January 31, 2005

Mr. Mark E. Warner
Site Vice President
FPL Energy Seabrook, LLC
Seabrook Station
c/o Mr. James M. Peschel
P.O. Box 300
Seabrook, NH 03874

SUBJECT: SEABROOK STATION - NRC INTEGRATED INSPECTION REPORT 05000443/2005003

Dear Mr. Warner:

On December 31, 2004, the NRC completed an inspection at the Seabrook Nuclear Power Station. The enclosed report documents the inspection findings which were discussed on January 20, 2005, with yourself and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents three NRC-identified findings and one self-revealing finding, all of which were of very low safety significance (Green). Two of these findings were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations, in accordance with Section VI.A of the NRC Enforcement Policy. Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in this report.

If you contest the non-cited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Seabrook.

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Sincerely,

/RA/

Paul G. Krohn, Chief
Projects Branch 6
Division of Reactor Projects

Docket No. 50-443
License No: NPF-86

Enclosure: Inspection Report No. 05000443/2005003
w/ Attachment: Supplemental Information

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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.:	05000443
License No.:	NPF-86
Report No.:	05000443/2005003
Licensee:	Florida Power & Light Energy Seabrook, LLC (FPL)
Facility:	Seabrook Station, Unit 1
Location:	Post Office Box 300 Seabrook, New Hampshire 03874
Dates:	October 1, 2004 to December 31, 2004
Inspectors:	Glenn Dentel, Senior Resident Inspector Steve Shaffer, Resident Inspector Tom Moslak, Health Physicist Joe D'Antonio, Operations Engineer Nancy McNamara, EP Specialist Michael Dudek, Reactor Engineer
Approved by:	Paul Krohn, Chief Projects Branch 6 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000443/2005003; 10/01/2004-12/31/2004; Seabrook Station, Unit 1; Adverse Weather Protection, Maintenance Risk Assessments and Emergent Work Evaluation, Operability Evaluations.

The report covered a 13-week period of inspection by resident inspectors, regional inspectors supporting the residents, and an announced inspection by a regional senior health physics inspector. Two Green non-cited violations (NCVs) and two Green findings were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a finding for failure to properly classify and correct a failed heat trace circuit in a timely manner which resulted in a main steam header pressure transmitter failure and a potential challenge to the plant. This finding was associated with the cross-cutting area of problem identification and resolution in that the degraded condition was not appropriately identified, classified or corrected.

  This finding was more than minor because it affected the Initiating Events cornerstone objective to limit the likelihood of events that upset plant stability due to unreliable equipment performance. The finding is of very low safety significance since there was an increase in the probability of an initiating event but it did not impact mitigating systems, reactor coolant system leakage, or external event initiators. (Section 1R01)

- Green. The combination of an inadequate procedure and the failure of Seabrook's technicians to take appropriate actions during preventative maintenance activities was a self-revealing finding. This performance deficiency resulted in an inadvertent switchyard breaker opening, creating a potential challenge to plant stability. This finding was associated with the cross-cutting area of human performance in that once both heaters were removed from service, the technicians became distracted with unrelated administrative tasks such that gas pressure decreased and the breaker tripped open. The issue was entered into the licensee's corrective action program (CAP) as CR04-11141, Switchyard Breaker 163.

The finding was more than minor because it affected the Initiating Events cornerstone objective to limit the likelihood of events that upset plant stability due to factors such as switchyard activities. This finding was determined to be of very low safety significance since there was an increase in the probability of an initiating event but no impact on mitigating systems, reactor coolant system leakage, or external event initiators. (Section 1R13)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of Seabrook's Facility Operating License, Section 2.F, "Fire Protection." The violation involved a design deficiency in which a single fire could result in a loss of both charging pumps.

  This finding was more than minor because it affected the Mitigating System cornerstone and could impact the availability of equipment needed to ensure a safe shutdown of the plant during a fire. The finding was determined to be of very low safety significance based on a detailed review of the fire areas against Appendix F, "Fire Protection Significance Determination Process" of Manual Chapter 0609. (Section 1R15.1)

- Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XIII, "Handling, Storage, and Shipping" when Seabrook personnel may have used contaminated oil in a safety-related pump due to inadequate oil storage controls. This finding was associated with the cross-cutting areas of human performance and problem identification and resolution in that contaminated oil[1] was potentially added to safety-related equipment, operability assessments were delayed, and extent-of-condition reviews were not documented.

  This finding was more than minor because it affected the Mitigating System cornerstone and could impact the availability and reliability of safety-related equipment. The finding was determined to be of very low safety significance since there was no actual loss of equipment due to the contaminated oil. (Section 1R15.2)

B. Licensee-Identified Violations

A violation of very low significance which was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program.

[1] Contaminated refers to metal particles in the oil, not radiologically contaminated.

REPORT DETAILS

Summary of Plant Status

The plant began the inspection period at full rated thermal power and operated at or near full power for the entire report period.

1. REACTOR SAFETY [R]

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 - 3 Samples: 1 Seasonal Weather Review and 2 System Reviews)

a. Inspection Scope

The inspectors reviewed Seabrook's preparation for adverse weather relative to the protection of safety-related structures, systems, and components from cold weather. This review included a walkdown of the overall site and detailed walkdowns of the cooling tower and main steam line system areas to verify implementation of cold weather protection features to ensure continued operability during adverse weather. The inspectors also conducted detailed reviews of heat trace panels and licensee-identified deficiencies. The following documents were reviewed to determine the adequacy of Seabrook's preparation for and ability to respond to cold weather:

- ON1059.01, "Heat Trace Operation," Rev. 4;
- ON1490.06, "Winter Readiness Surveillance," Rev. 2;
- OS1200.03, "Severe Weather Conditions," Rev. 12;
- OS1090.09, "Station Cold Weather Operations," Rev. 0; and
- Selected sections of the Updated Final Safety Analysis Report (UFSAR).

The inspectors reviewed deficiencies identified during the implementation of cold weather protection procedures and verified these deficiencies were entered into the corrective action program.

b. Findings

Introduction. The inspectors identified that Seabrook failed to properly classify and correct a failed heat trace circuit in a timely manner. This resulted in a main steam header pressure transmitter failure and a potential challenge to plant stability. This finding was determined to be of very low safety significance (Green).

Description. On December 20, 2004, the main steam header pressure transmitter, MS-PT-507, failed high due to a frozen sensing line. The transmitter provided input to the main feedwater pumps speed control circuitry and to the pressure control mode for the condenser steam dumps. Operators responded in accordance with their procedures and placed the feedwater pumps speed control in manual. The impact on steam

generator levels was minimal, since at full power, the increase in main feedwater turbine speed was limited. However, at a different power level or if freezing of the line resulted in the instrument failing low, the failure of the transmitter could have resulted in a reactor trip.

The frozen sensing line was caused by the failure of the heat trace circuitry. On December 15, 2004, the inspectors conducted walkdowns with a nuclear system operator (NSO) of the heat trace panels in the Turbine Building, Cooling Tower Switchgear Room, and Main Steam Chase. Several deficiencies were identified including a tripped circuit breaker and numerous heat trace panel low temperature alarms, which were captured on deficiency tags and condition report (CR) 04-12382. The identified circuit breaker provided power to the heat tracing for main steam pressure transmitter, MS-PT-507. The work order (WO) 0443584 for this heat tracing was classified as priority 3 and had not been completed prior to the failure.

Seabrook's Work Management Manual (WM) 8.3, "Work Order Process," outlines a process to classify deficiencies. Priorities 1 and 2 are assigned to WOs that must be completed in an expedited manner to prevent impact on plant function. Priority 3 is assigned to WOs that do not require prompt corrective action. The failure of operations' personnel to recognize the significance of the degraded condition and properly classify the work order resulted in the continued inoperability of the heat trace circuitry and eventual freezing of the line during the next cold weather condition. Additionally, operators failed to identify the tripped circuit breaker during routine NSO tours.

Analysis. Seabrook's failure to properly classify and correct the failed heat trace circuit in a timely manner was considered a performance deficiency. Traditional enforcement does not apply because the issue did not have any actual safety consequence or potential for impacting the NRC's regulatory function and was not the result of any willful violation of NRC requirements or Seabrook's procedures.

The finding was more than minor because it affected the Initiating Events cornerstone objective to limit the likelihood of events that upset plant stability due to unreliable equipment performance. Using MC 0609, Appendix A, Phase 1, “Determining the Significance of Reactor Inspection Findings for At-Power Situations,” dated December 2004, the finding was determined to be of very low safety significance (Green) since there had been an increase in the probability of an initiating event without an impact on mitigating systems, reactor coolant system leakage, or external event initiators. This finding was associated with the cross-cutting area of problem identification and resolution in that the degraded condition was not appropriately identified, classified or corrected.

Enforcement. No violation of NRC requirements occurred since 10 CFR 50, Appendix B, does not apply to non-safety-related equipment. However, failure to correct the deficiency in a timely manner was considered to be a performance deficiency and a finding. This issue was entered into the licensee's corrective action program. **(FIN 50-443/2005-03-01, Untimely Corrective Maintenance Resulting in a Frozen Main Steam Transmitter Sensing Line)**.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial System Walkdowns. (71111.04Q - 2 Samples)
The inspectors performed the following partial system walkdowns:

- On October 26 and 27, 2004, the inspectors performed a walkdown of the "A" centrifugal charging pump prior to the positive displacement pump being removed from service for maintenance.

- On November 1, 2004, the inspectors performed a walkdown of the "B" emergency feedwater (EFW) pump prior to "A" EFW pump being removed from service for scheduled maintenance.

The inspectors conducted a walkdown of each system to verify that the critical portions of selected systems, such as valve positions, switches, and breakers, were correctly aligned in accordance with Seabrook's procedures and to identify any discrepancies that may have had an operability effect. The inspectors reviewed applicable piping and instrumentation drawings and operational lineup procedures to support the walkdowns and to verify proper system alignment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope (71111.05Q - 6 Samples)

The inspectors examined several areas of the plant to assess: 1) the control of transient combustibles and ignition sources; 2) the operational status and material condition of the fire detection, fire suppression, and manual fire fighting equipment; 3) the material condition of the passive fire protection features such as fire doors, fire dampers, fire penetration seals; and 4) the compensatory measures for out-of-service or degraded fire protection equipment. The following areas were inspected:

C "A" Charging pump room, primary auxiliary building, 7'0" elevation

- “A” and "B" Train electrical room, service water pump house, 21'0" elevation
- Service water pump house, 21'0" elevation
- “A” Generator room, diesel generator building, 21'6" elevation
- “B” Generator room, diesel generator building, 21'6" elevation
- “A” Silencer room, diesel generator building, 51'6" elevation

The inspectors verified that the fire areas were in accordance with applicable portions of the following documents:

- Fire Protection Pre-Fire Strategies and Fire Hazard Analysis
- Compensatory List of Fire Protection Equipment out-of-service

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

1. Quarterly Resident Inspector Review (71111.11Q - One Sample)

a. Inspection Scope

The inspectors observed the conduct of licensed operators during a simulator training session on October 18, 2004. The inspectors reviewed the physical fidelity of the simulator in order to verify its likeness to the Seabrook control room. The inspectors examined the operators’ ability to perform actions associated with high-risk activities, the Emergency Plan, previous lessons-learned items, and the correct use and implementation of procedures. The inspectors observed the training evaluator’s critique of the operators' performance and verified that deficiencies were adequately identified and discussed.

b. Findings

No findings of significance were identified.

2. Annual Operating Test Results Evaluation (71111.11P - One Sample)

a. Inspection Scope

On December 16, 2004, the inspectors conducted a review of licensee annual operating test results for 2004. The inspection assessed whether pass rates were consistent with the guidance of NRC Manual Chapter 0609, Appendix I, “Operator Requalification Human Performance Significance Determination Process.” The inspectors verified that:

- Crew failure rate was less than 20 percent. (Crew failure rate was 0 percent.)

- Individual failure rate on the dynamic simulator test was less than or equal to 20 percent. (Individual failure rate was 0 percent.)
- Individual failure rate on the walk-through test was less than or equal to 20 percent. (Individual failure rate was 0 percent.)
- Individual failure rate on the comprehensive biennial written exam was less than or equal to 20 percent. (Individual failure rate was 0 percent.)
- Overall pass rate among individuals for the operating test was greater than or equal to 75 percent. (Overall pass rate was 100 percent.)

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (71111.13 - 4 Samples)

1. Inadequate Procedure Resulting in Unplanned Opening of a Switchyard Breaker

a. Inspection Scope

The inspectors reviewed the scheduling and control of planned preventive maintenance (PM) activities on a switchyard breaker to verify that the licensee had properly evaluated the effect of the PM activity on plant risk. The inspectors conducted interviews with operators, risk analysts, and maintenance personnel to assess their knowledge of the risk associated with the work and subsequent corrective actions. The inspectors evaluated the work activities and compensatory measures against procedures, Maintenance Manual 4.14, "Troubleshooting," and Work Management Manual 10.1, "On-Line Maintenance." A specific risk assessment was conducted using Seabrook's "Safety Monitor."

b. Findings

Introduction. The combination of an inadequate procedure and the failure of Seabrook technicians to take appropriate actions resulted in a switchyard breaker opening and was a potential challenge to plant stability. This finding was considered to be self-revealing and was determined to be of very low safety significance (Green).

Description. On November 10, 2004, during performance of cold weather preventive maintenance activities, switchyard breaker SY-BKR-163 tripped due to loss of gas pressure. The breaker is one of the supply breakers from the offsite power grid and one of two breakers that provide power to the grid from Seabrook Station. This second design function caused this breaker to be a potential trip initiator. Once breaker

SY-BKR-163 tripped, operators took actions to protect the remaining breaker and restored the 163 breaker to service within four hours.

On November 10, 2004, maintenance technicians commenced procedure, LN 0561.08, "12 Month Gas Circuit Breaker Cold Weather Pre-Checks," Rev. 0. Previously, this preventive maintenance had been completed while the breaker was out-of-service. The procedure disabled all alarm annunciators associated with the breaker. During the maintenance activity, the technicians identified that the primary heater was non-functional and proceeded to replace the heater. To replace the heater, the secondary heater was removed from service. The technicians did not begin work on the heater due to other administrative tasks for approximately 2½ hours. This allowed the temperature and pressure in the high pressure gas tank to drop, resulting in the breaker trip.

Seabrook's Manual and Procedures Administration Manual requires procedures to be "clear and accurate ... to perform work" and that precautions in procedures "alert procedure users to situations which may result in placing ... the plant in jeopardy." Despite this requirement, the procedural change to allow work with the breaker in service did not provide appropriate cautions or compensatory measures to address the loss of alarms and the impact of the heaters being taken out-of-service. In addition, maintenance technicians did not take the appropriate actions following removal of the heaters from service and performance of unrelated administrative tasks. This self-revealing finding was documented in CR 04-11141, Switchyard Breaker 163 Inadvertent Opening.

Analysis. The combination of an inadequate procedure and the failure of Seabrook technicians to take appropriate actions resulted in a switchyard breaker opening and was a potential challenge to plant stability and a performance deficiency. Traditional enforcement did not apply because the issue did not have any actual safety consequence or potential for impacting the NRC's regulatory function and was not the result of any willful violation of NRC requirements or Seabrook's procedures.

The finding was more than minor because it affected the Initiating Events cornerstone objective to limit the likelihood of events that upset plant stability due to factors such as switchyard activities. Using Appendix A, Phase 1 of Manual Chapter 0609, “Determining the Significance of Reactor Inspection Findings for At-Power Stations, “ dated December 2004, the finding was determined to be of very low safety significance (Green) since there was an increase in the probability of an initiating event but no impact on mitigating systems, reactor coolant system leakage, or external event initiators. This finding was associated with the cross-cutting area of human performance in that once both heaters were removed from service, the technicians became distracted with unrelated administrative tasks such that gas pressure decreased and the breaker tripped open. The issue was entered into the licensee’s corrective action program as CR 04-11141.

Enforcement. This was not a violation of NRC requirements since 10 CFR 50, Appendix B does not apply to non safety-related equipment. However, inadequate procedural guidance and the technicians failure to take appropriate actions to prevent opening of a switchyard breaker was a performance deficiency and a finding. **(FIN 50-443/2005-03-02, Inadequate Procedure Resulting in Unplanned Opening of a Switchyard Breaker)**.

2. Other Maintenance Risk Assessments and Emergent Work Evaluations

a. Inspection Scope

The inspectors reviewed the scheduling and control of one planned maintenance activity and two emergent work troubleshooting activities in order to verify that the licensee had properly evaluated the effect of the activity on plant risk. The inspectors conducted interviews with operators, risk analysts, maintenance technicians, and engineers to assess their knowledge of the risk associated with the work, and to ensure that other equipment was properly protected. The inspectors evaluated the compensatory measures against Seabrook procedures, Maintenance Manual 4.14, "Troubleshooting," and Work Management Manual 10.1, "On-Line Maintenance." Specific risk assessments were conducted using Seabrook's "Safety Monitor." The inspectors reviewed the following items.

- On November 2, 2004, the inspectors reviewed the planned risk configuration for maintenance on the "A" emergency feedwater pump and the "A" safety injection pump.

- On October 13, 2004, the inspectors reviewed the operational decision making for a neutral cable (HC6-J1J/1) resting on a fuse clamp in rod control cabinet 1AC. The inspectors reviewed CR 04-09998 and attended the operational decision making meeting. The operational decision making process was evaluated against Seabrook's procedure, "Operational Decision Making SM7.18," Rev. 0.

- On October 19 and 22, 2004, the inspectors reviewed the on-line maintenance assessment for troubleshooting work for a Hi-Hi vibration alarm associated with main turbine bearing #2 during main control valve testing. The inspectors attended the operational decision making meeting and examined the work order. The work documents and the operational decision making process were evaluated against Seabrook's procedures.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance Related to Non-Routine Plant Evolutions and Events (71111.14 - 2 Samples)

a. Inspection Scope

The inspectors reviewed operator response to the following non-routine evolutions:

New Fuel Receipt Inspection
The inspectors reviewed operator performance during the inspection and movement of new fuel assemblies from the shipping containers to dry storage. The inspectors verified that operators inspected each fuel assembly and took appropriate actions to address any deficiencies that were found in accordance with procedures. Operators performed the new fuel inspection and movement in accordance with procedure RS0722, “New Fuel and Core Component Inspection,” Revision 7.

Non-Safety Inverter Repairs and Return to Service
On December 2, 2004, the inspectors reviewed operator performance during return to service of inverter 4 following troubleshooting and repairs. The inspectors observed the pre-evolution briefing, just-in-time training on an identical inverter, and actual performance of the work. The inspectors assessed adherence to procedure, ON1047.03, "Non Vital Inverter Operation," Revision 6 and interviewed selected individuals to determine their understanding of the procedure and potential challenges.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 4 Samples)

1. Design Inadequacy Resulting in Potential Loss of Both Charging Pumps during a Fire

a. Inspection Scope

During October 2004 the inspectors reviewed the operability assessment in CR 04-09428, Postulated Fire Resulting in a Loss of Both Charging Pumps. The inspectors reviewed the compensatory measures, interviewed system and design engineers, and performed walkdowns in the essential switchgear rooms. The inspectors also reviewed the following design basis documents and examined the basis for current operability:

- Fire Protection of Safe Shutdown Capability (10 CFR 50, Appendix R) Revision 6
- Selected sections of the Updated Final Safety Analysis Report

b. Findings

Introduction. During October 2004, based on inspectors questions, Seabrook identified an original design deficiency in that a single fire could result in loss of both safety-related charging pumps. This finding was determined to be of very low safety significance (Green) and was characterized as a non-cited violation (NCV) of Seabrook's Facility Operating License, Section 2.F "Fire Protection."

Description. During September 2004, the inspectors questioned Seabrook engineers regarding a potential design inadequacy in the charging system. The potential design inadequacy, which involved a potential common mode failure of both charging pumps was based on operating experience at two other nuclear facilities. The common mechanism involved a fire that would cause a failure of the power cable to the standby charging pump and spurious closure of the Volume Control Tank (VCT) isolation valve resulting in damage to the running charging pump. During October 2004, Seabrook determined that the potential loss of the charging system during certain fire scenarios was a failure to comply with the requirements of their fire protection program. Seabrook concluded that four fire areas were affected and established compensatory measures including hourly fire tours until long term corrective actions could be implemented.

Seabrook's fire protection program, as described in the Fire Protection of Safe Shutdown Capability Report, has design requirements for safe shutdown capability. This includes having two redundant trains of equipment providing a safe shutdown function to ensure that one train will remain available during a fire. The charging pumps are used for the safe shutdown function of the reactor coolant inventory and pressure control. Since both the control cable for the VCT isolation valve and the power cable for the charging pump are located in the same fire area, the licensee identified that a fire could result in loss of both charging pumps.

The inspectors determined that this was an original design issue; however, based on Inspection Manual Chapter 0305, the issue will not be treated as an old design issue since it was identified in response to NRC inspection activities. Seabrook had prior opportunities to identify this design deficiency during 10 CFR 50.54(f) reviews in 1997. In addition, Seabrook failed to fully evaluate the operating experience (OE) at other nuclear sites until questioned by NRC inspectors in late September 2004. The inspectors determined that Seabrook entered the information in their operating experience program in August 2004 and had not completed the review by the assigned date of mid-September 2004. This finding will be considered an NRC-Identified finding.

Analysis. Seabrook's failure to properly design and protect the charging system from loss of both charging pumps during a fire was considered a performance deficiency. Traditional enforcement does not apply because the issue did not have any actual safety consequence or potential for impacting the NRC's regulatory function and was not the result of any willful violation of NRC requirements or Seabrook's procedures.

The finding was more than minor because it affected the Mitigating System cornerstone and could impact the availability of equipment needed to ensure a safe shutdown during a fire. Using Appendix F, "Fire Protection Significance Determination Process" of IMC 0609, dated May 28, 2004, the finding was determined to be of very low safety significance (Green).

In performing the significance determination, Seabrook design engineers evaluated the location of VCT isolation valve control cables and charging pump power cables and identified locations where both cables could be affected by a fire. Each location was then evaluated using Appendix F to determine the significance. The fire areas of concern were the "A" and "B" essential switchgear rooms, the primary auxiliary building (PAB) - 25' elevation, and the PAB cable chase. A table is provided below describing the locations where both cables intersected, the progression through the SDP, and the rationale for screening to very low safety significance (Green). In all cases, the finding category was a post-fire safe shutdown with a duration factor of greater than 30 days. Additionally, Seabrook's use of thermoset cables reduced the significance of a cable fire.

Intersection & Fire Source	**Phase 1 Results**	**Phase 2 Results**	**Rationale for Screen to Green**
Near breaker EDE-SWG-5	N/A	N/A	A fire in the breaker would result in loss of power to the VCT isolation valve control panel and would prevent the spurious closure of the valve. Therefore, this scenario would not result in loss of both charging pumps.
Above the rod drive control panel	Does not screen due to duration and fire area initiation rate	A general electrical cabinet fire in an open location was considered.	A 70 kW fire screened due to the first cable tray greater than 3.5 feet away the fire (Table A1.4). A 200 kW fire screened on step 2.7 due to the 14 minutes to reach the 7th tray (tray with charging power cable). This resulted in frequency equal to 1E-6 and therefore screened to Green. (Frequency was calculated by Individual Base Fire Frequency * Severity Factor * Probability for Manual Fire Fighting)
Above RTU - EPWR sequencer panel	Does not screen due to duration and fire area initiation rate	A general electrical cabinet fire in an open location was considered.	A 70 kW fire screened due to the first cable tray greater than 3.5 feet away the fire (Table A1.4). A 200 kW fire screened on step 2.7 due to the 28 minutes to fail the first cable. This resulted in a frequency less than 1E-6. The time to fail was determined based on a NUREG 1850 generated peak centerline temperature of 595 F and Table A7.1 in the SDP.

Intersection & Fire Source	Phase 1 Results	Phase 2 Results	Rationale for Screen to Green
No ignition source in the area	Screen out since no ignition source near cables	N/A	No ignition source near cables.
Above 480V Load Center Bus 12	Does not screen due to duration and fire area initiation rate	A general electrical cabinet fire in an open location was considered.	The 70 kW and 200 kW fires screened due to the first cable tray greater than 5.3 feet away the fire (Table A1.4).

Enforcement. The Seabrook Facility Operating Licensee Section 2.F, "Fire Protection" requires that the licensee to implement and maintain the approved fire protection program as described in the Fire Protection of Safe Shutdown Capability Report. The report describes the design requirements for safe shutdown capability including having two redundant trains for equipment that provides a safe shutdown function to ensure that one train will remain available during a fire. The charging pumps are used for the reactor coolant inventory and pressure control safe shutdown functions. Contrary to the above fire protection requirements, between 1990 and 2004, during several fire scenarios the plant design failed to ensure that a charging pump would be available for its required safe shutdown function. Because this violation was of very low safety significance and Seabrook entered this finding into its corrective action program (CR 04-09428), this violation is being treated as an NCV consistent with section VI.A.1 of the NRC Enforcement Policy **(NCV 50-443/2005-03-03, Design Inadequacy Resulting in Potential Loss of Both Charging Pumps during a Fire)**.

2. Inadequate Controls on Oil Storage

a. Inspection Scope

On October 7, 2004, the inspectors reviewed plant engineers' actions after receiving results of an oil sample from a container in the lube oil storage building which contained abnormally high levels of particulate contamination and visible debris. The inspectors reviewed the licensee's determination that the oil sample was from a bottle used in filling various safety-related components. The inspectors reviewed the operability assessment conducted on the various components potentially affected. The inspectors reviewed the corrective actions taken in response to this issue and previous condition reports associated with lube oil building controls. Documents reviewed during the inspection are listed in the Attachment.

b. Findings

Introduction. Seabrook identified contaminated oil[2] that may have been used in a safety-related pump due to inadequate oil storage controls. The inspectors identified deficiencies with prior corrective actions regarding storage of consumable materials such as oil. This finding was determined to be of very low safety significance (Green) and was characterized to be an NCV of 10 CFR 50, Appendix B, Criterion XIII, "Handling, Storage, and Shipping."

Description. During October 2004, plant engineers identified that oil with abnormally high levels of particulate contamination and visible debris may have been used on safety-related components. The potential components affected included four service water pumps, two cooling tower pumps, two emergency diesel generators, a startup feedwater pump, one containment building spray pump, and one charging pump. Based on interviews, the type of container used to fill the components, the period of time since the last addition, and a review of component oil sample results, Seabrook determined that only the "B" cooling tower pump was affected. Based on a visual examination of the oil and subsequent testing, Seabrook determined that the "B" cooling tower pump oil was not impacted by the contaminated oil.

Seabrook identified that the contaminated oil was waste oil that had not been properly marked and handled. The container of waste oil was not marked properly in accordance with Seabrook's policy and had been placed with other oils to be reused in the plant. Seabrook had previously noted in various 2004 condition reports that benchstock material was not being adequately controlled. Errors had included material not labeled correctly, wrong material in containers, and containers returned to the wrong shelf. Seabrook conducted apparent cause evaluations in April and September 2004 and implemented corrective actions to improve controls including additional procedural guidance and physical controls. The inspectors concluded that the corrective actions did not provide adequate controls on the benchstock materials including lube oil. The inspectors also identified deficiencies with CR 04-09917, in that it did not address Seabrook’s full-day delay in evaluating operability of the components and did not document the extent-of-condition review conducted on other oil containers. Based on the previous opportunities to identify and correct the condition and engagement by the inspectors, the finding will be treated as an NRC-identified finding.

Analysis. Seabrook's failure to adequately control the storage of oil was considered a performance deficiency. Traditional enforcement did not apply because the issue did not have any actual safety consequence or potential for impacting the NRC's regulatory function and was not the result of any willful violation of NRC requirements or Seabrook's procedures.

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[2] Contaminated refers to metal particles in the oil, not radiologically contaminated.

The finding was more than minor because it affected the Mitigating System cornerstone and could impact the availability and reliability of safety-related equipment. Using Appendix A, Phase 1 of MC 0609, the finding was determined to be of very low safety significance (Green) since there was no actual loss of equipment due to the contaminated oil. This finding, which involved failure to properly control contaminated oil, was associated with the cross-cutting areas of human performance and problem identification and resolution in that contaminated oil was added to safety-related equipment, operability assessments were delayed, and extent-of-condition reviews were not documented.

Enforcement. The Code of Federal Regulations, 10 CFR 50, Appendix B, Criterion XIII, "Handling, Storage, and Shipping" requires measures be established to control the handling and storage of material to prevent damage or deterioration. Contrary to this requirement, in 2004 Seabrook did not provide the appropriate controls in the lube oil storage building to prevent deteriorated (i.e., contaminated) oil from being used on safety-related components. Because this violation was of very low safety significance and Seabrook entered this finding into its corrective action program (CR 04-09917, “Abnormal Lube Oil Contamination”), this violation is being treated as an NCV consistent with section VI.A.1 of the NRC Enforcement Policy **(NCV 50-443/2005-03-04, Inadequate Controls on Oil Storage)**.

3. Other Operability Evaluations

a. Inspection Scope

The inspectors reviewed operability evaluations and/or condition reports in order to verify that the identified conditions did not adversely affect safety system operability or plant safety. The evaluations were reviewed using criteria specified in Generic Letter 91-18, "Resolution of Degraded and Nonconforming Conditions" and Inspection Manual Part 9900, "Operable/Operability - Ensuring the Function Capability of a System or Component." In addition, where a component was determined to be inoperable, the inspectors verified the Technical Specifications (TS) limiting condition for operation implications were properly addressed. The inspectors performed field walkdowns, interviewed personnel, and reviewed the following items:

- CR 04-09325, which evaluated the impact of the presence of a foreign material in the Service Water Cooling Tower. During scaffolding erection, workers dropped a 12-inch piece of #14 wire into the middle bay of the cooling tower. The piece of wire was not recovered. The inspectors reviewed the CR, interviewed the system engineer, and reviewed WO 01C3157 to determine current and past operability of the cooling tower and the overall impact on the SW system.

- CR 04-10542 and CR 04-10695, which evaluated reactor trip bypass breaker testing. Implementation of the testing procedure (IX1680.921 and .922) did not

test the Shunt Trip Mechanism. WO's 0441047 and 0441051 tested the electrical trip mechanism of the reactor trip bypass breakers. The inspectors reviewed the CR's, reviewed and observed performance of the WO's.

b. Findings

One licensee-identified finding. (See section 4OA7)

1R16 Operator Workarounds (71111.16 - 2 Samples)

a. Inspection Scope

The inspectors completed one inspection of the cumulative impact of operator workarounds and reviewed in detail one specific operator workaround.

The inspectors reviewed Seabrook's current listing of operator workarounds and operator burdens to determine whether the workarounds adversely impacted the ability of the operators to implement emergency procedures or respond to plant transients. The inspectors examined NAP-402, "Conduct of Operations, Attachment K, Operator Workarounds and Burdens," Revision 0 and verified that this procedure provided the necessary guidance to the licensee to adequately address the cumulative effects the workarounds had on the operation, reliability, and availability of affected systems. The inspectors also reviewed selected CRs and quarterly assessments completed under WOs 0412191, 0413043, and 0412190. The work orders were verified to be properly tracked and scheduled for completion based on the priority and impact on the plant.

The inspectors reviewed in detail the repeat problem described in CR01-11805, Containment Purge Supply Flow Instrument Drift. Seabrook's program designated this issue as a minor operator burden. The inspectors examined the design basis of the containment purge system and flow instrument through UFSAR reviews, interviewed operators and chemists to determine the function and use of the flow instrument, and reviewed the compensatory measures established. The inspectors verified that the operator burden did not impact the functionality of the system or impact the ability of operators to respond during an emergency.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

Resident Periodic Inspection. (71111.17A - 1 Sample)

a. Inspection Scope

The inspectors reviewed the design change, MMOD 02-0531, "WRGM Low Temperature Alarm Variable Setpoint." The inspectors verified that operating procedures were appropriately changed, design basis documents updated, and computer parameters correctly modified. The inspectors also verified that current temperature inputs into the new alarms and heat trace temperatures and alarms were accurately reflecting expected conditions through interviews, walkdowns of the heat trace panels, and review of computer points. The inspectors reviewed the design change and supporting engineering evaluations to assess impact on the operability of the wide range gas monitor.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 4 Samples)

a. Inspection Scope

The inspectors reviewed post-maintenance testing (PMT) activities to ensure: 1) the PMT was appropriate for the scope of the maintenance work completed and in accordance with MA 3.5, "Post Maintenance Testing;" 2) the acceptance criteria were clear and demonstrated operability of the component; and 3) the PMT was performed in accordance with procedures. The following PMTs were reviewed:

- On October 28, 2004, LS0569.20, “Lubrication Only PM for Motor Operated Valve Actuators,” Revision 0, following the lubrication of the recirculation valve for the positive displacement pump. The inspectors observed the maintenance activities, reviewed the completed procedure, and interviewed the maintenance technicians and operators.

- On November 2, 2004, OX1436.02, “Operability Testing of IST Valves,” Revision 8, following replacement of the outboard bearing on the FW-P-37A. Additional bearing temperature monitoring was performed per WO 0421159. The inspectors observed the maintenance activities and reviewed the work order and the completed procedure.

- On November 11, 2004, OX1416.04, "Service Water Quarterly Pump and Discharge Valve Test and Comprehensive Pump Test," Revision 9, following

replacement of the discharge check valve and an isolation valve thermal overload relay for the "B" service water pump. In addition, the inspectors reviewed WOs 0324441 and 0403077.

- On December 1, 2004, the observation of the system pressure and response following actuator diaphragm replacement on the startup feedwater pump recirculation valve (1-FW-PCV-4326) and pressure control valves (1-FW-PCV-4377 and 4378). The inspectors observed portions of the maintenance activities and reviewed WOs 0412864 and 0327583.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 4 Samples)

a. Inspection Scope

The inspectors observed portions of surveillance testing activities of safety-related systems to verify that the system and components were capable of performing their intended safety function, to verify operational readiness, and to ensure compliance with required Technical Specifications and surveillance procedures.

The inspectors attended some of the pre-evolution briefings, performed system and control room walkdowns, observed operators and technicians perform test evolutions, reviewed system parameters, and interviewed system engineers and field operators. The test data recorded was compared to procedural and technical specification requirements, and to prior tests to identify any adverse trends. The following surveillance procedures were reviewed:

- On October 22, 2004, OX1431.03, “Main Control Valve Monthly Test,” Revision 8.
- On October 29, 2004, IX1680.922, “Solid State Protection System (SSPS) Train B Actuation Logic Test” Revision 09 and IX1680.921, “Solid State Protection System (SSPS) Train A Actuation Logic Test” Revision 9 were partially performed to demonstrate operability of the bypass breaker shunt trip capability.
- On November 12, 2004, ON1431.20, "Hydraulic Fluid Pumps Test," Revision 4.
- On December 23, 2004, OX1401.02, "RCS Steady State Leak Rate Calculation," Revision 6.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23 - 2 Samples)

a. Inspection Scope

The inspectors reviewed two temporary modifications CR 04-05875 and TMOD 04-009. CR 04-05875 involved the use of temporary equipment to patch a pin-hole leak on a heater drain line that was emitting steam. This pin-hole leak was located on an un-isolable portion of the drain line that was previously modified by WO 04-23253. Temporary Modification 04-009 involved the installation of a non-metallic liner on top of the stainless steel liner in the Cask Handling and Fuel Transfer Canal. The liner was a two component system consisting of an isocyanate hardener and an amine polymer resin.

Inspectors interviewed engineers and operators, completed field walkdowns, and reviewed Maintenance Manual, MA 4.3A, "Temporary Modifications and Temporary Alterations," Revision 16 and CR 04-09434.

The inspectors verified that the temporary modifications were completed in accordance with NRC requirements and plant procedures. The procedural requirements included modifications to plant drawings, tagging of plant equipment affected by the temporary modification, and procedural changes. The inspectors verified 10 CFR 50.59 reviews and 10 CFR 50.65(a)(4) risk evaluations were completed correctly. The inspectors also examined the combined effect of the modifications with other outstanding temporary modifications.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness [EP]

1EP4 Emergency Action Level (EAL) and Emergency Plan Changes

a. Inspection Scope (IP 71114.04 - 2 Samples)

A regional in-office review was conducted of licensee-submitted revisions to the emergency plan, implementing procedures, and EALs which were received by the NRC during the periods of April to September 2004 and October to December 2004. A thorough review was conducted of plan aspects related to the risk significant planning standards (RSPS), such as classifications, notifications and protective action recommendations. A cursory review was conducted for non-RSPS portions. These changes were reviewed against 10 CFR 50.47(b) and the requirements of Appendix E and they are subject to future inspections to ensure that the combination of these changes continues to meet NRC regulations. The inspection was conducted in

accordance with NRC Inspection Procedure 71114, Attachment 4, and the applicable requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06 - 1 Sample)

a. Inspection Scope

On October 20, 2004, the inspectors observed the combined function drill 04-003 to evaluate the conduct of the drill and adequacy of Seabrook's post-drill critique. The inspectors verified that event classifications and notifications were properly conducted in accordance with NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 2. The inspectors observed activities in the technical support center to ensure that priorities were appropriately identified and communicated. The inspectors also verified that identified problems were entered into the corrective action program through observation of the critique, review of the drill evaluation report, interviews of applicable drill participants, and review of condition reports initiated.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY [OS]

Cornerstone: Occupational Radiation Safety

2OS2 ALARA Planning and Controls (71121.02 - 7 samples)

a. Inspection Scope

During the period December 13 through 17, 2004, the inspectors conducted the following activities to verify that Seabrook was properly implementing operational, engineering, and administrative controls to maintain personnel exposure as low as is reasonably achievable (ALARA) for tasks conducted during power operations. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and the licensee's procedures.

Radiological Work Planning

The inspectors reviewed pertinent information regarding cumulative exposure history, current exposure trends, and ongoing activities to assess current performance and

ALARA preparations for the spring refueling outage (OR10). The inspectors determined the site's 3-year rolling collective average exposure.

The inspectors reviewed the work activities scheduled during the inspection period and the associated exposure estimates. Scheduled work reviewed included a containment entry to perform routine on-line maintenance and system inspections and a reactor coolant pump seal refurbishment. The inspectors interviewed Health Physics Department staff regarding the work planning/scheduling process and attended work planning meetings to evaluate the method for forecasting dose for work performed in radiologically significant areas.

The inspectors reviewed procedures associated with maintaining worker dose ALARA and estimating and tracking work activity specific exposures.

The inspectors reviewed dose summary reports detailing workers' estimated and actual exposures through December 16, 2004 for jobs performed during the calendar year to compare actual exposures with forecasted data. Additionally, the inspectors reviewed doses for the highest exposed individuals to assess the effectiveness of Seabrook's controls to limit an occupational dose below the regulatory criteria.

The inspectors evaluated exposure mitigation requirements specified in Radiation Work Permits (RWPs) and the associated ALARA Reviews (AR). Jobs reviewed included the tritium remediation project and coating removal and repair of the transfer canal and cask loading pool walls (RWPs 04-R-00026, 04-R-00029, 04-R-00031 and AR 04-01).

The inspectors evaluated the departmental interfaces between Health Physics, Operations, Maintenance, and Engineering departments to identify missing ALARA program elements and interface problems. The evaluation was accomplished by interviewing Health Physics Department staff, reviewing Radiation Safety Committee minutes, attending OR-10 Outage Readiness meetings, and attending a pre-job briefing for a containment entry.

Verification of Dose Estimates and Exposure Tracking Systems

The inspectors reviewed the assumptions and basis for the 2004 annual site collective exposure estimate and the spring 2005 OR-10 refueling outage dose projection. The inspectors reviewed the current efforts to implement a "Forward Looking Dose Projection Program" to better quantify dose forecasts.

The inspectors reviewed personnel contamination reports and whole body counting data for selected individuals.

Job Site Inspection and ALARA Control

The inspectors observed maintenance and operational activities being performed for reactor coolant pump seal refurbishment and preparations for a containment entry during power operations. The inspectors verified that the appropriate radiological controls were implemented including radiation protection coverage, contamination mitigation, proper dosimetry, and that workers were briefed on job site radiological conditions.

The inspectors reviewed the exposure of individuals in selected work groups, including mechanical maintenance, radiation protection, and operations to determine if supervisory efforts were being made to equalize doses among workers. The inspectors also interviewed the Radiological Technical Specialist-ALARA regarding the management of low dosage tasks (i.e., < 1 person-rem) through the use of task-specific ALARA Evaluations.

Source Term Reduction and Control

The inspectors reviewed the current status and historical trends of the site source term. Through interviews with the Radiological Technical Specialist-ALARA, Primary Chemistry Supervisor, and the Radiation Protection Manager, the inspectors evaluated Seabrook's source term measurements and control strategies. Specific strategies currently employed include system flushes and chemistry controls.

Radiation Worker Performance

The inspectors observed radiation workers and radiation protection technicians perform various tasks, including reactor coolant pump seal refurbishment and preparations for making a containment entry at power. Through interviews with selected individuals, the inspectors determined whether individuals were aware of job site radiological conditions, access controls, and electronic dosimetry dose/dose rate alarm set points.

The inspectors attended a pre-job briefing for a containment entry made during power operations to evaluate the adequacy and accuracy of information provided to workers.

The inspectors reviewed condition reports, related to radiation worker and radiation protection technician errors, and personnel contamination reports (PCR) to determine if an observable pattern traceable to a common cause was evident.

Declared Pregnant Workers

The inspectors reviewed the procedures associated with controlling and monitoring dose for declared pregnant workers (DPW). The inspectors determined that no new DPWs were employed since the last inspection of this area.

Problem Identification and Resolution

The inspectors reviewed elements of the licensee's corrective action program related to implementing the radiological controls program to determine if problems were being entered into the program for resolution. Details of this review are contained in Section 4OA2 of this report.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03 - 9 samples)

a. Inspection Scope

Between November 29 and December 2, 2004, the inspectors conducted the following activities to evaluate the operability and accuracy of radiation monitoring instrumentation, and the adequacy of the respiratory protection program for issuing self-contained breathing apparatus to emergency response personnel. Implementation of these programs was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and Seabrook's procedures.

The inspectors observed technicians performing radioactive source and functional checks on a variety of instruments including small article contamination monitors (SAM Nos. 9A & 48), low range/high range portable survey instruments (RO-20 Nos. 2846/4546/4557/4543/3352, RO-2 No.3189, Johnson Extenders Nos. 2070, 2747) and contamination monitors (RM-14 Nos. 7629/7634/7580/7618/ 7676/7633/7686/3887) and portable contamination instruments (E-140N Nos.1882/1872).

The inspectors reviewed the calibration records for selected survey instruments including an RO-2, RO-20, E-140N, and Johnson Extender; electronic dosimeters (DMC-2000); R-14 contamination monitor; and a small article contamination monitor (SAM-9). Additionally, the quality assurance quarterly testing data for the whole body counter (FastScan) was reviewed for the third and fourth quarters of 2004.

The daily quality control records were reviewed for the whole body counting system, alpha counter (Ludlum 2000), and proportional counters (Tennelec XLB and APC 175)

The calibration and maintenance records were reviewed for selected installed area monitors including R-6544, R-6549, R-6534, R-6518, and R-6540.

The inspectors reviewed the associated procedure and observed technicians performing the quarterly operational test of the Loop-A Primary Closed Cooling Water radiation monitor R-6516.

The inspectors reviewed the operating procedure and current source activity/dose rate characterizations for the Shepard Model 81 beam irradiator, used for instrument calibrations.

The inspectors evaluated the adequacy of the respiratory protection program regarding the maintenance and issuance of self-contained breathing apparatus (SCBA) to emergency response personnel. Training and qualification records were reviewed for all licensed operators from each of the six operating shifts and for fire brigade members, who would be required to wear SCBA's in the event of an emergency. Three SCBA's staged for use in the control room and three SCBAs staged on the turbine deck were physically checked and the maintenance and hydrostatic/regulator test records for other selected SCBA's, staged in other plant areas, were reviewed.

The inspectors reviewed the calibration records for the respirator regulator testing device. Also, reviewed were the breathing air certification records to confirm that breathing air met the Grade D quality criteria of the Compressed Gas Association.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification (71151 - 2 samples)

Cornerstones: Occupational Radiation Safety and Public Radiation Safety

a. Inspection Scope

The inspectors reviewed implementation of Seabrook's Occupational Exposure Control Effectiveness Performance Indicator Program. Specifically, the inspectors reviewed recent CRs and associated documents for occurrences involving locked high radiation areas, very high radiation areas, and unplanned exposures against the criteria specified in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2, to verify that all occurrences that met the NEI criteria were identified and reported as performance indicators.

The inspectors reviewed relevant effluent release reports for the period October 1, 2003, through October 1, 2004, for issues related to the public radiation safety performance indicator, which measures radiological effluent release occurrences that exceed 1.5 mrem/qtr whole body or 5.0 mrem/qtr organ dose for liquid effluents; 5mrads/qtr gamma air dose, 10 mrad/qtr beta air dose, and 7.5 mrem/qtr for an organ dose for gaseous effluents. The inspectors reviewed the following documents to ensure Seabrook met all requirements of the performance indicator from the fourth quarter 2003 to the third quarter 2004 (4 quarters):

- monthly projected dose assessment results due to radioactive liquid and gaseous effluent releases;
- quarterly projected dose assessment results due to radioactive liquid and gaseous effluent releases; and
- dose assessment procedures.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

1. ALARA Planning and Controls/ Radiation Monitoring Instrumentation & Protective Equipment (71121.02 and 71121.03) (20 Samples)

a. Inspection Scope

The inspectors reviewed twenty-three CRs, recent Radiation Safety Committee meeting minutes, a Health Physics Department Self-Assessment (04-0121), a Nuclear Oversight Audit Report (SBK-04-01), Daily Quality Summary Reports, and materials used in presenting the ALARA Plan for the next refueling outage to evaluate Seabrook's threshold for identifying, evaluating, and resolving occupational radiation safety problems. This review included a check of possible repetitive issues such as radiation worker and radiation protection technician errors.

The review was conducted against the criteria contained in 10 CFR 20, Technical Specifications, and Seabrook's procedures.

b. Findings and Conclusions

No findings of significance were identified.

2. Problem Identification and Resolution Trend Review

a. Inspection Scope

The inspectors reviewed Seabrook's corrective action program to identify trends that may indicate the existence of more safety significant issues. The inspectors reviewed the corrective action database through the review of individual components to identify equipment degradation trends. Additionally, the inspectors reviewed Seabrook's programs for identifying trends through their performance improvement group, the individual departments, and the condition report oversight group. During this period, the inspectors examined the Engineering Department's trend analysis in further detail. The inspectors also reviewed several trend condition reports.

b. Findings

No findings of significance were identified.

3. Problem Identification and Resolution (71152 - 2 samples)

Adherence to Procedures

a. Inspection Scope

The inspectors reviewed CR-03-09703 and its associated root cause analysis. This CR concerned inappropriate use of an abnormal operating procedure (AOP) in support of maintenance. In this instance, the turbine generator high vibration AOP was being used to provide an operating limit while gathering vibration data for turbine balancing. A high vibration condition occurred during a turbine coastdown, and the Unit Supervisor entered AOP attachment "A" to break condenser vacuum rather than entering at the beginning of the procedure, which would have required a reactor trip.

b. Observations and Findings

The inspectors noted that the root cause and corrective actions were extensive and addressed this event as indicative of management and work planning errors in the decision to use an AOP for troubleshooting, not just an individual error by an individual operator. The failure to appropriately implement the AOP was documented as an NCV in NRC Inspection Report 05-443/03-06.

Simulator Testing

a. Inspection Scope

The inspectors reviewed Nuclear Assurance Quality Report 03-0146 and the resolution of Condition Reports 03-09849 and 03-09850 resulting from that report. This QA report addressed simulator testing at the station. The CRs which resulted addressed noncompliances with the simulator testing guidance of ANS 3.5 -1998, and the issue of simulator deficiencies arising during training rather than being found during testing. The inspectors then independently reviewed the simulator for compliance with 10CFR55.46 and ANSI 3.5-1998 and dispositioning of discrepancies. Outstanding vendor deficiencies and facility simulator condition reports were reviewed for timely correction of deficiencies affecting training.

b. Observations and Findings

The inspectors noted disagreement between the QA auditors and the training department concerning the specific requirements of ANS 3.5-1998, regarding simulator testing and documentation, with no resolution of this disagreement in the closure of corrective actions. The inspectors reviewed the issues in the report and simulator testing documentation, and identified a potential performance deficiency in the documentation of scenario-based simulator testing (SBT).

At Seabrook the documentation of scenario-based testing consists of a schedule showing the scenario run, a short checklist which asks five questions concerning simulator performance, and a description of any deficiencies noted and condition reports generated. This checklist does not list specific alarms, parameters, or data for evaluation of simulator performance. It is apparent that detailed evaluation is being performed because many SBT scenario validations have resulted in the identification of discrepancies, however when the simulator evaluation produces "clean" results it is not possible to determine from the available documentation whether such results are due to lack of discrepancies or due to a different evaluator. ANS 3.5-1998 paragraph 4.4.3 states that a record of the conduct of simulator performance tests and data comparison that the results meet reference unit data shall be maintained. Paragraph 4.4.3.1. states that simulator operability testing credit may be taken for having performed those normal evolutions, malfunctions, local operator actions, and other features exercised by the scenario during scenario-based testing provided that such evolutions are performed in accordance with reference unit procedures and provided that the scenario based testing results are evaluated and documented. Paragraph 4.4.3.2. States that a record of the conduct of scenario-based tests "typically in the form of a completed scenario or lesson plan checklist," and the evaluation of test results, shall be maintained. The Seabrook checklist, which provides no documentation of what actual data comparison was performed, does not clearly satisfy the ANSI standard guidance.

Because ANSI/ANS-3.5-1998 does not provide details regarding the extent of the comparison between the simulator and actual or predicted plant performance that is required during SBT, some confusion has developed regarding proper interpretation of the standard in this area. The NRC staff believes that the comparison, to be meaningful, must include a listing or description of key parameters / automatic actions / alarms as described in section 4.1.4 "Malfunctions" of the standard. As concurred by the Operator Licensing Program Office, this item is unresolved pending anticipated enhancements to the ANSI/ANS-3.5 standard in this area and additional guidance or clarification/interpretation of existing guidance (e.g., revise or update Regulatory Guidance 1.149, "Nuclear Power Plant Simulation Facilities For Use In Operator Training And License Examinations," Revision 3, October 2001) **(URI 50-443/2005003-05, Simulator Testing)**.

4. Cross-references to PI&R Findings

Section 1R01 describes a failure to identify and correct a failed heat trace circuit in a timely manner. The finding was associated with the cross-cutting area of problem identification and resolution in that the degraded condition was not appropriately identified, classified or corrected.

Section 1R15.2 describes repeat problems regarding the control of benchstock materials including lube oil. The corrective actions were inadequate to prevent the potential use of waste oil in safety-related components. The finding was associated with the cross-cutting area of problem identification and resolution in that operability assessments were delayed and extent-of-condition reviews were not documented.

4OA4 Cross Cutting Aspects of Findings

Cross-references to Human Performance Findings

Section 1R13.1 describes, in part, a failure of maintenance technicians to take appropriate mitigating action to prevent an inadvertent switchyard breaker opening during preventive maintenance. This finding was associated with the cross-cutting area of human performance in that once both heaters were removed from service, the technicians became distracted with unrelated administrative tasks such that gas pressure decreased and the breaker tripped open.

Section 1R15.2 describes a failure of personnel to control the storage of oil in accordance with 10 CFR 50, Appendix B, Criterion XIII, "Handling, Storage, and Shipping." This finding was associated with the cross-cutting areas of human performance and problem identification and resolution in that contaminated oil was added to safety-related equipment

4OA6 Meetings, including Exit

Exit Meeting Summary

The inspectors presented the inspection results to Mr. M. Warner on January 20, 2005, following the conclusion of the inspection period. Seabrook acknowledged the findings presented. The licensee did not indicate that any of the information presented at the exit meeting was proprietary.

4OA7 Licensee-Identified Violations

The following finding of very low safety significance was identified by the licensee and is a violation of NRC requirements which met the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a Non-Cited Violation (NCV).

– TS 4.3.1.1 requires that automatic trip logic be demonstrated operable per the requirements in Table 4.3-1. Table 4.3-1 requires, in part, that the local manual shunt trip be demonstrated operable prior to placing any of the trip breakers in service. Contrary to this, in 2004 the Bypass Trip Breakers were placed in service on more than one occasion without the shunt trip mechanism being demonstrated operable. The issue was identified by Seabrook and entered into its corrective action program as CR 04-10542, Failure to Test Bypass Shunt Trip Breaker. This finding is of very low safety significance since the shunt trip breakers were demonstrated operable after the issue was discovered.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

W. Bladow	Nuclear Oversight Manager
D. Boss	Respiratory Protection Technician
J. Buyak	Respiratory Protection Technician
E. Carley	Licensing Engineer
W. Cash	Health Physics Department Manager
T. Daye	Instrumentation & Control Technician
C. Ellis	Senior Health Physics Technician
D. Flahardy	Senior Health Physicist
S. Friedman	Instrumentation & Control Supervisor
R. Gutherie	Plant Systems Engineer - Instrumentation
M. Kiley	Operations Manager
W. Labbe	Work Controls Manager
L. Neely	Outage Manager
M. O'Keefe	Regulatory Compliance Supervisor
D. Robinson	Primary Chemistry Supervisor
A. Rolfe	Senior Radiation Technician
D. Roy	Training Manager
M. Scannell	Senior Health Physicist - Instrumentation
R. Sterritt	Radiological Technical Specialist - ALARA
G. St. Pierre	Plant General Manager
R. Thurlow	Health Physics Technical Supervisor

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened:

05-443/2005-03-05	URI	Simulator Testing (Section 4OA2)

Opened and Closed

50-443/2005-03-01	FIN	Untimely Corrective Maintenance Resulting in a Frozen Main Steam PressureTransmitter Sensing Line. (Section 1R01)
50-443/2005-03-02	FIN	Inadequate Procedure Resulting in Unplanned Opening of a Switchyard Breaker (Section 1R13.1)
50-443/2005-03-03	NCV	Design Inadequacy Resulting in Potential Loss of Both Charging Pumps during a Fire (Section 1R15.1)

50-443/2005-03-04 NCV Inadequate Controls on Oil Storage (Section 1R15.2)

LIST OF DOCUMENTS REVIEWED

Section 1R15: Operability Evaluations

Procedures

MA 4.9, Control and Storage of Benchstock and Faulted Material, Revision 9

Condition Reports

04-04198, 04-06609, 04-08517, 04-09917, 04-10368

Section 1EP4: Emergency Action Level (EAL) and Emergency Plan Changes

Procedures

Seabrook Emergency Plan and Implementing Procedures

Section 2OS2: ALARA Planning and Controls

Procedures

HD0955.05, Rev 12/11	Operation of Portable Radiation & Contamination Survey Instruments
HD0955.19, Rev 07/02	Use of the Model 81 Shepard Beam Irradiator
HD0955.31, Rev 03/02	Determination of Portable Instrument Response Check Data
HD0955.54, Rev 00/03	Operation of the TSA Model SPM-906 Portal Monitor
HD0958.03, Rev 23/04	Personnel Survey & Decontamination Techniques
HD0958.11, Rev 05/00	Radiological Characterization of the Irradiators
HD0961.31, Rev 03/02	Canberra Whole Body Counting System Operation
HD0961.32, Rev 00/03	Canberra Whole Body Counting System Calibration
HD0963.28 Rev 08/04	Calibration and Troubleshooting of Merlin Gerin DMC 2000 Dosimeters
HD 0963.02, Rev 13/07	Administrative Guidelines For Health Physics Instrumentation
HD0965.01, Rev 15/04	Respiratory Protection Quality Assurance and Maintenance Program
HD0965.02, Rev 14/07	Repair, Inspection, & Maintenance of Respiratory Equipment
HD0992.02, Rev28/03	Issuance and Control of Personnel Monitoring Devices
IX 1660.872, Rev 07/05	RM-R-6516 PCCW Loop “A” Radiation Monitor Operational Test
RP 15.1, Rev 17	Job PrePlanning and Review for Radiation Exposure Control
HD0958.42, Rev 23	Determination & Control of Dose to an Embryo/Fetus
RP 5.3, Rev 03	Expected or Declared Pregnant Worker Exposure Control
HD0961.29, Rev 23	Internal Dosimetry Assessment

Reports:

- HPSTID (Health Physics Study/Technical Information Document), 03-012, Verification of Model 81 Beam Irradiator 2003
-HPSTID 03-005, Installation of Canberra FastScan Whole Body Counting System Software and Hardware
- Semi-Annual (2004) Whole Body Counter Results for the Collaborative in-vivo Quality Assurance Program
- Radiation Monitoring System Health Report, 10/14/2004
- Nuclear Assurance Quality Reports, Radiation Protection, 04-0099, 04-0096, 04-0082
- Breathing Air Quality Sample Analyses

Condition Reports:

04-01263, 04-06775, 04-07145, 04-07154, 04-11298, 04-00800, 04-01183, 04-06637, 04-07533, 04-07644, 04-10429, 04-10512, 04-10889, 04-10963, 04-1127, 04-03592, 04-06336, 04-08189, 04-09026, 04-01974, 04-08497, 04-06560, 04-06427

Section 4OA2: Identification and Resolution of Problems

Procedures

NT-3710 Simulator Scenario Testing, Rev. 09/08/04
NT-3743 Steady State Value Comparison Test, Rev. 09/08/04
NT-3736 Simulator Core Performance Test, Rev. 07/01/04
2003 Scenario Based Testing Records for LORT Phase 03-01, 03-02, 03-03, 03-04, 03-05, 03-06

2004 Miscellaneous Tests

PZR Spray Effectiveness
Rod Operability
Industry Event - Stuck Open PZR Spray Valve
Main Steamline Break In Containment
Comparison of Plant to Simulator Data from the MPCS for a Loss of PP-1C

Condition Reports, Simulator Deficiency Reports

CR 03-00103, 03-02818, 03-0817, 03-04586, 03-04589, 03-09847 DR 359, 360, 361
NT-3730 Phase 02 Site Acceptance Test
NT-3731 Major Plant Evolutions (Phase 01 Site Acceptance Test)
CT-1537I Operational Decision Making Instructor Guide
L1628C EOP Users Guide Instructor Guide

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ALARA	As low as is reasonable achievable
AOP	Abnormal Operating Procedure
AR	ALARA reviews
CR	Condition Report
DPW	Declared Pregnant Workers
EAL	Emergency Action Level
EFW	Emergency Feedwater
IMC	Inspection manual Chapter
MA	Maintenance Manual
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NSO	Nuclear System Operator
NRC	Nuclear Regulatory Commission
OE	Operating Experience
PAB	Primary Auxiliary Building
PCR	Personnel Contamination Report
PMT	Post Maintenance Testing
RSPS	Risk Significant Planning Standard
RWP	Radiation Work Permit
SCBA	Self-Contained Breathing Apparatus
SDP	Significance Determination Process
SSPS	Solid State Protection System
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
VCT	Volume Control Tank
WM	Work Management Manual
WO	Work Order
WRGM	Wide-range Gas Monitor