

APPENDIX A

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-458/92-24

Operating License: NPF-47

Docket: 50-458

Licensee: Gulf States Utilities
P.O. Box 220
St. Francisville, Louisiana 70775

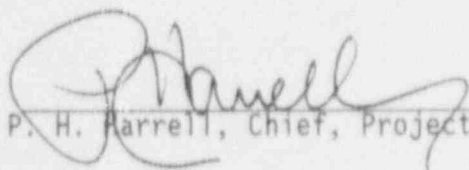
Facility Name: River Bend Station

Inspection At: St. Francisville, Louisiana

Inspection Conducted: May 24 through July 4, 1992

Inspectors: E. J. Ford, Senior Resident Inspector
D. P. Loveless, Resident Inspector

Approved:


P. H. Parrell, Chief, Project Section C

7-15-92
Date

Inspection Summary

Inspection Conducted May 24 through July 4, 1992 (Report 50-458/92-24)

Areas Inspected: Routine, unannounced inspection of review of the suppression pool cleanup, operational safety verification, maintenance and surveillance observations, observation of diesel generator inspections, occupational safety and health inspections, and evaluation of changes to the environment around the plant.

Results:

- o The licensee's efforts in removing the oily suspension from the high pressure core spray system and the suppression pool should prevent any associated chemistry problems during plant operations (paragraph 3).
- o The licensee's drywell coordination facilitated the flow of work and limited the spread of high contamination levels (paragraph 4.a).
- o Nuclear equipment operators were identifying and documenting deficiencies in plant equipment as required (paragraph 4.b).
- o The licensee's efforts to verify that the service water filtration equipment was not contaminated were excellent (paragraph 4.c).

- o Poor communications among the radiation protection technicians contributed to a personnel internal exposure, which could have been prevented (paragraph 4.e).
- o A poorly written work plan led to procedural discrepancies in the torquing of a check valve (paragraph 5).
- o Radiation protection activities were not coordinated or consistent during a maintenance activity involving a system breach; however, no contamination was spread (paragraph 5).
- o The performer of a surveillance procedure was knowledgeable of the testing requirements and the visual examination techniques (paragraph 6).
- o All licensee inspections of the Division I diesel generator that were observed were of good quality and met the requirements of the licensee's maintenance matrix (paragraph 7).
- o The trolley involved in an industrial accident was not installed in accordance with the manufacturer's recommendations. Side lifts were being performed against the manufacturer's recommendations (paragraph 8).
- o Periodic inspections of trolley's at River Bend Station are poorly documented and the inspection criteria are vague (paragraph 8).
- o The licensee does not have a formal program for identifying and evaluating safety issues resulting from changes in the environment around the plant. However, there was no indication that the Updated Safety Analysis Report did not reflect the current licensing basis in this area (paragraph 9).

DETAILS

1. Persons Contacted

J. S. Anderson, Shift Manager, Radiation Protection
D. L. Andrews, Director, Nuclear Training
R. E. Barnes, Supervisor, Codes and Standards
J. E. Booker, Manager, Nuclear Industry Programs
J. W. Cook, Technical Assistant
T. C. Crouse, Manager, Administration
J. C. Deddens, Senior Vice President
W. H. Odell, Manager, Oversight
J. P. Schippert, Assistant Plant Manager - Operations, Radwaste and Chemistry
J. E. Spivey, Engineer, Senior Quality Assurance Engineer
K. E. Suhrke, General Manager, Engineering and Administration
R. J. Vachor, Senior Compliance Analyst

The above listed personnel attended the exit meeting conducted on July 6, 1992. In addition, the inspectors contacted other personnel during this inspection period.

2. Plant Status

a. Operational Status

At the beginning of this inspection period, the reactor was defueled and the plant was in Day 74 of a 156-day outage that commenced on March 12, 1992.

On June 29, the licensee completed the chemical cleaning of the Division I standby service water subsystem.

At the end of this inspection period, the reactor was defueled and the plant was in Day 115 of the 156-day outage.

b. Announced Agreement to Merge Entergy Corporation and Gulf States Utilities

At 7:30 a.m., on June 8, 1992, Entergy Corporation announced an agreement between Entergy Corporation and Gulf States Utilities to combine the two utilities. The transaction involves approximately 2.3 billion dollars in stock and cash. The merger is subject to stockholder votes and regulatory approvals.

On June 6, 1990, Entergy Corporation consolidated the operation of Arkansas Nuclear One, Grand Gulf, and Waterford 3 nuclear plants under one company, Entergy Operations, Inc.

3. Review of the Suppression Pool Cleanup (93702)

On June 10, 1992, personnel in containment observed an oily film on the suppression pool floor. The suppression pool had been drained and the walls hydrolased previously, in an effort to clean up the suppression pool chemistry and allow for better evaluation of the emergency core cooling system suction strainers. During an evaluation, operators discovered a thick black oil coming from the high pressure core spray test return line.

The licensee determined that, during the connection of test equipment for signature testing of Suppression Pool Return Valve DFR*MOV-146, an interlock had been unintentionally bypassed allowing sump water from the auxiliary building to back up into the suppression pool pump back system piping and into the pool itself. This is evidence of poor planning and configuration control because the effect of connecting the test equipment at these locations was not recognized. The suppression pool was empty for cleaning at the time and no additional safety systems were affected. Chemical analysis identified the sludge as a suspension of 32 weight oil, rust, dirt, and water. The licensee stated that the most likely source was the reactor core isolation cooling system pump room sump.

The inspector determined that this event could not have taken place during operations. The systems involved were not required to be operable at that time. In addition, the licensee cleaned up the pool floor and flushed the high pressure core spray system prior to refilling the pool. These actions should prevent any potential chemistry problems during operation. It should be noted that the overall suppression pool cleanup effort will provide better chemistry and monitoring of safety-related systems.

Conclusion

Although poor work planning caused the contamination of the high pressure core spray system and the suppression pool, the licensee's efforts in removing the oily suspension should prevent any associated chemistry problems during plant operations.

4. Operational Safety Verification (71707)

a. Plant Tours

On June 19, 1992, the inspector performed a routine tour of the drywell. The licensee had staged a tool room in containment just inside the contaminated zone leading to the drywell. This should provide for improved control of contaminated tools and equipment.

The inspector observed the drywell coordinator and the radiation protection technicians at work and determined that they were

helpful in facilitating the flow of work and preventing the spread of high levels of contamination. Although drywell areas are small and significant work activities were taking place, lay down areas were kept to a minimum, suspended work was appropriately controlled, and industrial safety equipment was readily available.

On June 10, the inspector toured the closed-loop, normal service water system. The licensee was in the process of draining the system to remove the contamination documented in paragraph 4.c, below. The inspector noted that the mechanical system was 100 percent installed and that electrical acceptance testing was in progress.

On June 17, the inspector noted that the seal between the turbine building and the steam tunnel was degraded and leaking fluid. The inspector discussed this with the shift supervisor and the seal was documented for repair under Maintenance Work Order R152966. The seal was determined by the licensee to be nonessential.

b. Operator Log Reviews

During this inspection period, the inspector noted various minor deficiencies in the plant. These were reviewed to verify that they had been identified in the nuclear equipment operators logs and that it had been entered in the licensee's program for correction. No discrepancies were identified.

c. Potential Transport of Radioactive Material Offsite

On June 3, 1992, Gulf States Utilities identified that the plant normal service water and Division II standby service water systems were very slightly contaminated. Radiological samples of service water identified very low levels of Co-60 and Mn-54 of about 1 to 2 E-07 uCi/ml, which are below reportable limits. Earlier, approximately May 30, the licensee had contracted with Churchill Environmental Services to provide filtering services for service water cleanup after extensive modifications to the normal service water system and extensive chemical cleaning of the normal service water and Division II standby service water systems. These filter presses and support equipment left the site on June 2. The filter media was retained by the licensee and remained on site.

On June 3, Gulf States Utilities dispatched radiation protection technicians to the locations where equipment from the service water filtration was stored. Equipment was located in Baton Rouge, Morgan City, Lafayette, and Lake Arthur, Louisiana. Radiation surveys and samples detected no radioactive material, indicating that no radioactive material was transported offsite. This was an excellent effort to verify that the equipment was not contaminated.

The source of contamination in the service water system is not currently known. The licensee sampled the make-up water sources for the system and found no contamination. In addition, the licensee investigated all loads that were in service at the time that the contamination was found. No evidence of heat exchanger leakage or contamination was identified. No connections with other systems were identified that could have caused the contamination.

The system was drained and refilled. Following the system startup, the licensee analyzed system water samples and determined them to be free of contamination. The system had been running for 17 days at the end of this inspection period, and no contamination had been detected during licensee sampling.

d. Feedwater Elbow Inspections

During this inspection period, the licensee informed the resident inspectors of a potential 10 CFR Part 21 report that the licensee was reviewing. As part of the N4A feedwater nozzle safe end replacement, the licensee procured a new Category I stainless steel elbow from Connex Pipe Systems, Inc. The elbow was originally manufactured by Ram Forge as a Schedule 80 pipe and the licensee counterbored one end to Schedule 60.

Once onsite, the licensee performed quality control receipt inspections and accepted the elbow. However, further inspections in the field identified that the elbow was below the code allowable minimum wall specifications for the application. In a letter to the NRC, Connex stated that they had removed Ram Forge from their Approved Vendors List until a full investigation could be completed.

This event was reviewed and documented in NRC Inspection Report FJ-458/92-21.

e. Internal Contamination of Radiation Protection Technician

On June 15, 1992, a radiation protection technician performed a survey inside the Recirculation Pump A bowl and received an uptake of radioactivity. Based on a whole body count, the licensee determined the uptake to be approximately 47.8 maximum permissible concentration-hours.

The technician was requested to obtain radiological survey data on the old impeller with a teletector, dose rates at the plane of the pump bowl, and the dose rates and contamination levels on the bowl-to-bonnet flexitallic gasket prior to lifting the pump impeller. The protection guidelines for the job did not require a respirator based on data obtained from a previous impeller lift.

After the lift, the lead mechanic requested that the technician perform a survey inside of the pump bowl. The technician suggested that a respirator would be required to perform the job; however, the drywell foreman thought that the technician was asking about the gasket survey. No respirator would be needed for the gasket survey alone. Therefore, through a communication error, the technician did not wear a respirator to perform this survey. The contamination levels were found to be 4500 mRad/hour/100 cm².

The exposure received by the technician did not meet the regulatory threshold of an overexposure. However, an exposure was received because of poor communications. This event is significant because the dose received was not as low as reasonably achievable.

Conclusions

The licensee's program provided good control of the numerous activities in the drywell facilitating the flow of work and limiting the spread of high contamination levels.

Nuclear equipment operators were identifying and documenting deficiencies in plant equipment, as required.

The licensee's efforts to verify that the service water filtration equipment was not contaminated were excellent. Although the source of the service water contamination was not identified, no contamination has been detected since returning the system to service.

Poor communications among the radiation protection technicians contributed to personnel internal exposure, which could have been prevented.

5. Maintenance Observations (62703)

On June 15, 1992, the inspector observed the work activities being performed under Maintenance Work Order R147140. This order requested the disassembly, inspection, cleaning, and reassembly of Check Valve 1-SSR*V705. The inspector observed that the workers were following the work plan step by step. Step 9 of the plan required the mechanics to torque the valve bonnet bolts to 48 ft-lbs in accordance with the vendor manual. Although the mechanics torqued the nuts in the appropriate order, the vendor manual required the torque to be performed in increments of approximately 20 percent of full torque. The mechanics actually torqued the bonnet nuts in three increments. The inspector reviewed the quality control inspection report and determined that it had accepted this torquing method.

The inspector reviewed General Maintenance Procedure GMP-0018, "General

Torquing Guide," and determined that Step 8.3.3.6 requires the mechanics to torque the fasteners in proper sequence in approximately 33 percent increments of the required final torque. This procedural reference was in conflict with Step 9 of the work plan.

The licensee determined that the valve torque was technically adequate. The General Maintenance Supervisor indicated that the planner was most likely referencing the final torque value in the vendor manual and not the incremental steps. The mechanics are trained to follow Procedure GMP-0018 guidelines. The inspector concluded that the work plan was poorly written because it referenced the vendor manual for torquing as opposed to Procedure GMP-0018.

The inspector reviewed Limiting Condition for Operation Log 92-202 and determined that the appropriate action statement was being implemented for this piping to be out of service. The inspector reviewed Clearance Order RB-1-92-3078 and determined that it was appropriate for the work being performed. In addition, the inspector walked down the clearance boundary and found no discrepancies. The mechanics were following the requirements of Maintenance Section Procedure MSP-0021, "Equipment Removal/Disassembly Identification Tag," as required.

The inspector reviewed Radiation Work Permit 92-2019 and found that it was appropriate for the job. Job specific surveys were performed and a specific briefing was given by radiation protection technicians. A radiation protection technician also accompanied the job because it was in a high radiation area and the system was to be breached.

Initially, the area of the job was not contaminated. However, as a precaution, radiation technicians required those working with the valve internals to be dressed in a single pair of anticontamination clothing, and those observing to wear a lab coat and booties. In addition, a nearby heat exchanger was contaminated and only had a taped barrier between the scaffold and the top of the heat exchanger. After the system was breached, the technician did find contamination in the system.

The contamination was controlled by proper work practices of the mechanics. However, once the system was breached, radiation protection activities, as directed by the assigned radiation protection technician were inconsistent. During single evaluation, the quality control inspector was allowed in the area once with single anticontamination clothing, once with a lab coat and booties, while wearing shorts, and finally in street clothes. A contaminated zone was never established. Final surveys proved the area to be clean; however, workers expressed confusion in the implementation of radiological protection measures indicating that more consistent and clear instructions could have been provided.

The radiation protection supervisor stated that procedures allow system breaching work to be performed in a clean area without the establishing of a contaminated zone, provided that a radiation protection technician covers the job. The licensee indicated that the job could have been better controlled. However, the inspector concluded there was no safety significance with the activity because no contamination was spread.

Conclusions

A maintenance work order was poorly written because it referenced the vendor manual as opposed to Procedure GMP-0018.

Radiation protection activities were not coordinated or consistent; however, no contamination was spread because of good work practices.

6. Surveillance Observations (61726)

On June 15, 1992, the inspector observed a portion of the performance of Surveillance Test Procedure STP-000-3607, "Check Valves Tested per ASME XI, Inservice Testing by Disassembly." This procedure verifies check valve operability and local position by disassembly because of the inability to verify operability and local position by alternative means, as required by Technical Specification 4.5.5.

The inspector observed the evaluation of the Check Valve 1-SSR*V705 in the reactor sample system. The procedure met the requirements of Valve Relief Request No. 24 of the River Bend Station Pump and Valve Program Plan and was performed within the required Technical Specification frequency.

All prerequisites were met and the performers were knowledgeable of the test requirements and the specifics of Check Valve 1-SSR*V705. The visual examination techniques were understood and well documented. The performer was able to support the conclusions made.

The inspector independently verified the condition of the internal valve parts and the evaluation of the valves capability to continue to operate through future cycles.

Conclusion:

The surveillance procedure met the Technical Specification requirements and was performed within the required frequency. The performers were knowledgeable of the testing requirements and the visual examination techniques.

7. Observation of Diesel Generator Inspections (61701)

Throughout this inspection period, the inspector observed portions of the performance of Procedure STP-309-7614, "Diesel Generator Inspection

- Division I and Division II." This procedure required the diesel generator to be inspected in accordance with procedures prepared in conjunction with the manufacturer's recommendations for this class of standby service, as stated in Technical Specification Surveillance Requirement 4.8.1.1.2.f.1. The inspector verified that the tasks being performed within the time frame specified in the Technical Specifications.

Procedure STP-309-7614 implements a number of vendor procedures that provide for the proper inspection activities, as required by the licensee's maintenance matrix for the Division I and Division II diesel generators. The inspector observed portions of the following refueling outage procedures being performed on the Division I diesel generator:

- o RFO-430, "Inspect the Gear Train"

The inspector observed portions of the preparation and inspection of the Division I diesel generator gear train. The technician performing the inspection understood the inspection activities and the location and inspection ports for the gears to be examined. The technicians found the gears to be in good condition. Quality control witness points were met as evidenced by licensee Inspection Reports 92-26386 and 92-26096.

The inspector reviewed the stores requisition for the oil and the crankcase and gear train inspection port gaskets. All parts had been released by quality control and were approved for safety-related applications.

- o RFO-415, "Fuel Injection Equipment Examination and Maintenance."

The inspector observed a portion of the testing of the fuel injectors. Clean oil was utilized and the "pop tester" was in good working condition. The inspector verified that Pressure Gauge PTG-097A used in the test was properly calibrated and was covered by the licensee's measuring and test equipment program. The technicians performing the test were knowledgeable of the test requirements and acceptance criteria. Pop tests of the injectors identified that Injectors 6 and 8 opened at too low of a pressure and that Injector 3 had a weeping nozzle. These three injectors were rebuilt and the injection pressure and spray patterns tested satisfactorily.

- o RFO-448, "Cylinder Head Removal and Reinstallation," and RFO-459, "Cylinder Block Top Deck Inspection by Visible Dye Penetration Method."

The inspector observed portions of the dye penetrant testing of replacement cylinder heads being prepared to place in the diesel

generator. Quality control coverage was good and all indications were documented and compared to the vendor records of initial exams. In addition, the scope of the licensee's inspections was wider than that required. Dye penetrant tests of the Division II diesel generator intake valves identified stem cracking. As corrective action, the licensee tested the Division I valves and also found evidence of cracking. The licensee conservatively chose to replace the entire cylinder head assemblies.

- o RFO-453, "Perform Turbo Charger and Exhaust Expansion Joint Inspection"

The inspector observed the vendor visual inspections of the turbocharger. To avoid disassembly, the inspections were being performed remotely via a boroscope. The technicians performing the inspections were following the procedure and aware of the acceptance criteria. The inspector independently performed a boroscopic inspection of the turbocharger buckets and verified no major cracking of the turbine root existed.

The inspector determined that the contractor personnel performing the inspections were knowledgeable of their tasks and that the inspections were thorough and of good quality. The minimum number of personnel required for the test were at hand and in position. The inspector verified that test prerequisites were appropriately signed off and that a sampling of the prerequisites to verify that these actions had been performed.

The inspector verified that the contractor supplied procedures had been reviewed and approved for use by the licensee. The current revision of the procedures was available and used by test personnel. Additionally, all data was properly recorded and documented in the work package data sheets in accordance with the procedures. Quality control inspectors were following witness and hold points and issued appropriate inspection reports.

The inspector observed activities to restore the diesel generator to normal operation upon completion of the inspections. Appropriate controls were in place. Cleanliness and parts control were maintained. The inspector reviewed Limiting Condition for Operation Log 92-168 to verify that appropriate testing of the diesel generator was scheduled to be performed prior to the operators declaring the system operable.

Conclusion

All inspections observed were of good quality and met the requirements of the licensee's maintenance matrix. Corrective actions appeared to be conservative and indicated that appropriate inspections were being performed. Cleanliness and parts control were being maintained.

8. Occupational Health and Safety Inspections (93001)

On June 18, 1992, the licensee declared a Notification of Unusual Event when a potentially contaminated individual was transported offsite. The individual was injured by a falling hoist in the drywell. The emergency medical technician responding placed him on a backboard to immobilize his back; therefore, a complete contamination survey was not able to be completed prior to transporting the individual offsite. When surveyed at the hospital, no contamination was found on the individual or safety equipment.

The inspector reviewed the event and concluded that although the exact cause of the trolley failure is unclear, the following facts were significant:

- o The Harrington trolley (model TF-822) was installed on the narrow drywell monorail system, apparently outside of the vendor recommended beam width according to the operating instructions.
- o The craftsmen were making a side lift at the time of the accident. The vendor instructions state that this is dangerous.
- o The shaft stopper pin that allows trolley adjustment was missing following the accident.

Based on interviews, the inspector concluded that the craftsmen were not performing the daily inspections as specified in GMP-0014, "Control of Load Lifting Equipment." This procedure required that the personnel operating load lifting equipment perform a daily visual inspection in the performance of their work and also required periodic inspections of the lifting equipment. The special lifting devices checklist used for trolley inspections only verified that it had a legible device number and that it had been color coded for its load test. This checklist did not clearly address the installation or condition of the trolley.

Following discussions with the inspector, the licensee suspended all use of the trolleys on the drywell monorail system pending evaluation.

On July 2, during a followup inspection, the inspector observed a trolley in the Division III diesel generator room that was not installed in accordance with the manufacturer's recommendations in that a bolt had been inserted in place of the shaft stopper pin. In addition, the condition of the cotter pin installed through the bolt indicated that side lifts had been made with the trolley. The vendor's operating instructions state that it is dangerous to pull the chain slant with the trolley connected to the hoist. During interviews, tool room personnel informed the inspector that the shaft stopper pin is often missing or replaced with unacceptable alternatives upon return. Also, sometimes the cotter pin is missing and replaced with a nail or tie wire. Both

conditions indicate that the daily inspections required by Procedure GMP-0014 had been ineffectively performed. The inspector concluded that no safety-related equipment was affected by the inadequate usage because the Division III diesel generator was not operable during the time that the lifts were being made with this trolley. Based on these inspection findings, the licensee removed this type of trolley from service until a full review could be performed.

Conclusions

The trolley involved in the accident was installed outside of the manufacturer's recommendations. Side lifts were being performed against the manufacturer's recommendations. The licensee voluntarily removed this type of trolley from service until a full evaluation of their proper use can be completed.

Frequent inspections required by Procedure GMP-0014 were not being performed in specific cases identified. Inspections of trolley's at River Bend Station are poorly documented and the inspection criteria is vague.

9. Evaluation of Changes to the Environment Around the Plant (TI 2515/112)

The licensee has no formal program identifying and evaluating safety issues resulting from changes in population distribution or industrial, military, or transportation hazards that could arise on or near the River Bend site. The inspector did review the licensee's response to NRC Information Notice 91-63, "Natural Gas Hazards at Fort St. Vrain Nuclear Generating Station."

River Bend Station Operating Licensee NPF-47 requires the licensee to aerially photograph the site and vicinity within 1 km of the cooling towers in all directions. This requirement is to allow the evaluation of the significance of damage to area vegetation. However, the licensee is considering utilizing this method to include identification of any new oil or gas wells, pipelines, or new industrial hazardous material storage or use within at least 2 miles of the River Bend Station reactor centerline. Additionally, the licensee intends to ascertain plans for new wells or pipelines from contact annually with the State Department of Natural Resources. None of these proposed changes have been proceduralized at this time.

The inspector did not identify any changes which would affect the current licensing basis as described in the Updated Safety Analysis Report.

Conclusions

The licensee does not have a formal program for identifying and evaluating safety issues resulting from changes in the environment

around the plant. However, there was no indication that the Updated Safety Analysis Report did not reflect the current licensing basis in this area.

10. Exit Meeting

An exit meeting was conducted with licensee representatives identified in paragraph 1 on July 6, 1992. During this interview, the inspectors reviewed the scope and findings of the report. The licensee did not identify as proprietary, any information provided to, or reviewed by, the inspectors.