U.S. NUCLEAR REGULATORY COMMISSION

REGION III

REPORT NO. 50-341/95011

FACILITY
Fermi Nuclear Plant, Unit 2

License No. NPF-43

LICENSEE
Detroit Edison Company
6400 North Dixie Highway
Newport, MI 48166

DATES
August 18 through September 22, 1995

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AREAS INSPECTED

An integrated inspection was performed by resident and region-based inspectors of Fermi's performance in the areas of operations, engineering, maintenance, and plant support. Safety assessment and quality verification activities were routinely evaluated. A follow-up inspection was performed for non-routine events and for certain previously identified items. Temporary Instruction (TI) 2515/121, "Verification of Mark I Hardened Vent Modification" was closed based on the results of this inspection.

RESULTS

The following assessments were based on activities during this report period.

Performance within the area of OPERATIONS was good.

- Material conditions in general, and General Service Water (GSW) system condition in particular, have degraded during this inspection period. A large number of balance of plant equipment problems have challenged and distracted operators, and through-wall pipe leaks in the GSW system have repeatedly occurred.

- Operations management began to set priorities for site organizations to support safe plant operations. Good coordination was observed with maintenance and engineering in creating the material concerns list as a tool for focusing efforts on operations-prioritized problems.

Performance within the area of MAINTENANCE was good.

- Improved coordination with other organizations resulted in very good work on a number of problems.

- The material condition of Combustion Turbine Generator 11-1 degraded, and a significant number of problems call into question the reliability of this important equipment from a station blackout standpoint. A sense of ownership for this equipment was not strong for the site.

Performance in the area of ENGINEERING was adequate.

- Temporary Instruction 2515/121, "Verification of Wetwell Hardened Vent Modification" was closed based on the results of this inspection, with no significant problems noted, and one followup item identified.

- The effectiveness of system engineer monitoring of plant equipment was mixed.

Performance in the area of PLANT SUPPORT was excellent.

- Radiation protection staff support was excellent on a number of radiologically significant jobs.

- Overall security performance was very good, with some program deficiencies noted.

The inspectors concluded that SELF-ASSESSMENT efforts in the areas of engineering and security were good.

Summary of Open Items
Violations: No violations were identified.
Inspector Follow-up Items: Identified in Sections 1.6.1, 3.1, and 4.2.1.

INSPECTION DETAILS

1.0 OPERATIONS

NRC Inspection Procedure 71707 was used in the performance of an inspection of ongoing plant operations. The plant operated at or near full power for the entire inspection period. Operator response to equipment problems was prompt and coordination between departments on resolving issues were noted to be improved. Material condition of balance-of-plant equipment was weak.

1.1 Increased Operator Awareness to System Transients During the previous inspection period, Inspection Report 95009, inspectors documented concerns involving the occurrence of several water hammer events. Additionally, the inspectors noted that similar transients in the reactor water cleanup (RWCU) and condensate systems had previously occurred. Inadequate communications of the events by plant staff to station management hampered corrective actions to prevent event recurrence. During this inspection period, inspectors noted increased awareness to systems transients. The increased awareness was reflected in two deviation event reports (DERs) documenting potential water hammers during performance of a standby feedwater surveillance and a condensate filter demineralizer backwash and precoat operation. Though the occurrence of these events was a concern, the licensee operations staff promptly initiated action to communicate the abnormal system transients to management and the engineering staff.

As a result, evaluations of the transients were promptly initiated to assess the cause of these events and develop corrective actions. The inspectors will continue to monitor licensee staff correction actions to system transients during routine observation of plant activities.

1.2 Continued Indications of General Service Water (GSW) System Degradation As previously documented in Inspection Report 95009, the inspectors expressed concern with the degraded material condition of the GSW system. During this inspection period, the licensee initiated an ultrasonic inspection of selected portions of GSW piping to identify indications of pipe wall thinning due to erosion or corrosion. However, on several occasions inspectors and the licensee identified GSW material condition problems, including:

- On August 17, the licensee identified a through wall crack on piping upstream of Drain Valve P41F218.
- On September 7, inspectors identified a through wall crack on piping upstream of Drain Valve P41F217.
- On September 12 and 13, GSW Pumps Nos. 3 and 6 were shutdown due to excessive packing leaks identified by licensee maintenance personnel. During adjustments, it was noted that the packing glands had nearly completely backed out.

- On September 12, maintenance personnel noted that GSW Pump No. 4 was secured but rotating in the reverse direction due to discharge check valve leakage.

- On September 18, inspectors identified a crack in a weld downstream of the No. 3 Hydrogen Cooler Temperature Control Valve. The leak was of particular concern because it had the potential of spraying the high voltage static exciter cabinet.

- On September 20, inspectors identified missing or loose bolts on GSW pipe supports on the east hydrogen cooler return line and the reactor building closed cooling water fan cooling unit return line. These were likely to have been caused by sustained piping vibration due to high flow conditions during the summer.

Based upon the above examples, it was evident that the GSW system material condition continues to be degraded. Though none of the above problems have challenged plant safety, the potential impact of continued degradation of the GSW system may be serious. The licensee's ranking of system importance per the Fermi Probable Risk Assessment by risk achievement worth (RAW) methods, ranks the GSW system eighth. The RAW method of ranking measures the risk impact of removing a system from service and thus measures the value of the system with regard to preventing core damage. The RAW method also provides a risk ranking measure when the principle criterion is the effect on core damage frequency if system reliability is seriously degraded. Since the GSW system has a relatively high RAW, the risk significance of the observed degraded material condition is proportionally high. The fact that inspectors, on multiple occasions, identified leaks in the GSW system indicated that the licensee staff was not sufficiently monitoring GSW system material condition. While the NRC recognizes that long term corrective actions were in progress, short term actions to assure continued reliable system operation were lacking; further licensee management attention is warranted to ensure that the GSW system is being adequately maintained. The inspectors will continue to assess licensee monitoring of the GSW system during routine observation of plant activities.

1.3 Engineered Safety Feature Systems Material Condition During inspection of engineered safety feature (ESF) system, the accessible portions of the following systems were walked down.

- Emergency Diesel Generator (EDG) Numbers 12, 13, and 14
- Reactor Core Isolation Cooling System
- High Pressure Coolant Injection System (HPCI)
- Standby Gas Treatment System (SBGT)
- Core Spray System

Material condition of ESF systems observed was generally good. The licensee began a significant effort to correct the large number of minor EDG oil leaks by mapping all leaks and developing a corrective action plan to address each leak.

1.4 Frequent Equipment Failures and Degraded Material Condition A large number of balance of plant (BOP) equipment problems occurred during this inspection period which challenged and distracted operators. Examples include:

- Large numbers of small oil leaks from standby feedwater pumps, reactor recirculation motor-generator set A, and all EDGs require wiping up by operators.

- Packing leaks in both RWCU pumps and one condenser pumps have required increased monitoring by operators.

- Failure of the North Turbine Building Heating Ventilation and Air Conditioning (TBHVAC) supply fan blades. This item is discussed in section 2.3.

- Repeated loss of the process computer due to overheating of the power conditioner. The cabinet containing the power conditioner is located in a high temperature area outside the control room, while the process computer itself is located within the control center envelope and is properly cooled. Initially thought to be related to securing TBHVAC for inspections, the licensee determined the problem to be related to temperature sensing equipment degradation. Loss of this equipment for hours at a time challenged operations, particularly when coupled with the other equipment problems that required increased monitoring.

- Several Division I Control Complex Heating Ventilation and Air Conditioning problems required frequent manual purging of non-condensible gases from the system for long periods. Initially considered to be related to severe hot weather, the problem was eventually determined to be caused by three minor problems that cascaded.

- Off gas chillers frequently tripped and required constant maintenance attention. The chillers, for which very little technical support documentation existed on site, are located in a hot area and have no external cooling supply. High ambient temperatures and improperly sized orifices contributed chiller trips. Each trip required operator investigation and action.

- South Reactor Feed Pump Discharge Drain leak required Fermanite repair. The drain valve leaked past its seat. The threaded pipe cap downstream of the valve also leaked. Initially identified to operators by inspectors two months earlier, while still a drip, the problem was not repaired until it became a steam plume beyond

the capacity of a weld repair. Two attempts to Fermanite the drain were required to stop the leak.

- Diesel fire pump (DFP) exhaust leak not identified during surveillance performance. Toward the end of a surveillance run on the DFP, the inspector entered the DFP room and noted an obvious exhaust leak. The inspectors determined that the leak was due to a loose exhaust manifold bolt. These observations were reported to the operator present during the surveillance. The leak was not documented until a month later, when the inspectors inquired about the leak.

- Reactor recirculation pump B high/low oil level alarm. Though unable to determine the exact cause of the alarm due to inaccessibility of the equipment at power, licensee actions to monitor and resolve this problem have been good.

- 5N Heater Steam Supply Valve (N22-F183A) packing leak. The leak was considerably reduced by backseating the valve in a safe manner with a minimal dose.

Although the fairly large number of BOP equipment problems during this short period were indicative of a decline in plant material condition. The licensee improved in identifying and resolving these and other problems that have occurred during this inspection period. Operations, engineering, and maintenance coordinated well to create a material concerns list to identify and track material deficiencies which were of the highest concern to operations, and included items which were operator work-arounds. This list grew to include the status and schedule for investigation and corrective actions of each item, and appears to have had the desired effect of enhancing communication and coordination between these organizations. Additionally, during this inspection period, operations has emerged as the leader of overall site activities, setting priorities for plant work and engineering support.

Inspectors will continue to assess licensee effectiveness in resolving material concern list issues during routine observation of plant activities.

1.5 Follow-up on Non-Routine Events NRC Inspection Procedures 90712 and 92700 were used to perform a review of written reports on non-routine events. The following items were closed with no significant strengths or weaknesses noted.

1.5.1 Retraction of 10 CFR 50.72 Notification As previously documented in Inspection Report 95009, dated September 19, 1995, a flow indicator on the sample line from the reactor recirculation system failed on August 1, 1995, resulting in a leak. The leak was isolated by shutting Containment Isolation Valves B31F019 and B31F020. A 10 CFR 50.72 Notification was made because closing the valves was considered a manual actuation of an ESF. Subsequent licensee review determined that the

closure of the valves was not reportable and the 50.72 call was retracted on August 18, 1995. The licensee determined that the ESF function of the valves was not challenged because these valves were designated by procedure as the planned sample isolation method. In addition, the valves were procedurally closed once sampling was completed and the line secured. Inspectors reviewed licensee documentation and determined that the licensee's retraction was consistent with NRC reportability requirements.

1.6 Followup on Previously Opened Items A review of previously opened items (violations, unresolved items, and inspection follow-up items) was performed per NRC Inspection Procedure 92901. No significant strengths or weaknesses were identified.

1.6.1 (Closed) Inspection Followup Item 341/93016-06 Review of licensee corrective actions in response to frequent control room indicator bulb failures. Licensee actions to resolve this issue were in progress. Pending inspector review of completed actions this issue will be tracked as an Inspection Followup Item (341/95011-01).

1.6.2 (Closed) Inspection Followup Item 341/93028-01 Loss of Division I off-site power event on January 27, 1994, due to a combination of system faults resulting from an ice storm and the failure of a 120KV switchyard breaker. The licensee determined the cause for the failure of the breaker was due to ice buildup on a linkage. Licensee corrective actions included repairs to the susceptible linkage and initiation of preventative maintenance on the breaker to prevent recurrence. Licensee investigation of the event was thorough and corrective actions were comprehensive. This item is closed.

1.6.3 (Closed) Inspection Followup Item 341/95008-02 Partial Loss of Condenser Vacuum. On May 28, 1995 the plant experienced an unexpected lowering of main condenser vacuum at 94 percent power. While operators were taking corrective actions, condenser pressure rose to 2.3 psia. Placing a second air ejector in service caused pressure to lower before reaching the 2.6 psia turbine trip setpoint. The licensee determined that the pressure increase was due to reduced condenser efficiency caused by non-condensible gases blanketing condenser tubes; this problem was compounded when condensate temperatures rose and reduced the efficiency of the only operating air ejector condenser, which is cooled by condensate.

The licensee's investigation identified a number of deficiencies regarding understanding of off gas operation and indications. The lack of familiarization of single air ejector operation, which had not been used during high power operations before, was the major contributor to the problem. Training on the event and the off gas system was performed. Procedures have been revised to ensure two air ejector operation and to strengthen the recommendation to place an additional air ejector in service if vacuum is lowering.

Additionally, a condenser level transient during the event confused and distracted operators. The problems with condenser level control was previously identified by the licensee and scheduled to conduct testing to determine the best fix during power ascension testing. As noted in section 2.5 of this report, power ascension testing was on hold pending turbine vibration data collection. Licensee corrective actions were adequate, and no additional concerns were identified.

2.0 MAINTENANCE

NRC Inspection Procedures 62703 and 61726 were used to perform an inspection of maintenance and testing activities. Overall, maintenance activities were well planned and executed.

2.1 Observation of Work and Testing The following maintenance and surveillance activities were observed:

- Traversing Incore Probe (TIP) "C" Replacement
- HPCI Outage Work
- Combustion Turbine Generator (CTG) 11-1 Monthly Operability Check
- Torus Vacuum Breaker Surveillance
- Diesel Fire Pump Operability Surveillance
- Off Gas Chiller Orifice Replacement
- Replacement of ECCS Room Cooler Controller Transformer
- SBGT Operability Surveillance

For all activities observed, the inspectors noted safe work practices. The activities observed were performed satisfactorily in accordance with procedures. Some problems were identified as discussed below.

2.2 Events and Near-misses due to Inadequate Work Control Early in the inspection period the licensee identified two events. The inspectors were concerned that these events involved, in part, inadequate work control practices. On August 15, work was started on the center service air compressor unloader valve without adequate protection. Maintenance personnel noted that 110 VDC was still being applied to a valve that was supposed to be deenergized. This condition posed a potential personnel safety hazard.

On August 17, during performance of a test of station air compressors, an automatic isolation of the Division II Non-Interruptible Air Supply (NIAS) occurred and the Division II NIAS air compressor auto started. The cause for the unexpected actuations was an inadequate test procedure. Both of these events were of minor safety significance. Licensee response to these events was prompt. Corrective actions for these events were to include a lessons learned meeting to communicate the cause of the events and corrective actions. Inspectors will continue to monitor licensee efforts to improve work control performance.

2.3 TBHVAC Supply Fan Blade Failure Due to Foreign Material in Ducts The north TBHVAC supply fan blades failed on September 9. Preliminary analysis determined that the blade failure was caused by foreign material getting between a blade and the casing during operation. This failure differed from two previous TBHVAC exhaust fan failures that were caused by high cycle fatigue. Licensee system inspection found degraded material condition of the system, including washers, bolts and wood inside the duct work and several loose duct work fasteners. The current fan failure and suspected causes of previous fan failures have resulted in operating while using one supply and one exhaust fan, rather than the normal lineup of running two of each.

2.4 Improved Coordination Between Organizations During Corrective Maintenance Coordination and communication have improved between maintenance, operations, radiation protection, chemistry, and engineering, particularly in prioritizing and performing corrective maintenance. Good coordination contributed to the smooth and timely work on replacement of TIP "C," circulating water system decant line flow indication problems, and dehalogenation pump problems.

2.5 Power Ascension Testing Delayed During this inspection period, power ascension testing activities were on hold pending data collection on turbine vibration as a function of condenser vacuum, ambient temperature, and other parameters. Main turbine vibration alarms became more frequent during this inspection period, and the licensee raised the vibration alarm setpoints on a number of bearings through the summer months. The vibration changes were believed to be related to weather changes, but a more rigorous review determined that under similar conditions, vibration levels increased from June to September. The licensee decided that a clearer understanding of conditions affecting turbine vibration and their ability to control those conditions are required before continuing the power ascension test program. The inspectors will continue to monitor this condition and evaluate power ascension activities.

2.6 Combustion Turbine Generator (CTG) 11-1 Degraded Material Condition During this inspection, Fermi experienced numerous faults and failures related to CTG 11-1. CTG 11-1 provides Fermi with a black start capability during station blackout conditions and safety system alternate power for which considerable credit is taken in the Individual Plant Evaluation. However, the inspectors noted that this important equipment is not maintained in a condition appropriate to its importance to plant safety. The Fermi site maintenance organization is not responsible for CTG maintenance, but rather a separate Detroit Edison organization which maintains all Detroit Edison corporate peaking units. This organization does not maintain a presence on the Fermi site. In an interview with one of the peaker maintenance personnel, the inspectors found that preventive maintenance to this 30 year old CTG was limited to lubrication, filter replacement, and visual inspections. This was also confirmed by an interview with the station system engineer.

Recent problems experienced with CTG 11-1 included:

- Loss of indication and alarm telemetering in the control room requiring an operator to be sent outside the protected area to the peaker control booth to run the peakers. The cause was determined to be an incorrectly installed jumper.

- Two indicated fires in the unit which resulted in injection of CO_2 and CTG turbine trips. The cause was determined to be a failed eductor cover which caused heat detectors to indicate over-temperature conditions. In the first instance, the other eductor cover failed to shut as required, providing a release path for the CO_2 injected into the unit.

- Repeated trips when increasing load from minimum to base load in automatic mode with no indicated cause (operators observed on one occasion the load increased beyond base load to a peak load condition unexpectedly, then tripped).

- Slow controller response in automatic mode at minimum load resulted in large power oscillations.

- CTG transformer 11 trouble alarm with no indication of an actual fault.

The reduced reliability of this CTG was somewhat masked because it always started when required, so it's availability appeared to remain high. During the inspection period, CTG 11-1's degraded reliability became evident through the numerous problems described above. The inspectors were concerned that, under black start conditions, CTG 11-1 may not carry the station load for some time. The Fermi organization does not appear to have a clear attitude of ownership of this important equipment, as demonstrated by their tolerance of a minimal maintenance program, and not demanding rigorous root causes for failures.

Fermi management was aware of the reliability problems, and was investigating whether to perform a vendor overhaul or obtain a new blackstart CTG. If a new CTG was obtained, the CTG would be dedicated to the site, rather than routinely operated as a system peaker unit as is currently done. The site Independent Safety Engineering Group (ISEG) was also in the process of evaluating the reliability of CTG 11-1 at the close of this inspection. The inspectors will continue to follow the status of this issue during future routine inspections, including the ISEG reliability evaluation.

3.0 ENGINEERING

NRC Inspection Procedure 37551 was used to perform an onsite inspection of the engineering function.

3.1 (Closed) Temporary Instruction (TI) 2515/121 Hardened Vent Modification
The purpose of this TI was to inspect hardware modifications made in response to Generic Letter 89-16, "Installation of a Hardened Wetwell Vent." The hardened vent system consists of a new pipe routed from the existing standby gas treatment system header into a new elevated stack on the roof. A radiation monitor was installed to monitor any release.

The system was sized to accommodate a five percent increase in rated thermal power. This remains within the design criteria for the system to remove heat input equal to one percent rated thermal power at a containment pressure equal to the primary containment pressure limit.

The licensee previously conducted a self assessment of this modification, and had the following observations: two radiation monitor bolts had inadequate thread engagement; the drain hole in the vent stack had been partially blocked by debris (a condition which still existed when the inspectors walked down the system); and there was an overall weakness in operations personnel system knowledge, noting that many operations personnel had received no refresher training since initial systems training in 1992. As part of corrective action for the identified concerns, the licensee planned to include training on this system as part of the licensed operator requalification training, and planned to re-evaluate the current 18 month frequency of performing visual inspections of the drain hole.

The inspector reviewed the licensee's response to Generic Letter 89-16 and the licensee's modification package, including the associated 10 CFR 50.59 evaluation and identified no concerns. In general, the licensee implemented the modification as designed, and the design was in accordance with Generic Letter 89-16. The inspector noted that the system was designed for static loads only, and was concerned that a dynamic load could be placed on the system upon system initiation due to the primary containment being pressurized. The licensee was performing confirmatory calculations to ensure that piping support margins were adequate under these conditions. Pending the inspectors' review of the results of these calculations, this item will be tracked as an Inspection Follow-up Item (341/95011-02).

The inspector identified no additional concerns with the implementation of this modification. This TI is closed.

3.2 Followup on Engineering Improvement Initiatives As previously documented in Inspection Report 95009, licensee senior management determined that some significant changes were needed to improve the technical performance of engineering. New initiatives were being implemented to address longstanding engineering issues. The newly implemented initiatives included, but were not limited to: (1) Backlog Reduction Project, (2) System Engineering Handbook (SEH), (3) Component Engineering Group, (4) Engineering Improvement Group, (5) Project Evaluation Review Committee and (6) Revised Deviation and Corrective Action Process. Inspectors reviewed progress of some of these initiatives. A particular strength was the use of the SEH which was

being utilized by the system engineers. Though some refinements need to be incorporated, the system engineers perceived the SEH as a useful tool and guidance for performing system engineering functions.

On September 12, 1995, the inspectors attended a system engineering Real Time Training session. During this meeting of all system engineers and supervisors, engineering lessons learned training topics were delivered by the involved system engineers, and pertinent engineering issues were presented. The meeting demonstrated positive interface and teamwork effort among system engineers and supervisors.

The inspectors accompanied the EDG system engineer on a biweekly system walkdown. The engineer utilized a checklist to document walkdown efforts and system parameters. The engineer was very familiar with requirements and system past history. The engineer exhibited ownership and expert system knowledge.

Of particular concern, based on inspectors identification of GSW material deficiencies documented in Section 1.2 of this report, was system engineer awareness of system material condition. In some cases, such as the EDG system engineer, system engineers were very knowledgeable of their system condition and were aggressively monitoring performance. In other cases, such as in the CTG 11-1 and GSW, the material condition was allowed to degrade and system engineer aggressiveness in identifying and resolving problems was weak. Inspectors will continue to monitor system engineer support of daily activities and system engineer involvement in monitoring systems during routine assessment of plant activities.

3.3 Follow-up on Previously Opened Items A review of previously opened items (violations, unresolved items, and inspection followup items) was performed per NRC Inspection Procedure 92902. No significant strengths or weaknesses were identified.

3.3.1 (Closed) Violation 341/93007-01 The licensee failed to promptly identify and correct the cause of a high pressure coolant injection (HPCI) system water hammer event. As part of their corrective actions, the licensee revised their surveillance procedure for testing the HPCI system, and modified the system to prevent water hammer events. The inspectors performed a walkdown of the affected portions of the system and did not identify any subsequent damage related to water hammer. This violation is closed.

3.3.2 (Closed) Violation 341/95004-03 The licensee failed to incorporate design basis requirements into an emergency operating procedure (EOP) support procedure. In addition to resolving the design basis conflict, the licensee performed engineering verifications of other EOP support procedures to ensure that technical requirements had been addressed. The inspectors reviewed a sample of the engineering verifications which had been subsequently performed and did not identify any concerns. This violation is closed.

3.3.3 (Closed) Unresolved Item 341/93018-06(DRP) Operability status of Valve B2103-F600. The licensee identified that the Main Steam Drain Isolation Valve (B2103-F600) was not in the inservice testing (IST) program, even though it should have been as the Division II Main Steam Isolation Valve Leak Control System (MSIVLCS) isolation boundary. Preventive maintenance on the valve covered all but stroke time testing, which was not performed. A determination was made that the valve was operable without performing any stroke time testing, even though plant conditions at the time did not prevent such testing. The decision to not test was based on the belief that stroke timing was not a factor in the ability of the valve to perform it's isolation function during a loss of coolant accident. Upon inspectors challenging the operability determination, the licensee performed stroke time testing and determined that the data obtained was the same as data taken in 1989 and 1991, and made a final determination that the valve was operable. Based on no further examples of questionable operability determinations since this instance, this item is closed.

3.3.4 (Closed) Inspection Followup Item 341/93028-04 Failure of EDG-13 to fully load. On December 16, 1993, during EDG No. 13 monthly surveillance test, the engine was successfully started and synchronized, but load oscillations were observed and engine load could not be raised above 1800kw. The licensee identified the cause to be a fuel rack linkage which was disconnected from the governor actuator output terminal shaft. The clamp bolt had come loose due to engine vibration, causing the fuel racks to fail as-is. The licensee reconnected the fuel rack linkage to the governor actuator output terminal shaft using Loc-Tite to preclude the bolt from backing out. The licensee also applied Loc-Tite to the three remaining EDGs, and revised Procedure 35.307.004 (Rev. 24) to require the use of Loc-Tite. The inspectors visually inspected several installed clamp bolts and had no concerns. This item is considered closed.

4.0 PLANT SUPPORT

NRC Inspection Procedures 71750 and 83750 were used to perform an inspection of Plant Support Activities. Radiation protection and chemistry performance continue to be excellent. Security performance remains very good.

4.1 Continued Excellent Performance in Radiological Controls The inspectors verified that personnel were following health physics procedures for dosimetry, protective clothing, frisking, posting, etc., and randomly examined radiation protection instrumentation for use, operability, and calibration. No deficiencies were identified.

Radiation protection (RP) continues to aggressively pursue radiological issues and coordinate well with other organizations. RP efforts in response to the center condenser pump seal leak, south reactor feed pump drain line leak repair, TIP C replacement, and the 5N Heater Steam Supply Valve (N22-F183A) packing leak were excellent. Concern for maintaining the ALARA concept have led to a constant drive to improve, as reflected in an ALARA evaluation of the recent HPCI post maintenance

surveillance run and the dose minimization efforts related to the center condenser pump seal leak. Concerns for dose were apparent at all levels of the plant staff.

4.2 Performance of Safeguards Functions were Good With Exceptions in Equipment Maintenance and Key Accountability Each week during routine activities or tours,the inspectors monitored the licensee's security program to ensure that observed actions were being implemented according to the approved security plan. In addition, an onsite inspection by a region-based security inspector was conducted between August 14-24, 1995. During the inspection, an inspection followup item was noted pertaining to out-of-service time for certain security components. Observations were noted pertaining to weak security key accountability and control, and inaccurate vehicle log entries that were not detected during supervisors reviews. Two program strengths were noted concerning response to a civil demonstration and good individual security personnel performance.

The duty performance of personnel observed was very good. Alarm station operators were particularly proficient during observed activities. Personnel interviewed were very knowledgeable of their responsibilities and procedure requirements, except for key control and accountability requirements.

4.2.1 Inconsistent Maintenance of Support of Security Equipment Maintenance support for security equipment was generally very good and most repairs, especially if compensatory measures were required, were completed in a timely manner. However, Quality Assurance (QA) noted during their annual audit that maintenance support for one type of security equipment required review (the specific security components involved are considered Safeguards Information and exempt from public disclosure in accordance with 10 CFR 73.21 until the potential deficiency is corrected).

The QA analysis concentrated primarily on the number of repeat failures the equipment components experienced before the problems were corrected using primarily 1994 data. The inspector's review of this issue for 1995 showed that four pieces of equipment have resulted in about 30 percent of the total out-of-service time for all security equipment on site, accounting for about 3,800 hours, compared to a total out-of-service time for all equipment of about 13,300 hours. Although security personnel did not have to compensate for these four components, redundant equipment had to be used for compensatory measures and was, therefore, not available for their intended purpose. This trend will be monitored to verify the effectiveness of the corrective actions. This item will be tracked as an Inspection Followup Item (341/95011-03).

4.2.2 Weaknesses in Key Accountability and Vehicle Logs An observation was noted in two areas reviewed which indicate a need for more attention to detail by security force personnel.

A weakness was noted in the accountability of vital and protected area keys stored at the Secondary Alarm Station. Two key accountability forms were posted in the key control cabinet and both forms listed the incorrect number of keys. Two security officers interviewed were not certain how many security keys were to be accounted for, and one security officer thought two of the keys were lost when requested to conduct an inventory of the keys (the correct number of keys were available, the officer did not conduct a correct inventory). This issue was a concern because the keys were accounted for three times a day for several months, and deficiencies were not noted during the accountability process.

During review of vehicle logs for entry and exit into the protected area, four days of vehicle logs were reviewed. Log entries errors were not detected or corrected during daily supervisory reviews. This issue raised concern about attention to detail on the part of some security officers and the quality of supervisor reviews of the documents.

4.2.3 Effective Response to Civil Demonstrations During review of the recent civil demonstrations, it was confirmed that the demonstrations had not constituted a threat to the protected area or activities within the protected area. The most significant impact on the security force within the protected area seemed to be the amount of overtime worked during a two week period. Although 80 hour work weeks were not uncommon during the two week period, interviews with supervisors confirmed that the overtime requirements were reviewed and approved by the appropriate level of management, and there appeared to be no fitness-for-duty incidents caused by fatigue. Security staff coordination with local law enforcement agencies was effective.

4.3 Follow-up on Previously Opened Items A review of previously opened items (violations, unresolved items, and inspection followup items) was performed per NRC Inspection Procedure 92902. No significant strengths or weaknesses were identified.

4.3.1 (Closed) Violation 341/95006-01 This issue pertained to a failure to conduct required medical evaluations for some watchpersons prior to their performing security duties. The immediate corrective actions and actions to prevent recurrence as identified in the licensee's May 23, 1995, written response to the Notice of Violation were reviewed and considered adequate to prevent recurrence. This item is considered closed.

4.3.2 (Closed) Inspection Followup Item 341/95006-02 This issue pertained to procedure weaknesses, lack of procedures, or work practices differing from procedures as a primary factor in several security related DERs. During this inspection, review of several security related DERs did not find any instances of procedural deficiencies contributing to the cause of the DER incident. This item is considered closed.

4.3.3 (Open) Inspection Followup Item 341/95006-03 This issue pertained to the need for increased security followup and oversight of security

contingency training because of training delays caused by the extended outage for turbine repair. A significant amount of effort had been completed in this area since the previous inspection and the security action plan to address this issue appeared to be adequate. However, further significant training objectives identified in the action plan, and other items, are scheduled to be completed by October 1995. This item will remain open until the remainder of the action plan items are completed.

5.0 SAFETY ASSESSMENT AND QUALITY VERIFICATION

Inspectors used Inspection Procedure 40500 to evaluate licensee self-assessment activities. The inspectors have noted that Nuclear Quality Assurance (NQA) inspectors have made some good findings recently. NQA took a close look at the Engineering Design Packages (EDPs) for implementing hydrogen water chemistry (HWC), which are currently in progress, and identified the following problems:

- HWC cryogenic gas supply system work was begun before vendor specification used in the EDP were approved.
- H_2 and O_2 pads for the HWC modification were to be built at different elevations per the safety evaluation and installation drawings, but were actually built at the same elevation.
- The HWC gas supply facility lightning protection was not built per either the method listed in the safety evaluation or the National Fire Protection Association standard listed in the EDP.
- Automatic isolation for HWC system uses non-QA1 components; however, the safety evaluation failed to analyze for the effect of single component failures which could result in incomplete isolation.

A recently completed QA audit of the security program was excellent in scope and depth and was very well documented. The security section's self-assessment efforts continued to be effective. Ten compliance surveillances were completed or were in progress since the previous inspection (March 1995). Actions to resolve QA and security section assessment findings were timely and well documented.

NQA was in the process of performing a self-assessment to determine ways to increase its effectiveness and become more proactive. The inspectors will follow these efforts during routine inspections.

5.0.1 Deviation Event Report (DER) Closeouts The inspectors determined that DERs, the primary means used by the licensee to report conditions adverse to quality, were closed with appropriate corrective actions and review. No instances were identified where a DER had been "administratively closed" or closed without appropriate corrective actions being taken. The inspectors' conclusions were based upon review

of a representative sample of 150 DERs which had been initiated and closed since 1992. The inspectors noted that for significant conditions adverse to quality, the licensee's program required an independent review, either by Safety Engineering or NQA, to ensure that corrective actions addressed the condition and prevented repetitive occurrences. In all cases, this review was performed and occasionally resulted in additional information being submitted as part of the closeout packages. Additionally, the inspectors noted several examples where previous DERs were referred to as part of a new DER, either due to problems recurring or the original corrective actions being too narrowly focused. This indicated an effort by the licensee to ensure that corrective actions were complete and adequate. The inspectors had no concerns in this area.

6.0 PERSONS CONTACTED AND MANAGEMENT MEETINGS

The inspectors contacted various licensee operations, maintenance, engineering, and plant support personnel throughout the inspection period. Senior personnel are listed below.

SENIOR PERSONNEL

At the conclusion of the inspection on September 22, 1995, the inspectors met with licensee representatives (denoted by *) and summarized the scope and findings of the inspection activities. The licensee did not identify any of the documents or processes reviewed by the inspectors as proprietary.

* W. Colonnello, Director, Safety Engineering
* J. Conen, Supervisor, Licensing
* G. DePalma, Acting System Engineering Manager
* P. Fessler, Plant Manager
* L. Fron, Director, Turbine Group
  D. Gipson, Senior Vice President, Generation
* L. Goodman, Director, Nuclear LIcensing
* S. Hsieh, Supervisor, Nuclear Fuel
* E. Kokosky, Assistant Radiation Protection Manager
  J. Korte, Director, Nuclear Security
* A. Kowalczuk, Director, Plant Support
  R. Laubenstein, NSS, Operations
* J. Malaric, Supervisor Modifications, Technical Engineering
  R. McKeon, Assistant Vice President/Manager, Operations
* R. Newkirk, Supervisor, Licensing
* J. Nolloth, Superintendent, Maintenance
* D. Nordquist, Director, Quality Assurance
* J. Plona, Superintendent, Technical Services
  J. Potter, Supervisor, Training
* D. Powel, Engineer, Operations
* K. Precord, Supervisor, Maintenance
  W. Romberg, Assistant Vice President and Manager, Technical

* R. Russell, Supervisor, Training
R. Szkotnicki, Outage Manager
* E. Vinsko, I&C Maintenance Manager

7.0 DEFINITIONS

7.1 Inspection Followup Items Inspection followup items are matters which have been discussed with the licensee, which will be reviewed by the inspector, and which involve some action on the part of the NRC or licensee or both. Inspection followup items disclosed during the inspection are discussed in Sections 1.6.1, 3.1, and 4.2.