

U.S. NUCLEAR REGULATORY COMMISSION

Region I

Report No. 50-245/82-22  
50-336/82-24  
Docket No. 50-245  
50-336  
License No. DPR-21 Priority --- Category C  
DPR-65

Licensee: Northeast Nuclear Energy Company  
P.O. Box 270  
Hartford, Connecticut 06101

Facility Name: Millstone Nuclear Power Station, Units 1 & 2

Inspection at: Waterford, Connecticut 06385

Inspection conducted: September 26 thru November 20, 1982

Inspectors: J. T. Shedlosky 11/22/82  
J. T. Shedlosky, Sr. Resident Inspector date signed

D. R. Lipinski 11-22-82  
D. R. Lipinski, Resident Inspector date signed

Approved by: T. C. Elsasser 12/9/82  
T. C. Elsasser, Chief date signed  
Reactor Projects Section 1B,  
Division of Project & Resident Programs

Inspection Summary:

Unit 1: Routine facility safety inspections, September 26 thru November 20, 1982 (Report Number 50-245/82-22) including: evaluations of plant operations, refueling operations, equipment alignments and readiness, radiation protection, physical security, fire protection, plant operating records, maintenance and modifications, surveillance testing and calibrations, and reporting to the NRC. The inspection involved 217 hours of onsite, regular, and backshift inspection effort by two resident inspectors.

Results: No Violations were identified.

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Unit 2: Routine facility safety inspections, September 26 thru November 20, 1982 (Report Number 50-336/82-24) including: evaluations of plant operations, equipment alignments and readiness, radiation protection, physical security, fire protection, plant operating records, maintenance and modifications, surveillance testing and calibrations, and reporting to the NRC. The inspection involved 104 hours of onsite, regular, and backshift effort by two resident inspectors.

Results: No Violations were identified.

DCS Identification Numbers

NRC Inspection No.  
50-245/82-22  
50-336/82-24

<u>Number</u>	<u>Report Paragraph</u>
50336 - 821027	3
50336 - 821105	3
50245 - 821118	3
50245 - 820925	6
50245 - 820928	6
50245 - 820930	6
50245 - 820913	6
50245 - 820928	6
50245 - 821005	6
50336 - 820825	6
50336 - 820902	6
50336 - 820918	6
50336 - 820914	6
50336 - 820918	6
50336 - 821009	6

## DETAILS

### 1. Persons Contacted

The below listed technical and supervisory level personnel were among those contacted:

R. Asafaylo, Training Supervisor  
J. Crockett, Unit 3 Superintendent  
F. Dacimo, Quality Services Supervisor  
E. C. Farrell, Station Services Superintendent  
J. Etheridge, Radioactive Materials Handling Supervisor  
B. Granados, Health Physics Supervisor  
D. Kross, Unit 2 Instrumentation and Control Supervisor  
R. J. Herbert, Unit 1 Superintendent  
J. Kangley, Radiological Services Supervisor  
J. Keenan, Unit 2 Engineering Supervisor  
J. J. Kelley, Unit 2 Superintendent  
E. J. Mroccka, Station Superintendent  
V. Papadopoli, Quality Assurance Supervisor  
R. Place, Unit 2 Engineering Supervisor  
R. Palmieri, Unit 1 Engineering Supervisor  
W. Romberg, Unit 1 Operations Supervisor  
S. Scace, Unit 2 Operations Supervisor  
F. Teeple, Unit 1 Instrumentation and Control Supervisor  
W. Varney, Unit 1 Maintenance Supervisor  
P. Weekley, Security Supervisor

### 2. Status of Open Items

#### New Items:

#### Unit 1

245/82-22-01, Open Item, Repair or modification to Reactor Vessel Service Platform to prevent wheels from leaving Support Ring (paragraph 3.k).

245/82-22-02, Open Item, Procedures for back filling safety related instrument lines (paragraph 3.q).

#### Unit 2

336/82-24-01, Open Item, Evaluation and Analysis of October 27, 1982 Reactor Trip, Loss of Power to Safeguards Bus and Vital AC Instrument Bus Transient (paragraph 3.n).

Unit 2 (cont'd.)

336/82-24-02, Open Item, Verification of Administrative and procedural controls over radioactive discharges (paragraph 3.0).

Combined Units 1 & 2

245/82-22-03, 336/82-24-03, Open Item, Records of fire brigade meetings do not conform to guidance of National Fire Protection Association Code Section 27. Record keeping system must be reviewed to ensure required information is captured and readily retrievable (paragraph 7.c.(6)).

Old Items:Unit 1

245/81-11-03 (Closed). This item was opened to follow modifications to the radioactive waste system to prevent liquid discharge with the effluent radiation monitor in a test position. A plant design change has been implemented which causes an automatic trip of the flow isolation valve in the event radiation levels exceed a set limit for the discharge or in the event alarms occur indicating instrument upscale, downscale, or inoperable. A spring return bypass button is provided for these trips to permit instrument functional testing. This item is closed.

245/81-06-01 & -02 (Closed). The licensee has developed valve lists for all instrument isolation, bypass and test valves located in racks as well as for key instruments located alone. These valve lists have been incorporated into plant procedures as valve lineups to be conducted "after major modifications or repairs pertaining to those instruments or system..." and "after cold shutdown of greater than a 30-day duration." The inspector verified placement of valve labels on 5 of 12 instrument racks specified in Procedures SP440 "Instrument Isolation, Bypass, Vent, and Fill Valves Position Check." The inspector observed that this procedure was used at the conclusion of the recent refueling outage, as required. SP440 includes both instruments required for Reactor Protective System (RPS) and safeguards system actuation (open item 81-06-02.) These items are closed.

245-81-11-01 (Open). This item was opened to follow measures to enhance the reliability of the emergency gas turbine air start system. Several failures of the gas turbine were found to be caused by fouling of the air start system with rust particles. The most vulnerable component is the Air Pressure Regulator & Shutoff (APRS) Valve (Air Research Co.). Three modifications have been completed to limit corrosion product fouling. The interior of the carbon steel air receiver has been painted with epoxy and urethane-based coatings to reduce corrosion in the receiver. The piping from the air receiver to the air strainer immediately upstream of the APRS valve has been replaced with stainless steel piping. This piping, approximately fifty feet long, had been carbon steel and was believed to also be a

source of rust particles. Two sensing lines for the APRS valve have been modified to include filters to limit fouling of internal valve sensing ports. The gas turbine has been successfully tested following these modifications. This item will be closed after four months of successful operation of the air start system. The previous interval between failures averaged approximately two (2) months.

245/81-11-02 (Open). This item was opened to follow engineering evaluations and possible modifications to the emergency gas turbine generator voltage regulator cubicle to limit environmental degradation of components. The licensee's analysis indicates that the problem is one of high humidity. The addition of heaters only to the cubicle has been rejected as inappropriate due to high temperatures experienced during the summer. An enclosure and dehumidifier installation is in the planning stages. Other design efforts have taken precedence over this task. Completion is expected during 1983. The inspectors will continue to follow gas turbine reliability enhancements.

#### Unit 2

79-27-02 (Closed). This item was opened to observe licensee actions to improve communications during fire drills and fires. The inspectors observed an unannounced fire drill on November 16. Use of the plant announcing system to pass the alarm resulted in a prompt response by fire brigade members. The inspectors evaluated communications as adequate. The licensee continues to evaluate **alternatives to hand-held radios for mobile communications** which will permit communications while the fire fighter is using breathing apparatus while keeping both hands free. This item is closed.

### 3. Review of Plant Operation - Plant Inspection (Units 1 and 2)

The inspectors reviewed plant operations through direct inspection and observation of Units 1 and 2 throughout the reporting period. Unit 1 conducted a refueling outage until November 18. Initial criticality on core 9 was attained at 0251 on November 16. Unit 2 operated at full power through the inspection period with exception of reactor trips on October 27 and November 5.

#### a. Instrumentation

Control room process instruments were observed for correlation between channels and for conformance with Technical Specification requirements. No unacceptable conditions were identified.

#### b. Annunciators

The inspector observed various alarm conditions which had been received and acknowledged. These conditions were discussed with shift personnel who were knowledgeable of the alarms and actions

required. During plant inspections, the inspector observed the condition of equipment associated with various alarms. No unacceptable conditions were identified.

c. Shift Manning

The operating shifts were observed to be staffed to meet the operating requirements of Technical Specifications, Section 6, both to the number and type of licensed operators. Control room and shift manning was observed to be in conformance with Technical Specifications and site administrative procedures.

d. Radiation Protection Controls

Radiation protection control areas were inspected. Radiation Work Permits in use were reviewed and compliance with those documents as to protective clothing and required monitoring instruments was inspected. Proper posting of radiation and high radiation areas was reviewed in addition to verifying requirements for wearing of appropriate personal monitoring devices. There were no unacceptable conditions identified.

e. Plant Housekeeping Controls

Storage of material and components was observed with respect to prevention of fire and safety hazards. Plant housekeeping was evaluated with respect to controlling the spread of surface and airborne contamination. There were no unacceptable conditions identified.

f. Fire Protection/Prevention

The inspector examined the condition of selected pieces of fire fighting equipment. Combustible materials were being controlled and were not found near vital areas. Selected cable penetrations were examined and fire barriers were found intact. Cable trays were clear of debris. There were no unacceptable conditions identified.

g. Control of Equipment

During plant inspections, selected equipment under safety tag control was examined. Equipment conditions were consistent with information in plant control logs.

h. Instrument Channels

Instrument channel checks recorded on routine logs were reviewed. An independent comparison was made of selected instruments. No unacceptable conditions were identified.

i. Equipment Lineups

The inspector examined the breaker position on switchgear and motor control centers in accessible portions of the plant. Equipment conditions, including valve lineups, were reviewed for conformance with Technical Specifications and operating requirements. No unacceptable conditions were identified.

j. Reactor Refueling Operations (Unit 1)

The inspectors observed reactor fueling. Fuel movements were conducted in accordance with approved procedures and under appropriate supervisory control. No unacceptable conditions were observed.

k. Reactor Vessel Service Platform (Unit 1)

On October 10, at 1010, while personnel involved with jet pump beam replacement were rotating the Service Platform, one of four wheels ran off the Service Platform Support Ring allowing the platform to tip about 35 to 40 degrees. All personnel left the platform with no injuries; however, material on the platform was dumped into the Reactor Vessel. At 1130, while attempting to remove a welding machine from the platform, it slipped off into the vessel. The licensee conducted inspection of the vessel and components using closed circuit television.

The inspection included, but was not limited to, the Core Spray and Feedwater Spargers and the Upper Support Grid. There was no damage found. Inspections of the Fuel Support Plates and Fifteen Control Rod Guide Tubes were made. Using refueling floor material control logs, all debris was **accounted for and recovered by October 23.**

The Service Platform may have tipped because of faulty wheel alignment or unequal rotation of the drive wheels. Identification and correction of this problem is an open item (50-245/82-22-01).

l. Control Element Assembly (CEA) No. 23 - Drop (Unit 2)

On October 19 at 1511, CEA 23 dropped from full out. Reactor power was reduced to less than 70 percent per Technical Specification Action Statement 3.1.3.1.1 and the CEA Upper Gripper Coil Switch was replaced. However, on October 20, at 1445, CEA 23 again dropped from full out. At this time, the entire power supply for CEA23 was replaced. That unit has operated properly.

The inspector verified that Technical Specification Action Statements were complied with for: 3.1.3.1.1. CEA alignment; 3.2.4, Azimuthal Power Tilt and 3.2.2 Total Planar Radial Peaking Factor. There were no unacceptable conditions identified.



m. Reactor Fuel Reload (Unit 1)

All fuel had been removed from the reactor earlier in the outage to allow replacement of Jet Pump Beams. Fuel was reloaded from October 24 through November 1. The inspector verified that the required Surveillance Testing for instruments required in the Refuel Mode had been completed and that plant conditions supported Technical Specifications LCO's. After the first assembly was reloaded, the count rate indicated on the two special moveable dunking detectors was 0.1 and 80 cps. After the eighth assembly was loaded, the dunking detectors indicated 3 and 300 cps, and the installed SRM's remained at 0.1 cps. Technical Specifications: 3.1, Reactor Protection System; 3.2.C, Control Rod Block Actuation; 3.3, Reactivity Control; 3.4, Standby Liquid Control; 3.2.E, Reactor Building Refueling Floor Radiation Monitors; 3.7.B.4, Standby Gas Treatment System, 3.7.C, Secondary Containment 3.10, Refueling and Spent Fuel Handling and 6.2.2 Staffing were reviewed. There were no unacceptable conditions identified.

n. Reactor Trip and Loss of Power to a Safeguards Bus, October 27 (Unit 2)

A reactor trip occurred on October 27 at 1517 from 100% power due to a turbine trip caused by actuation of the Turbine Master Trip Solenoid. The Steam Generator Feedwater Regulating System is powered by regulated instrument bus VR-11 and caused a protective high water level trip when de-energized. At the time of the trip, water level was normal.

Inadvertent automatic load shedding of one of two 4160 volt Safeguard Buses and the opening of supply breakers from Station Service Buses resulted in a loss of power to the No. 1 Steam Generator Feedwater Regulating Circuits which actuated the Turbine Master Trip Solenoid. The Safeguards Bus Load Shedding was caused by the actuation of two of five undervoltage trip modules in one of two Engineered Safety Feature Actuation Systems (ESFAS) when power was being restored to those actuation modules. Internal protective circuitry had interrupted 24 volt power to the modules when a fault occurred in the control room ventilation control circuit. That control circuit is supplied by the same Vital A.C. Bus which powers a portion of the ESFAS. An undervoltage protection circuit in the ESFAS monitors 15 volt power supplied to logic circuits. To prevent spurious actuations of safeguards equipment when voltage to logic circuits drops below 14 volts, the protective circuit removes 24 volt power from the actuation relays. This had occurred when a momentary fault occurred in control room ventilation control circuits. That fault was caused by a power supply wire breaking loose from its terminal in a control board when moved during an inventory of unused or untagged cables.

When the safeguards bus load shedding occurred, an actual undervoltage condition was detected. The Emergency Diesel Generator was started and restored power to the 4160 volt Safeguards Bus.

This complex series of events identified the following concerns:

- (1) A fault on a 120 volt Vital Instrument Bus will cause the Bus Supply Static Switch to shift from the primary source, the Vital Static Inverter to the alternate supply (a static inverter or regulated transformer) before the protective device in the branch circuit can trip. It is desired to have the protective device closest to the fault, **trip and protect devices in the bus supply.**
- (2) The 15 volt supply to the ESFAS Actuation Modules logic devices should be stabilized to prevent short time transients on the 120 volt Vital Instrument Bus from resulting in actuation of the protective trip on the 24 volt ESFAS Actuation Relay supplies.
- (3) In the event that the ESFAS undervoltage protective circuit is actuated, provisions should be available to restore 24 volt power without experiencing an actuation of safeguards components. The licensee and the equipment vendor have determined that since the 24 volt supply not only powers the actuation relays but also reset **relays in each actuation module, any module** which changed state because of low 15 volt bus voltage could cause an actuation when 24-volt power was restored as the actuation relay would receive power at the same time as the reset relay. A design change is being planned to change the power supply for the reset relay to the 15 volt bus.
- (4) The loss of power to any one of several components can cause a spurious turbine trip and reactor trip. These are located in Steam Generator Feedwater control and Turbine Auxiliary equipment. Design changes should be considered to provide insurance against unnecessary turbine and Reactor Trips without decreasing **the** reliability of protective systems for major equipment.

These observations resulted from weaknesses demonstrated during complex system interactions, and except for number 2 and 3, do not lend to simple solutions. However, those inadequacies had led to challenges placed on plant protective equipment including: a loss of power to a 4160 volt Safeguards Bus during reactor power operations; shift of a 120 volt Vital Instrument Bus from a class 1E to non-class 1E supply when the Class 1E supply remained available; and a Turbine Trip and Reactor Trip. The licensee's evaluation and analysis of this event is considered an open item (50-336/82-24-01).

The reactor was made critical at 2230, October 27, and the turbine placed on the grid at 0948, November 1 following the reduction of Steam Generator secondary chlorides to less than 200 ppb. Following the October 27 trip, chloride concentration increased to over 3.5 ppm. Cleanup was accomplished in Hot Standby with Steam Generator Blowdown being processed by a demineralizer system.

o. Unplanned Radioactive Liquid Release - November 5 (Unit 2)

An unplanned release of liquid effluent occurred between 0415 and 0435, November 5, when during an approved discharge sequence, an incorrect radioactive waste monitoring tank was lined up and discharged. The licensee had planned to discharge 30,000 gallons of low conductivity waste from the "A"-Coolant Waste Monitoring Tank (A-CWMT) and had processed a liquid discharge Permit No. 2356. The concentration of that tank was analyzed as  $3.6E-5$  microcuries per ml. By the time the error was recognized, 848 gallons of high conductivity waste was discharged from the Aerated Waste Monitoring Tank (AWMT). That tank was mixed with a mechanical agitator, sampled and found to have a concentration of  $5.3 E-3$  microcuries per ml. The mechanical agitator provided a conservative sample as it suspends solid material from the bottom of the tank.

The inspector found that discharge Permit 2356 had been prepared for the A-CWMT, and the liquid effluent alarm settings had been calculated and the effluent monitor adjusted, however, the control room log entry recorded starting a liquid discharge from the AWMT at 0415.

This is considered to be a violation of Technical Specification requirements in that the plant was not operated in accordance with written procedures. However, since the licensee discovered the error, terminated the discharge, calculated the amount of the actual discharge and reported the event to the NRC, a Notice of Violation was not written. The licensee's corrective actions are to require two-person control over all discharges at all three operating plants (DNS 50-213, 245, and 336). Implementation of this corrective action will be verified during a future inspection (50-336/82-24-02).

The inspector observed that the chance for error with future discharges may be reduced if the discharge permit form identified the source in full, possibly using computer block letters. The present form identifies the source tank by letter abbreviation and number.

p. Reactor Trip - November 5 (Unit 2)

A reactor trip occurred at 1651, November 5, when electromagnetic interference, originating in D.C. solenoids or relays of the Chemical Volume Control System, resulted in noise spikes in reactor coolant system hot leg temperature channels. The positive spiking in temperature channels was translated to positive spikes in calculated RPS set points for Thermal Margin/Low Pressure (TM/LP) trip set points and in calculated Differential Temperature Power. A trip was received on TM/LP channels A and C when the trip set point reached sensed pressurizer pressure.

This problem has occurred previously. At that time voltage suppression diodes were added to the DC components. Although the licensee is continuing his investigation, a longer term solution of replacing hot leg temperature channel wiring with shielded wire is planned.

The reactor was made critical at 0303, and the turbine placed on the grid at 1745, November 6.

q. Inadvertent Initiation of Emergency Core Cooling Systems (ECCS),  
November 15 (Unit 1)

An inadvertent initiation of ECCS occurred at 0929, November 15, when during the backfilling of reactor vessel transmitter variable and reference logs, an improper valve alignment caused an indicated very low reactor level on instruments located on instrument rack 2206. The reactor was in cold shutdown; preparations for a reactor startup were in progress. The affected instruments resulted in an RPS Trip, ECCS actuation and an ATWS Recirculation Pump Trip.

The reactor was filled from 50 inches to 250 inches indicated level and, although the two-inch head vent line remained open, pressure increased to a maximum recorded 280 psig. Recirculation loop temperature dropped from 179 degrees F to 149 degrees F when 78 degree water was pumped from the suppression chamber. Although all six low pressure safety injection pumps started, the Core Spray pumps were secured after 12 seconds; the Low Pressure Coolant Injection Pumps were secured after 2 minutes and 10 seconds. During a recent operational leak test of the LPCI system, a pump was run only on its minimum flow and dead headed at 267 psig. Correcting for the elevation difference between the pump and the reactor steam space, pressure in the reactor head could have been as low as 221 psig.

The inspector reviewed the reactor vessel pressure and temperature information as recorded in the control room to determine compliance with Technical Specification 3.6.A.1, A.2, B.2 and B.4. There were no unacceptable conditions identified.

This event was caused in part due to a lack of approved procedures to cover the operation of back filling instrument lines. Licensee management has recognized this and had taken corrective action to develop a procedure to cover back filling evolutions. Implementation of this corrective action will be verified during a future inspection (50-245/82-22-02).

The reactor was made critical at 0251, November 16, completing a refuel outage which began on September 11.

r. Reactor Trip - November 18 (Unit 1)

A reactor trip occurred at 1307, November 18 from a hot standby condition of 750 psig, 510 degree F and power at 50 percent of IRM range 8. The trip occurred when a worker involved in turbine-generator balancing struck an instrument rack on the turbine deck causing a spurious condenser low vacuum trip. The reactor was made critical at 2037 and the turbine placed on the grid at 0830, November 19.

#### 4. Review of Plant Operations - Logs and Records - (Units 1 & 2)

During the inspection period, the inspector reviewed operating logs and records covering the inspection time period against Technical Specifications and Administrative Procedure Requirements. Included in the review were:

Shift Supervisor's Log	- daily during control room surveillance
Plant Incident Reports	- 9/26/82 through 11/20/82
Jumper and Lifted Leads Log	- all active entries
Maintenance Requests and Job Orders	- all active entries
Construction Work Permits	- all active entries
Safety Tag Log	- all active entries
Plant Recorder Traces	- daily during control room surveillance
Plant Process Computer Printed Output	- daily during control room surveillance
Night Orders	- daily during control room surveillance

The logs and records were reviewed to verify that entries are properly made; entries involving abnormal conditions provide sufficient detail to communicate equipment status, deficiencies, corrective action, restoration and testing; records are being reviewed by management; operating orders do not conflict with the Technical Specifications; logs and incident reports detail no violations of Technical Specification or reporting requirements; and logs and records are maintained in accordance with Technical Specification and Administrative Control Procedure requirements.

There were no unacceptable conditions identified.

#### 5. Review of Periodic and Special Reports

Upon receipt, periodic and special reports submitted by the licensee pursuant to Technical Specification 6.9.1 and 6.9.2 and Environmental Technical Specification 5.6.a were reviewed by the inspector. This review included the following considerations: the report includes the information required to be reported by NRC requirements; test results and/or supporting information are consistent with design predictions and performance specifications; planned corrective action is adequate for resolution of identified problems; determination of whether any information in the report should be classified as an abnormal occurrence; and the validity of reported information. Within the scope of the above, the following periodic reports were reviewed by the inspector:

- Monthly Operating Report, Units 1 & 2, September, 1982.
- Monthly Operating Report, Unit 1, October, 1982.

## 6. Licensee Event Reports (LERs)

The inspector reviewed the following LERs to verify that the details of the event were clearly reported including the accuracy of the description of cause and adequacy of corrective action. The inspector determined whether further information was required, and whether generic implications were involved. The inspector also verified that the reporting requirements of Technical Specifications and Station Administrative and Operating Procedures had been met, that appropriate corrective action had been taken, that the event was reviewed by the Plant Operations Review Committee, and that the continued operation of the facility was conducted within the Technical Specification limits.

### Unit 1

- 82-18 Crack indications were identified in one core spray sparger water box during remote visual inspection. The licensee installed clamps and conducted a safety analysis assuming the worse-case condition that the indications represent through-wall cracks.
- 82-19 Failure of 5 of 6 safety relief valves to open at 103% of setpoint pressure during slow ramp testing. Valves have been refurbished and re-tested satisfactorily. This issue is being addressed by the NRC on a generic basis.
- 82-20 Failure of 4 hydraulic pipe snubbers during testing of a sample of 5 snubbers manufactured by ITT Grinnell. Ten additional snubbers of this type were tested satisfactorily. The surveillance interval for testing these snubbers has been reduced from 18 months to 12 months.
- 82-21 Loss of emergency diesel generator during a surveillance run due to a broken current transformer lead.
- 82-22 At 2359 on September 28, the stack gas radiation monitor recorder was found secured. The radiation monitor with associated meters and alarms remained in service. As the unit was shutdown in a refueling outage, other recorders in the area were secured. New labels identifying recorders to be continuously energized have been installed.
- 82-23 Recirculation system sample valves failed local leak rate test due to seat erosion of valve 1-RC-37.

### Unit 2

- 82-36 Failure of "A" Coolant Charging Pump due to cracks in the pump block. The pump is a Gavlin Model NP18 Triplex Positive Displacement Pump.

Unit 2 (cont'd)

- 82-37 Power Operated Relief Block Valve inoperable.
- 82-38 Following a reactor trip on September 17, 1982, reactor coolant system dose equivalent Iodine -131 concentration peaked above .99 microcuries per gram. This indicates the failure of a small number of fuel rods.
- 82-39 Failure of the reactor containment personnel air lock to pass surveillance testing due to operating shaft packing leakage.
- 82-40 Failure of the reactor containment personnel air lock to pass surveillance testing due to failure of the door gasket.
- 82-42 Inadvertent actuation of HALON fire suppression system causing loss of the process computer.

7. General Training (Units 1 & 2)a. Scope

This inspection was conducted to determine the degree of conformance of over-all training and re-training activities for non-licensed employees as well as the general training for all employees to the requirements of Technical Specifications and Quality Assurance (QA) program requirements. The inspectors reviewed, on a sampling basis, training program documents, training schedules, lesson outlines, and personnel training folders. Interviews with a representative number of employees in various job skill and training categories were conducted to gauge the effectiveness of the training given. The inspectors attended separate training sessions of the General Employee Retraining program and the Health Physics Refresher program.

b. Documents Reviewed

- ACP 8.01 "Milestone Station Training" Revision 4 dated 5-27-81.
- ACP 8.02 "Fire Fighting Training Program" Revision 7 dated 12-15-81.
- ACP 8.03 "Health Physics Training and Retraining for Company and Contractor Personnel" Revision 4 dated 5-25-82.
- ACP 8.04 "Safety/First Aid Training for Northeast Nuclear Energy Company Employees and Temporary Personnel" Revision 2 dated 4-9-79.
- ACP-QA-8.07 "Q.A. Training Program" Revision 3 dated 6-4-82.

--- ACP-QA-8.16 "Training Certification, and Identification of Quality Inspection & Testing Personnel" Revision 9 dated 1-29-82.

--- ACP-QA-8.21 "Qualification of Audit Personnel" Revision 5 dated 4-15-82.

c. Findings

(1) Technical Specifications for both Units 1 and 2 require training and retraining programs to be established and conducted as outlined in ANSI Standard 18.1-1971 "Selection and Training of Nuclear Power Plant Personnel." This standard requires that all personnel receive training in the areas of

"Appropriate Plans and Procedures, Radiological Health and Safety, Industrial Safety, Plant Controlled Access Areas and Security Procedures, Use of Protective Clothing and Equipment."

Based on training sessions attended by the inspectors, the General Employee Retraining (GER) program content meets the above requirements. Review of training records indicates full participation by the station staff in this program. Interviews with 12 employees (including one (1) temporary employee) confirm that annual retraining is being provided and is understood by personnel to an acceptable degree. Interviews with three (3) new employees indicate that initial training is provided shortly after the employee begins work.

(2) Regulatory Guide 8.13 describes specific instruction regarding radiation exposure to the unborn which is required to be given to female employees. Two female employees, one permanent and one temporary, were interviewed. Both were familiar with the information contained in the Guide and confirmed that this training is given during initial employee training.

(3) The training records of three Quality Assurance Department inspectors were reviewed in the context of requirements of the Q.A. Program and of 10CFR50 Appendix B. These records indicated successful completion of required training topics and contain certifications of skills and levels of proficiency in these skills. The bases for certifications are also included. Interviews with these three inspectors confirmed the accuracy of these records including the bases for certifications. The Q.A. Department training program is being further defined to include a qualification check-off sheet, detailed qualification standards, and broadened written examinations. This area may be the topic of future inspections.



(4) The training program for the Instrumentation and Control Departments for each unit were reviewed. Personnel training and experience was found to meet the requirements of ANSI 18.1-1971. The training programs for Units 1 and 2 are independent and include formal presentations by experienced technicians, vendor schools, and on-the-job training. The training records of 3 technicians from each unit were reviewed and found to document acceptable levels of training and experience in the context of this program. Personal interviews of these 6 technicians confirmed the veracity of their records and their participation in the training program.

(5) A formal training program is under development for the mechanical and electrical repairmen of the units' maintenance departments. This effort has been inhibited by a shortage of instructors and by the diversity of experience levels among the maintenance department's personnel. Repairman training presently is based heavily upon learning and applying skills in actual maintenance operations with some use of equipment vendor schools. Such a program is consistent with the requirements of ANSI 18-1-1971. This topic may be the subject of further inspection effort.

(6) Technical Specifications for both Units 1 and 2 require Fire Brigade training programs to be established and conducted as outlined in the National Fire Protection Association (NFPA) Code Section 27 "Private Fire Brigades" with the exception that training meetings are to be held quarterly vice monthly. The training program was reviewed in the context of this standard and found to include a scope of training consistent with the syllabus listed in NFPA section 27, to provide for training periodic meetings and drills. Unit 1 Fire Brigade assignments for the week of November 15-19 were compared with lists of currently trained individuals provided by the training department. Assignments were consistent with the training received. The inspector observed that the training department continues to have difficulty in maintaining records of fire brigade training. This was identified during an earlier inspection. Record maintenance is identified as an item for further review under open item 50-245/82-08-01 and 50-336/82-10-01. The inspector noted that records of quarterly fire brigade meetings were not being maintained in the manner indicated in the NFPA Code 37 paragraph 4-3.2. Sufficient information is captured in training records and was confirmed by personnel interview of four plant operators to indicate that the quarterly meetings are taking place as required. The preparation of quarterly meeting reports is unresolved. (50/245-82-22 - 03, 50-336/82-24 -03)

(7) The inspectors observed an unannounced fire drill. The scenario involved a fire in the generator seal oil system of Unit 2 and did not involve radioactive materials. The conduct of the drill was observed to assess the attainment of drill goals as described in NFPA Section 27 paragraph 4-4 and 10CFR50 Appendix R paragraph I.3.

--- Drill planning involved members of the plant training staff and the corporate fire protection staff. The scenario was approved by the unit operations supervisor, an individual responsible for overall safety of reactor operation.

--- The drill exercised fire alarm communication and response, use of protective clothing, strategies for fire fighting, strategies for limiting the fire's effect on hazardous chemicals stored nearby, use of fire fighting equipment, and control of ventilation.

--- Assistance from the local fire department was simulated. Employment of external assistance was discussed but procedures for providing access to the Protected Area for the local fire department were not exercised.

--- Fire Hoses were stretched but not charged, portable extinguishers were brought to the area but not discharged, and self-contained breathing apparatus was donned but not actually used. The NFPA code states that, where possible, hose lines should be stretched and charged, respiratory protection should be donned and used, and portable extinguishers should be discharged. The pre-drill meeting specified that these simulations be made. Licensee representatives stated that these simulations are routinely made to ensure that the drills do not degrade equipment availability for actual fires, that the operability of these equipment is assured in the surveillance program, and that the annual fire training program provides brigade members experience in operating equipment.

--- A drill critique was conducted to evaluate the performance of the fire brigade and to assess the utility of plant equipment and procedures.

--- Equipment used in the drill was observed to be restored to the "ready" condition following the drill.

No unacceptable practices or conditions were observed.

8. Plant Maintenance and Modifications

During the inspection period, the inspector frequently observed various maintenance and problem investigation activities. The inspector reviewed these activities to verify: compliance with regulatory requirements, including those stated in the Technical Specifications; compliance with the administrative and maintenance procedures; compliance with applicable codes and standards; required QA/QC involvement; proper use of safety tags; proper equipment alignment and use of jumpers; personnel qualifications; radiological controls for worker protection; fire protection; retest requirements; and, reportability as required by Technical Specifications. In a similar manner, the implementation of design changes and modifications was reviewed. In addition to those items addressed above, the licensee's safety evaluation was reviewed. Compliance with requirements to update procedures and drawings was verified and post modification acceptance testing was evaluated. The following activities were included in this review:

Unit 1

- Modifications to Scram Discharge Volume in response to I&E Bulletin 80-17.
- Repairs to Isolation Condenser piping due to Intergranular Stress Corrosion Cracking indications found at weld ICAC-F-21.
- Conversion of the power supply for Motor Operated Valve 1-IC-10 from A.C. to D.C.
- Turbine maintenance, inspection, replacement of L-1 stage blades and balancing.
- CRD mechanism replacement.
- Jet Pump Beam Replacement.
- LPRM Replacement.
- Core Spray Sparger and installation of restraining clamp.
- Addition of Feed Regulating Valve Lock-up Annunciators.
- RPS Channel B IRM/APRM Recorder match RPS logic.
- Modification to Reactor Feedwater Auto/Manual transfer station to prevent lockup of FRV when in manual control.

- Replacement of GE type HFA relays of Lexan Coil spools with relays of Tefzel Coil spools.
- Remote indication of Feedwater Regulating Valves.
- Annunciator stack gas purge after 10 minutes.
- Install protective under voltage and under frequency devices on RPS MG-Sets.
- Install Containment Instrument Nitrogen Compressor System.
- Replacement of Service Water Strainer.
- Replacement of Emergency Gas Turbine Air Start Line, cleaning and coating air storage tank.

#### Unit 2

- Monthly and Quarterly Preventative Maintenance on the Terry Turbine (P-4) Auxiliary Feed Pump per MP2701J Section 48 Revision 3.
- Repairs to Main Steam Line Snubber No. 49001.

### 9. Inspector Witnessing of Surveillance Tests

The inspector witnessed the performance of surveillance testing of selected components to verify that: the surveillance test procedure was properly approved and in use; test instrumentation required by the procedure was calibrated and in use; technical specifications were satisfied prior to removal of the system from service; the test was performed by qualified personnel; the procedure was adequately detailed to assure performance of a satisfactory surveillance; and test results satisfied the procedural acceptance criteria or were properly dispositioned. The inspector witnessed the performance of:

#### Unit 1

- "Loss of Normal Power Relays" per SP617.1 Revision 2 with change 2 on November 11, 1982. Paragraphs 7.10 Fast Transfer from NSST to RSST, 7.11 Loss of Normal Power Test 8. Restoration.
- "Integrated Simulated Automatic Actuation of FWCI, Core Spray, LPCI, Diesel and Gas Turbine Generators" per SP628.1 Revision 4 on November 11, 1982.
- "Control Rod Scram Time Test" per SP1051 Revision 4 on November 17, 1982.

Unit 1 (cont'd.)

- Control Rod Drive Mechanism Function Testing.
- Reactor Pressure Vessel Operational Leak Testing.
- Excess Flow Check Valve Testing.

Unit 2

- "Facility II High Pressure Safety Injection Pump Operability Test" per SP2604B Revision 4 on October 7, 1982.
- "HPSI Pump 'B' (P-41B) Operational Readiness Test" per EN 21112 Revision 1 on October 7, 1982.
- "Spent Fuel Pool Cooling Pump 'A' (P-13A) Operational Readiness Test" per EN21121 Revision 2 on October 7, 1982.
- "Terry Turbine Auxiliary Feed Pump Operational Readiness Test" per EN21107 Revision 2 with Change 3 on November 18, 1982.
- "Turbine Driven Auxiliary Feed Pump Operability Test" per SP26103 Revision 5 on November 18, 1982.

10. Review of Radioactive Material Shipments - (Unit 1)

The inspector reviewed the activities concerning the shipment of radioactive waste to the Barnwell, S.C., burial site. Those activities included receipt inspections of the shipping cask and liner, solidification of material, radiation surveys and the completion of administrative and quality control requirements prior to shipment. These inspections concerned:

- Dewatered Resins and Filter Cartridges (14.4 curies) from Unit 1 on November 12, 1982.
- Dewatered Resin (3.1 curies) from Unit 1 on November 18, 1982.

11. Exit Interview

At periodic intervals during the course of the inspection, meetings were held with senior facility management to discuss the inspection scope and findings.