

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-458/90-30

Operating License: NPF-47

Docket: 50-458

Licensee: Gulf States Utilities (GSU)

Facility Name: River Bend Station (RBS)

Inspection At: RBS site, St. Francisville, Louisiana

Inspection Conducted: November 12-16, 1990

Inspector:

Blaine Murray
for R. E. Baer, Senior Reactor Health Physicist
Radiological Protection and Emergency
Preparedness Section

12/28/90
Date

Approved:

Blaine Murray
B. Murray, Chief, Radiological Protection and
Emergency Preparedness Section

12/28/90
Date

Inspection Summary

Inspection Conducted November 12-16, 1990 (Report 50-458/90-30)

Areas Inspected: Routine, unannounced inspection of the licensee's radiation protection program during the refueling outage.

Results: Within the areas inspected, no violations or deviations were identified. One unresolved item regarding radiation barriers is identified in paragraph 10.

No significant problems concerning radiological control activities were noted. The licensee had sufficient supplies and equipment to support outage activities. Contractor radiation protection personnel were hired to provide additional coverage during the outage. These contract personnel appeared to be qualified and received additional training as directed by the licensee. The licensee had implemented a comprehensive hot particle training program. Audits and surveillances were comprehensive and appeared to be performed by qualified individuals. Radiation exposures were within regulatory limits. Radiologically controlled access and egress points did not provide a clear

demarcation for clean and potentially contaminated personnel. Some problems were noted concerning high radiation area controls for barrier rope used to designate radioactive materials and radiation areas, and the adequacy of controls needs additional review as discussed in paragraphs 10 and 12.

DETAILS1. Persons ContactedGSU

- *J. C. Deddens, Senior Vice President
- *T. D. Burnett, Jr., Chemistry Foreman
- *E. M. Cargill, Director, Radiological Programs
- *J. W. Cook, Technical Assistant, Licensing
- *T. C. Crouse, Manager, Administration
- *S. V. Drsai, Senior Engineer
- *L. A. England, Director, Nuclear Licensing
- *C. L. Fantacci, Radiological Engineering Supervisor
- *P. D. Graham, Plant Manager
- *G. K. Henry, Director, Quality Operations
- *K. C. Hodges, Chemistry Supervisor
- *D. E. Jernigan, Administration
- *G. R. Kimmell, Director, Quality Services
- *L. A. Leatherwood, Supervisor, Core Analysis
- *D. N. Lorfing, Supervisor, Nuclear Licensing
- *W. H. Odell, Manager, Oversight
- *J. P. Schippert, Assistant Plant Manager for Operations and Chemistry
- *J. E. Spivey, Jr., Senior Quality Assurance (QA) Engineer
- *K. E. Suhrkr, General Manager, Engineering and Administration
- *M. L. Wittenburg, Nuclear Fuels Engineer
- *G. S. Young Jr., Reactor Engineering Supervisor

Others

- *L. G. Johnson, Site Representative, Cajun Electric
- *E. J. Ford, Senior Resident Inspector, NRC
- *D. P. Loveless, Resident Inspector, NRC

*Denotes those individuals present at the exit interview on November 16, 1990.

The inspector also interviewed several other licensee and contractor employees including radiation protection, radwaste, chemistry, training, and maintenance personnel.

2. Followup on Licensee Identified Items (92700)

(Closed) Licensee Event Report (LER) 90-030-00: Unauthorized entrance into a high radiation area - The LER reported that two workers had entered a high radiation area on October 10, 1990, without alarming dosimeters or a radiation protection technician escort as required by TS 6.12.1. This occurrence is also documented in RBS Condition Report 90-0890. The root cause was personnel error on the part of a contract HP technician in that

he failed to recognize that the workers would have to walk through a posted high radiation area to access their work area.

The inspector determined that the licensee (1) terminated the contract HP technician, (2) reviewed this event and procedure requirements for high radiation area entry with all GSU and contractor HP technicians, and (3) placed all radiation work permits that permitted entry into high radiation areas or very high radiation areas in a color coded folder to sensitize HP technicians to the TS requirements. A related event is discussed in paragraph 12.

3. Unresolved Item Identified During This Inspection

An unresolved item is a matter about which more information is required to ascertain whether it is an acceptable item, a deviation, or a violation.

<u>Unresolved Item</u>	<u>Title</u>	<u>Paragraph</u>
458/9030-01	Barrier Rope Policy	10

4. Planning and Preparation (83750)

The inspector reviewed representative records, discussed outage planning with licensee representatives, and observed activities to verify that the necessary planning and preparations, including management support, were implemented.

The licensee had sufficient supplies of protective clothing, respiratory protection equipment, radiological survey instrumentation, and temporary shielding to support outage activities. The inspector noted that while supplies were available, control points would run out of select protective clothing items. These items would be replenished within 20 minutes after the shortage was determined.

The licensee had sufficient portable high efficiency particulate air (HEPA) filtration units available to support the increased usage of tents and nuclear enclosures used to prevent the spread of radioactive contamination.

The licensee had augmented the radiation protection staff with approximately 63 contract radiation protection (RP) technicians. These contractors consisted of 54 ANSI qualified senior and 9 junior technicians. The inspector reviewed resumes and work experience of the contract technicians.

No violations or deviations were identified.

5. Training and Qualifications (83750)

The inspector reviewed the licensee's training and qualification program to determine compliance with the requirements of Technical Specification (TS) 6.3 and 6.4 and the recommendations of Industry Standard ANSI/ANS 3.1-1978.

The licensee's Procedure RSP-0003, "Personnel Qualification for the Radiation Protection Section," for the selection of contract RP technicians includes the requirement for a preliminary written qualification screening examination and personal interview. The individual's resume is also evaluated to determine that the 3 years of experience requirement of ANSI/ANS 3.1-1978 is fulfilled.

Contractor technicians are required to attend formal training relating to various aspects of the licensee's radiation protection program. The inspector noted during the observation of work practices that contractor RP technicians demonstrate good hot particle awareness during routine surveys and proper procedures for the release of materials and equipment from the radiologically controlled areas (RCA).

No violations or deviations were identified.

6. Audits and Appraisals (83750)

The inspector reviewed selected audits, surveillances, and assessments of the licensee's radiation protection and radioactive waste management program to determine compliance with TS 6.5. The following audits and surveillances were examined:

Audits

- 90-08-I-HPRP - Health Physics/Radiation Protection Program
- 90-09-I-PCON/RWMP - Process Control/Radwaste Management Programs

Surveillances

- 05-90-10-53 - Personnel Knowledge of High Rad Area Requirements
- 05-90-10-81 - Radiological Protection Services (posting of radiologically controlled area, radiological surveys, and radiation work permits).
- 05-90-11-21 - High Radiation Area Violation (CR-90-1077)
- 05-90-11-27 - Radiation Protection Activities (radiological monitoring of tools and equipment leaving the radiologically controlled area).

The licensee's audits and surveillances were found to be comprehensive and effective. Only minor procedural violations were identified. The RP department had submitted effective resolutions of identified problems.

No violations or deviations were identified.

7. External Exposure Control (83750)

The inspector reviewed the licensee's external exposure control program to determine compliance with TS 6.10.3; the requirements of 10 CFR Parts 19.13, 20.101, 20.102, 20.105, 20.202, and 20.401; and the commitments in Chapter 12 of the ISAR. Included in the review were changes in the dosimetry program to meet outage needs; use of dosimetry; selection and placement for nonuniform radiation fields; and required records, reports, and notifications.

The external radiation exposure measurement and control program for the current outage consists of whole body monitoring using thermoluminescent dosimeters (TLD), self-reading dosimeters (SRD), direct surveys, radiation work permits (RWP), and administrative limits. The licensee has shown good agreement with TLD vs. SRD results. The licensee uses alarming dosimeters for personnel working in high radiation areas or when required by the RWP.

The inspector reviewed the radiation exposure history file for all 11 persons who had, up to November 14, 1990, exceeded 1000 millirem (mrem) in the current calendar quarter. All persons had a completed exposure history, Form NRC-4 or the equivalent on file, and the proper authorization to exceed the licensee's administrative limit. The inspector noted that five additional persons exceeded the 1000 mrem level during the period November 14-16, 1990. The inspector also reviewed the results of multipack and extremity monitors.

The inspector noted that the licensee's Form RHRF-0013-1 only had space for two entries for previous exposure history information. The licensee uses Form RHRF-0013-2 for additional entries. The inspector discussed with licensee representatives that when an individual only had two entries that it would be helpful if the remarks section had an entry for no previous exposure and the date of the earliest entry.

During tours of the RBS facilities the inspector made independent measurements and determined that the designated areas in the radiologically controlled areas were posted properly and afforded an adequate level of protection to workers.

No violations or deviations were identified.

8. Internal Exposure Control (83750)

The inspector reviewed the licensee's internal exposure control program to determine compliance with the requirements of 10 CFR Part 20.103 and commitments in Sections 12.3 and 12.4 of the Updated Safety Analysis Report.

The inspector did not identify any problems regarding the respiratory protection program. The inspector noted that the individual issuing respiratories routinely checks the daily exposure record log to ensure the individual being issued a respirator is qualified to receive one and obtains the correct size. The licensee maintains a 40 maximum permissible concentration hour log of personnel issued respirators.

The licensee supplements the fixed continuous air monitoring instruments with portable air samplers. The licensee appeared to have a sufficient quantity of airborne radioactivity samplers in operation to monitor the radiological conditions in the plant.

No violations or deviations were identified.

9. Posting, Labeling and Worker Controls (83750)

The inspector reviewed selected portions of the licensee's posting, labeling, and worker controls. The inspector noted the licensee's goal for personnel contamination events was 230 for all types, including both skin and clothing contaminations. The licensee had recorded 186 events for this year as of November 15, 1990. The outage accounted for 152 events. Of these 152 events, 75 were on clothing, 48 on the skin, and an additional 29 which were on both the skin and clothing. The inspector noted that the largest number of events was attributed to contaminations occurring during removal of anti-contamination clothing and that personnel were counseled as appropriate.

The inspector observed the use of personnel contamination monitors (PCMs) at the exits from RCAs. The inspector noted that traffic patterns at the main control point and at the "T" tunnel was poor. Personnel clearing the PCMs (clean) would cross paths with personnel entering the PCMs. The inspector discussed with licensee representatives the advantage of relocating the PCMs to avoid cross contamination.

The inspector noted the licensee also uses portal monitors at control points. This provides for both beta and gamma monitoring of personnel exiting the RCA.

No violations or deviations were identified.

10. Control of Radioactive Materials and Contamination Surveys and Monitoring (83750)

The inspector reviewed the licensee's program for control of radioactive materials and contamination, surveys, and monitoring for compliance with the requirements of TS 6.11 and 6.12, and 10 CFR Parts 19.12, 20.4, 20.5, 20.201, 20.203, 20.205, 20.207, and 20.301.

The inspector examined select radiological surveys of direct radiation, surface contamination, and airborne radioactivity which had been performed in the radiologically controlled areas of the facility. The inspector also performed confirmatory survey of direct radiation levels; the results of these surveys were in agreement with the licensee's recorded values.

The inspector observed the routine placement and movement of barrier rope used to designate radioactive material and radiation areas within the protected area. The licensee's procedures allowed personnel to step over a barrier rope for access to a radioactive material or radiation area. The inspector discussed with licensee representatives and at the exit meeting on November 16, 1990, that this policy was in need of review. The present policy could be a contributing factor for incidents of personnel violating high radiation area boundaries along with a general lack of respect for a barrier rope and its intended purpose. Entry into or exit from an area enclosed by a barrier rope should be only through an established entrance. The licensee acknowledged the inspector's concern and stated they would review this matter. This is considered an unresolved item pending additional information obtained from the licensee's review of the adequacy of the procedural controls (458/9030-01).

No violations or deviations were identified.

11. Maintaining Occupational Exposures ALARA (83750)

The inspector reviewed the licensee's ALARA program to determine agreement with the recommendations of Regulatory Guides 8.8 and 8.10 and adherence to RBS procedures.

The licensee had established a revised 1990 goal of 625 person-rem. The original estimate was 362 person-rem. This goal included 575 person-rem for the third refueling (RF-3) outage and 50 person-rem during routine plant operation. As of November 15, 1990, the licensee had recorded an expenditure of 317 person-rem for the outage and an annual total of 397 person-rem. The licensee stated that one reason for the lower person-rem totals was the source term had not increased as much as originally estimated. An additional factor which contributed to the lower person-rem exposure during the outage was that certain tasks were deferred to RF-4. Some of the major tasks deferred and the estimated person-rem exposures included:

Reactor Water Cleanup (RWCU) Heat Exchanger Room

Valve shielding for maintenance activities 4 person-rem

Drywell

RWCU dead legs 32 person-rem

Painting 34 person-rem

Remove ERIS panel 3 person-rem

Inservice inspection of welds (RWCU) 28 person-rem

Insulation replacement (RWCU) 14 person-rem

Other Areas

Steam tunnel fire seals 10 person-rem

The total exposure saving for deferred work in RF-3 equals 125 person-rem.

The licensee also added some tasks to RF-3 which were not in the original work scope. These included the fuel sipping (0.5 person-rem) to identify the two leaking fuel assemblies, suppression pool grating (1.0 person-rem) which will reduce exposures in future outages, and check point surveys (3.3 person-rem) which were needed to provide precise radiation levels for tracking of the source term. Other large contributors were: residual heat removal heat exchanger inspection (6.9 person-rem), service water piping repairs (4.0 person-rem), and recirculation pump seal work (3.3 person-rem). The total additional work accounts for 32.5 estimated person-rem exposure.

The licensee averages about 1.5 person-rem per week during normal plant operations. It should be noted that there is no scheduled maintenance or refueling outage for 1991. The next refueling outage will be the spring of 1992.

The licensee's previous history of radiation exposures are depicted below:

Exposure History (Person-Rem)

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
River Bend	83	378	107	558
BWR Average	652	513	529	442

The ALARA committee appears to receive plant management support. The licensee stated they plan to obtain the "surrogate tour" laser disc video

system as part of the forthcoming year ALARA improvement. The inspector noted that the licensee currently uses the radiation protection breakroom for ALARA briefings.

The inspector noted the licensee does not have a hot-spot tracking system; rather, the job history file includes the overall radiation levels for the specific job. The inspector discussed with licensee representatives the usefulness of a hot spot log, to track the hot spot levels and use it as a tool to determine when a system flush may be in order.

The inspector determined by interviews and observations that worker awareness to ALARA and hot particles was at an acceptable level. Personnel were aware of the radiological conditions in their work areas.

No violations or deviations were identified.

12. Radiological Occurrence Reports (83750)

The inspector reviewed licensee actions for RBS Condition Report 90-1077 which documents two workers who entered a high radiation area on November 5, 1990, and again the next day without alarming dosimeters or a radiation protection technician escort as required by TS 6.12.1. The licensee was in the process of writing an LER (90-037) for Condition Report 90-1077. The individuals were both inexperienced with regards to work at an operating nuclear power plant, but both had received general employee training. The cause for this incident was attributed to personnel error in that these individuals failed to check in at the HP control point, review and sign on to the radiation work permit, and observe the radiation barrier and signs.

Following this incident, work was stopped by the licensee and the contractor to conduct additional training. The training emphasized each person's individual responsibility for activities and encouraged a "check yourself" approach to avoid further incidents of this type. This training was provided to both the day and night shift personnel. After the individuals involved in this occurrence were trained and made aware of the various requirements they had violated, the contractor terminated their employment. LER 90-037 will be reviewed during a future inspection.

No violations or deviations were identified.

13. Exit Meeting

The inspector met with the senior resident inspector and licensee representatives identified in paragraph 1 of this report at the conclusion of the inspection on November 16, 1990. The inspector summarized the scope of the inspection and discussed the inspection findings as presented in this report. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspector during the inspection.