are presented in Exhibit 1. GPUN personnel contacted during this period are indicated in Exhibit 2.

EXHIBIT 1

NSCC STAFF ACTIVITIES/INFORMATION SOURCES
(both TMI-1 and OC unless otherwise noted)

PLANT TOURS

General walkthroughs/housekeeping observations
Off-Shift tours
Control Room observations
Maintenance observations
Surveillance Test observations
Radwaste Handling observations
Emergency Drill observations

MEETINGS

Production Planning meetings
Plant Review Group (PRG) meetings
Daily Plant Status meetings
Outage Planning meetings
NRC Entrance/Exit meetings
INPO Training Evaluations
*GORB meetings
Post-Trip Review Group meetings
Critiques
Radiological Awareness Committee meetings (OC)
Project Review meetings (OC)
Department/Section Staff meetings (OC)

DOCUMENT REVIEW

GPUN Sources

*Plant Incident Reports (TMI-1)
Plant Review Group meeting minutes
*Deviation Reports (OC)
*Licensee Event Reports
*Incident Critiques
Station Action Item Tracking System
*Licensing Correspondence
*Significant Events Reports
*Off-Shift Tour Reports

*Denotes information reviewed by the NSCC

EXHIBIT 1
(Continued)

QA Audit Reports
*QA Assessment Reports (Monthly and Annual)
*QA Quarterly Trend Reports
Operations QA Monitoring Reports
STA Daily Reports
Operations Night Order Book
Log Books (Operations, STA, Chemistry, Maintenance, Radwaste)
*Independent Safety Review Annual Safety Assessment Report
Design Basis Documents
Shift Turnover Forms
MNCRs, QDRs
Radiation Awareness Reports
*Post-Trip Review Group Reports
*Transient Assessment Reports
Maintenance Job Order Packages
GPUN Administrative Policies and Procedures
Station Procedures (e.g., Admin., Operations, Maintenance)
Division Procedures (e.g., Rad Con, Tech. Functions)
Operations QA Plan
Technical Specifications
Training System Descriptions
Training Lesson Plans
Plant Drawings
*IOSRG Evaluation Reports
*GORB Meeting reports
Potential Safety Concerns
Licensing Action Items
*HPES Reports
Technical Data Reports
Calculations and Verifications
Field Questionnaires/Change Notices
Failure Trend Reports

Databases Reviewed

Computer Assisted Records & Info Retrieval System (CARIRS)
Generation Maintenance System II (GMS-2)
Material Inventory Control System (MICS)
Purchasing System (DKPS)
Nuclear COMEC (NCOMC)
Quality Assurance (NQMI)
Nuclear Material Management System (NMMS)
Technical Functions Work Requests (TFWR/TFAAI)
Plant Engineering Work Requests (PEWR/PETA)

*Denotes information reviewed by the NSCC

EXHIBIT 1
(Continued)

Other Sources

- *NRC Notices and Bulletins
- *NRC Generic Letters
- *NRC Regulatory Guides and NUREGs
- *NRC SALP Reports
- *NRC Inspection Reports
- *INPO Evaluation Reports
 - INPO Guides
 - ANSI Standards
 - ASME Codes
 - Code of Federal Regulations (10 CFR)
- *Industry Periodicals (e.g., Inside NRC, Nucleonics Week)
- *INPO Nuclear Power Plant Operational Data Report
 - Nuclear Network

*Denotes information reviewed by the NSCC

EXHIBIT 2

PERSONS INTERVIEWED/CONTACTED
DURING REPORT PERIOD

SITE PERSONNEL (both TMI-1 and OC unless otherwise noted)

Vice President/Director
Vice President, Saxton, NEC
Operations and Maintenance Director
Plant Operations Director (TMI-1, TMI-2)
Plant Maintenance Director
Plant Engineering Director
Site Services Director
Department Managers, Supervisors, and personnel
 Plant Operations/Radwaste/Chemistry
 Plant Materiel/Maintenance
 Site Services
 Plant Engineering
 Logistical Support
 Plant Review Group
 IOSRG
 Engineering and Design
 Engineering Services
 Licensing
 Systems Engineering/Plant Analysis (STA)
 Engineering Projects
 Startup and Test
 Training and Education
 Quality Assurance
 Emergency Planning
 Radiological Controls
 Environmental Controls
 Nuclear Safety
 Outage Management

CORPORATE PERSONNEL

Vice-President, Services/TMI-2
Vice-President, Technical Functions
Vice-President, Nuclear Assurance
Director, Radiological Controls
Director, Independent Safety Review
Managers and other personnel
 Licensing
 Training and Education
 Systems Engineering/Plant Analysis
 Nuclear Safety Assessment
 Engineering and Design
 Site Services