

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-458/84-22      Construction Permit: CPPR-145

Docket: 50-458      Category: 2A

Applicant: Gulf States Utilities (GSU)  
P. O. Box 2951  
Beaumont, Texas 77704

Facility Name: River Bend Station (RBS)

Inspection At: RBS Site, St. Francisville, Louisiana

Inspection Conducted: July 30 - August 3, 1984

Inspectors: J. Blair Nicholas      8/24/84  
J. Blair Nicholas, Radiation Specialist      Date

Russell Wise      8/24/84  
Russell Wise, Radiation Specialist      Date

Approved: Blaine Murray      8/24/84  
Blaine Murray, Chief, Facilities Radiological      Date  
Protection Section

J. P. Jaudon      8/29/84  
J. P. Jaudon, Chief, Project Section A      Date  
Reactor Project Branch 1

Inspection Summary

Inspection Conducted July 30 - August 3, 1984 (Report 50-458/84-22)

Areas Inspected: Routine, announced preoperational inspection of the applicant's chemistry/radiochemistry program including: organization, staffing and staff qualifications, training program, chemistry/radiochemistry program, chemical inventory program, postaccident sampling system (PASS), facilities and equipment, analytical instrumentation, quality assurance (QA) program of chemistry/radiochemistry activities, and administrative and analytical procedures. The inspection involved 68 inspector-hours onsite by two NRC inspectors.

Results: Within the ten areas inspected, no violations or deviations were identified. Nine open items are listed in paragraph 2.

DETAILS

1. Persons Contacted

GSU

- \*J. C. Deddens, Vice President, RBS Nuclear Group
- \*M. F. Cassada, Radiation Protection and Chemistry Supervisor
- \*P. J. Dautel, Onsite Licensing Representative
- \*S. L. Driscoll, Radiation Protection/Chemistry Coordinator
- \*P. E. Freehill, Assistant Plant Manager - Operations
- \*P. D. Graham, Assistant Plant Manager - Services
- \*T. O. Gray, Director, Operations QA
- \*P. Handy, QA Systems
- \*K. C. Hodges, Supervisor, Quality Systems
- \*G. V. King, Technical Materials and Plant Services Supervisor
- \*H. M. McClellan, Acting QA Supervisor-Operations
- \*C. L. Nash, Chemistry Supervisor
- \*C. A. Rohrmann, Nuclear Training Coordinator-Technical
- \*R. B. Stafford, Director, Quality Services
- \*K. E. Suhrke, Executive Assistant
- \*F. L. Willis, Lead Chemist
- \*W. K. Woodcox, Chemistry Foreman

Others

- \*R. E. Farrell, NRC Resident Inspector

\*Denotes those present during the exit briefing on August 3, 1984.

2. Open Items Identified During This Inspection

<u>Open Item</u>	<u>Description</u>	<u>Reference Paragraph</u>
(458/8422-01)	Chemistry/Radiochemistry Organization	3
(458/8422-02)	Chemistry/Radiochemistry Personnel Qualifications	4
(458/8422-03)	Chemistry/Radiochemistry Training Program	5
(458/8422-04)	Chemistry/Radiochemistry Program	6

(458/8422-05)	Postaccident Sampling System	8
(458/8422-06)	Facilities, Equipment, and Supplies	9
(458/8422-07)	Chemistry/Radiochemistry Analytical Instrumentation Calibration and Quality Control	10
(458/8422-08)	Quality Assurance Program	11
(458/8422-09)	Procedures	12

3. Chemistry/Radiochemistry Organization and Management Controls

The NRC inspectors examined the applicant's organization and staffing regarding chemistry/radiochemistry activities to determine compliance with Final Safety Analysis Report (FSAR) commitments.

The NRC inspectors reviewed the RBS staff assignments in regard to chemistry/radiochemistry responsibilities. The applicant's chemistry organization was found to be in agreement with Section 13 of the FSAR. The applicant's organization does not include a corporate chemistry/radiochemistry support organization. The proposed RBS chemistry/radiochemistry staff included a radiation protection supervisor, a chemistry supervisor, a chemical engineer, a lead chemist, 3 staff chemists, 2 chemical foreman, and 18 nuclear chemistry technicians. The duties and responsibilities of the chemistry/radiochemistry staff were described in approved procedures and position descriptions.

At the time of the inspection, 10 of the 27 chemistry/radiochemistry section staff positions had been filled. The radiation protection/chemistry supervisor was actively recruiting to fill the remaining positions with qualified personnel. The number of chemistry/radiochemistry personnel indicated on the section organizational chart appeared to be sufficient to meet staffing requirements for routine operation including backshift chemistry coverage. The applicant was supplementing its chemistry/radiochemistry staff during startup with seven qualified and experienced contract personnel.

The NRC inspectors reviewed the approved position descriptions which were being revised to reflect the new organizational structure. It was noted that the experience requirements for the staff positions were in accordance with present staff experience at the supervisory level and were consistent with the recommendations of ANSI N18.1-1971 and ANSI/ANS 3.1-1978. The NRC inspectors expressed concern regarding the lack of approved implementing procedures for functional area assignments.

This item is considered open (458/8422-01) pending:

- Complete staffing of the chemistry/radiochemistry section with qualified personnel.
- Final approval of position descriptions for all chemistry/radiochemistry section staff personnel.
- Final approval of all procedures defining the responsibilities and organizational structure of the chemistry/radiochemistry section.
- Development and implementation of procedures defining functional area assignments.

No violations or deviations were identified.

#### 4. Chemistry/Radiochemistry Personnel Qualifications

The NRC inspectors reviewed the qualifications of the chemistry/radiochemistry staff to determine compliance with commitments in the FSAR. The applicant had committed to, in the FSAR, the qualification requirements recommended in ANSI/ANS 3.1-1978 (not currently adopted by the NRC), which are more stringent than those contained in ANSI N18.1-1971 and endorsed by the NRC. The NRC inspectors reviewed the experience resumes of the present chemistry/radiochemistry staff to determine if the members of the staff met the experience qualification recommendations for chemistry/radiochemistry personnel as outlined in Sections 4.3, 4.4, and 4.5 of ANSI N18.1-1971. Based on the review of the staff resumes it was noted that all of the filled supervisory positions in the chemistry/radiochemistry section met or exceeded the ANSI N18.1-1971 qualifications. However, only 2 out of the 5 technicians hired to fill 18 positions met the experience qualification recommendations of ANSI N18.1-1971. The chemical engineer and all of the present chemistry technicians had no prior operating nuclear power plant experience except for several weeks at an operating nuclear power facility as part of their preoperational training. It was verified that the applicant had developed procedures which would provide guidance for the hiring of qualified chemistry/radiochemistry personnel.

The NRC inspectors expressed their concern regarding the low experience level of the RBS chemistry/radiochemistry technicians to the applicant during the inspection and at the exit briefing. Discussions were held on this concern with the applicant and resolutions such as supplementing the chemistry/radiochemistry staff with qualified personnel during startup or providing more experience for the present staff at operating nuclear power facilities were alternatives.



This item is considered open (458/8422-02) pending providing sufficient ANSI-qualified chemistry technicians to adequately fulfill shift staffing requirements.

No violations or deviations were identified.

5. Chemistry/Radiochemistry Training Program

The NRC inspectors reviewed the applicant's chemistry/radiochemistry training program to determine compliance with FSAR commitments and 10 CFR 19.12 requirements.

The applicant's training facility was toured and found to include offices, classrooms, and an equipped chemistry/radiochemistry laboratory and counting room duplicating in many aspects the station chemistry laboratories and counting facility. It was determined that the training laboratory was adequate to train and prepare the chemistry/radiochemistry staff to perform required analytical analyses.

The NRC inspector discussed the training program for chemistry/radiochemistry personnel with the nuclear training coordinator-technical and determined that all training department procedures were currently being revised. A training program for chemistry/radiochemistry personnel was being developed by a consultant. It was confirmed that chemistry section personnel were being trained in basic chemistry theory, BWR fundamentals plant systems, corrosion control, sampling, laboratory analyses, and laboratory instrument calibration and quality control. The training was being conducted by a consultant. At the time of the inspection, the nuclear training department had not hired a chemistry/radiochemistry instructor.

The NRC inspectors reviewed the chemistry/radiochemistry individual training records maintained by the nuclear training department. The records indicated that the present chemistry technician staff had completed administrative procedure training, water chemistry training, and laboratory analysis training on presently approved analytical procedures. Qualification cards maintained by the chemistry supervisor were reviewed and indicated that the chemistry technicians had completed different levels of instrument qualification and analytical procedures training as required by their job assignments to support startup.

This item is considered open (458/8422-03) pending:

- Development and implementation of an official formal training program for chemistry/radiochemistry personnel conducted and administered by the nuclear training department.
- Approval by GSU of all training procedures.

— Completion of qualification training of all chemistry/radiochemistry personnel.

No violations or deviations were identified.

6. Chemistry/Radiochemistry Program

The NRC inspectors reviewed the applicant's chemistry/radiochemistry program to determine compliance with FSAR commitments and proposed Technical Specifications. The review of the chemistry/radiochemistry program indicated that the program was not yet fully developed and implemented. It was noted that many of the implementing and analytical procedures had not been completed and approved. The applicant had not completed approved procedures for the operation, calibration, and performance check of all analytical instrumentation to be used in the chemistry/radiochemistry program. Analytical procedures for the determination of the various chemistry parameters to be measured by these instruments were not completed and approved to cover all of the required analyses.

The program review confirmed that the applicant had not completed approved procedures to provide surveillance of Technical Specification requirements in the chemistry area. The applicant had not developed approved procedures for the preparation, accountability, and quality control of nuclear instrument radioactive calibration standards traceable to the National Bureau of Standards. The applicant had not completed calibration of all process and laboratory analytical instrumentation which were to be used to support the chemistry/radiochemistry program.

The NRC inspectors visited the chemistry sampling areas to be used by the chemistry staff in performing their various chemistry/radiochemistry responsibilities. At the time of the inspection, the various sampling panels were not completely installed and checkout of the panel instrumentation and values had not been scheduled. The sample lines had not been traced and measured as a basis for determining sample line flush times. The applicant had not completed approved sampling procedures to operate the respective chemistry sampling panels and to obtain grab samples from all systems sampled to meet chemistry analysis requirements. Sample points had not been identified for all chemistry systems and tanks. The applicant had not verified tank volumes for all potentially contaminated tanks and had not determined recirculation times or sample flush times to produce representative samples. Specific sampling procedures had not been completed to provide step-by-step guidance for collection of all chemistry/radiochemistry samples which would include such information as sampling frequency, sample point valve identification, sample point location, sampling valve lineups, specific tank recirculation times, sample line flush times to provide a representative sample, sample quantity, and sample container labeling.

This item is considered open (458/8422-04) pending:

- Completion of administrative procedures, chemistry/radiochemistry system surveillance procedures, chemistry/radiochemistry analytical procedures, chemistry chemical control procedures, instrument calibration procedures, and instrument performance check procedures.
- Development of detailed preparation procedures for all nuclear instrument radioactive calibration standards which are traceable to the National Bureau of Standards.
- Completion of all instrumentation calibrations.
- Verification of all chemistry/radiochemistry analytical procedures using known standards.
- Installation and complete testing of the sampling panels and verification of all sample points.
- Verification of chemistry and radwaste tank volumes and tank recirculation times (where applicable) to produce representative samples.
- Determination of sample line flush times for each chemistry/radiochemistry sample point to produce a representative sample.
- Completion of approved sampling procedures and valve lineups for use of the sampling panels and development and implementation of detailed procedures for each chemistry system to be sampled.

No violations or deviations were identified.

7. Chemical Inventory Program

The NRC inspectors reviewed the applicant's chemical inventory and accountability program to determine compliance with FSAR commitments. The review of the present status of the chemical and reagent inventory and control program indicated that the chemistry/radiochemistry staff was implementing the program in the laboratories as described by procedure. The program appeared to be adequate to monitor and control the receipt and use of chemicals to support plant operations.

No violations or deviations were identified.

8. Postaccident Sampling System (PASS)

The NRC inspectors reviewed the applicant's PASS to determine compliance with FSAR commitments and the requirements of NUREG-0737. A tour of the

areas in plant where the components of the PASS are to be installed revealed that the system hardware was not yet installed. A brief description of the PASS capability was given by an applicant's representative. Procedures to test and operate the system were proposed but not completed and approved. A detailed review of the completed system will be conducted prior to plant operations.

This item is considered open (458/8422-05) pending:

- Installation of proposed system, completion of operating procedures, and calibration of inline instrumentation.
- Training of chemistry/radiochemistry technicians on the PASS.
- Checkout of system operation by performing trial runs using the sample transport devices and the sample handling facilities in the radiochemistry laboratory.
- Verification of system performance by collecting samples of reactor water and containment environment under simulated accident conditions and performing required comparative analyses.

No violations or deviations were identified.

#### 9. Facilities, Equipment and Supplies

The NRC inspectors toured and inspected the facilities to be used by the chemistry/radiochemistry staff in performing their various chemistry support responsibilities. The facilities inspected included: cold laboratory, radiochemistry laboratory, radiochemistry counting room, chemistry sampling panels, training chemistry laboratory, training counting room, and chemistry/radiochemistry personnel work areas. The applicant had nearly completed construction of the laboratory spaces. The cold laboratory was equipped and operational; however, the radiochemistry laboratory and counting room were not fully equipped and were not operational. The laboratory areas appeared to provide adequate space. The laboratories were furnished with adequate furniture, storage space, fume hoods, sinks, utilities, and laboratory bench space.

An inspection of the radiochemistry counting room showed that adequate space was provided for the planned nuclear counting instrumentation. The counting room was supplied with stabilized electrical power and air conditioning to protect the sensitive instrumentation. At the time of the inspection the counting room was equipped with a Beckmann LS-3800 liquid scintillation spectrometer system. The applicant was awaiting delivery of the multichannel gamma-ray spectroscopy system and associated four high purity germanium gamma scintillation detectors.



The offsite training chemistry laboratory and training counting room were completed and equipped with similar equipment supplied in the plant laboratories and counting room. The instrumentation had been calibrated and was being used for training purposes.

The chemistry sampling panel areas were still under construction and some of the sample panels were not yet installed. It was noted that the sampling panels were located some distance from the laboratory areas causing potential hazards in transporting samples to the laboratories and inconvenience for monitoring process instrumentation by the laboratory technicians.

This item is considered open (458/8422-06) pending completion of construction and routine occupancy of the chemistry/radiochemistry work areas.

No violations or deviations were identified.

10. Chemistry/Radiochemistry Analytical Instrumentation Calibration and Quality Control

The NRC inspectors reviewed the applicant's inventory of analytical instrumentation and supplies to be used in the counting room and laboratories to determine compliance with FSAR commitments and proposed Technical Specifications. The NRC inspectors found that the type and quantity of analytical instrumentation appeared to be adequate to perform the analysis requirements as specified in the FSAR and proposed Technical Specifications. The instruments were located in the laboratories and storage room and were not all operational.

The inspection verified that the applicant had demonstrated operability and had calibrated selected chemistry analytical instrumentation to support startup activities. However, many of the instruments were still in the process of being setup and calibrated. The performance check program was started on a few instruments, but not totally implemented at the time of the inspection.

The NRC inspectors visited the radiochemistry counting room and reviewed the status of counting instrument calibration and quality control. None of the counting instruments had been calibrated.

This item is considered open (458/8422-07) pending:

- Procurement of remaining proposed instrumentation, supplies, and spare parts.
- Final location of all analytical equipment in the respective work areas.

- Completion of operating, calibration, and performance check procedures for all analytical instruments.
- Verification of operability and complete calibration of all analytical instruments.
- Implementation of an instrument performance check program for all analytical instruments.

No violations or deviations were identified.

#### 11. Quality Assurance Program

The NRC inspectors reviewed the applicant's QA audit program regarding chemistry/radiochemistry activities to determine compliance with FSAR commitments and the requirements of 10 CFR Part 50, Appendix B.

The NRC inspectors were specifically interested in the existence of an audit program and the scope of that program as it relates to the chemistry/radiochemistry department. A review of the existing audit program was conducted to determine if the audit program included in its scope the following areas:

- Reviews performed by supervision within the chemistry/radiochemistry section of such activities as staff effectiveness, work practices, adequacy of staff training, and procedural compliance.
- Audits performed to ensure compliance with Technical Specifications, Code of Federal Regulations, and stated objectives.
- Audit format, including the existence of audit procedures and checklists, to provide an insight regarding the adequacy and scope of the proposed audit activities.
- Audits in the areas of plant water quality and chemistry control of feedwater quality.
- Audits in the areas of laboratory instrument operation, calibration, and calibration checks.
- Audits in the area of instrument radioactive calibration sources validity and their control.
- Audits in the area of chemistry and radiochemistry procedural accuracy.

- Composition of audit teams to ensure that team members possess the necessary technical expertise to evaluate the assigned area.
- Corrective action program to provide timely resolution of identified deficiencies.

The NRC inspectors found the RBS QA audit program was in an early stage of development. Procedures to implement an audit program of the chemistry/radiochemistry section which cover all the above areas of concern had not yet been developed. The inspection revealed that the QA department had committed to developing an audit checklist specifically for each audit as it came due to address areas of immediate importance and concern. The applicant appeared to have made an effort to have a well qualified audit staff. However, the QA department had not hired an auditor with radiochemistry experience and who was technically knowledgeable in chemistry/radiochemistry procedures and activities at nuclear power facilities. The QA department was supplementing their auditor expertise with the services of contractor personnel during startup operations.

The NRC inspectors reviewed QA audits 83-P-003 and 84-P-008 performed on chemistry activities. The scope of the audits dealt primarily with procedural review and compliance. Numerous findings were documented in the reports.

This item is considered open (458/8422-08) pending:

- Development and implementation of a comprehensive audit program for chemistry/radiochemistry activities covering at least the areas of concern listed above.
- Completion of scheduled audits of the chemistry/radiochemistry section program and activities.

No violations or deviations were identified.

## 12. Procedures

The NRC inspectors reviewed the applicant's chemistry/radiochemistry section procedures to determine compliance with 10 CFR Part 20 requirements, FSAR commitments, and the proposed Technical Specifications.

The applicant had designated and divided the procedures reviewed into the following categories:

- RSP - Radiation Protection/Chemistry Section Administrative Procedures: An administrative manual containing procedures which govern the conduct of personnel and provide specific guidance to the station staff in the areas of administrative control, quality control of section activities, and surveillance of station systems.

- COP - Chemistry Operating Procedures: A manual containing procedures that control chemical and radiochemical analyses, sampling activities, use of chemicals, and operation of laboratory equipment.

The NRC inspectors reviewed the procedures for chemistry section administration and operation and determined that the applicant had approved and issued 61 procedures (29 percent), and drafted 79 procedures (38 percent) out of a proposed 210 procedures.

This item is considered open (458/8422-09) pending completion and approval of all necessary chemistry/radiochemistry procedures.

No violations or deviations were identified.

### 13. Exit Briefing

The NRC inspectors met with the applicant representatives and the NRC resident inspector identified in paragraph 1 of this report at the conclusion of the inspection on August 3, 1984. The lead NRC inspector discussed the scope and findings of the inspection and summarized the nine NRC concerns identified in this report as open items. The NRC inspector stated that the open items identified in this report should be resolved prior to issuance of an operating license.