

APPENDIX
U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-458/92-01

Operating License No. NPF-47

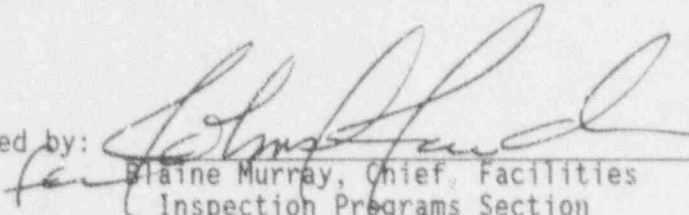
Licensee: Gulf States Utilities (GSU)
P.O. Box 220
St. Francisville, Louisiana 70775

Facility Name: River Bend Station (RBS)

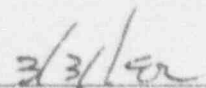
Inspection At: RBS, St. Francisville, Louisiana

Inspection Conducted: February 25-28, 1992

Inspectors: Nemen M. Terc, (Team Leader)
T. Essig, Chief, Emergency Preparedness Section, Office of
Nuclear Reactor Regulation (NRR)
E. Ford, Senior Resident Inspector
B. Spitzberg, Emergency Preparedness Analyst
J. Minns, Emergency Preparedness Analyst, NRR
F. MacManus, Comex Corporation

Approved by: 
Blaine Murray, Chief, Facilities
Inspection Programs Section

Date


3/3/92

Inspection Summary

Inspection Conducted February 25-28, 1992 (Report 50-458/92-01):

Areas Inspected: Routine, announced team inspection of the licensee's performance and capabilities during an annual exercise of the emergency plan and procedures. The team observed activities in the control room, Technical Support Center, Emergency Operations Facility, and Operations Support Center.

Results: Within the areas inspected, no violations or deviations were identified. Generally, the licensee's response during the course of the exercise was adequate to protect the health and safety of the public. Within the areas inspected, no violations or deviations were identified. Two exercise weaknesses requiring corrective actions were identified by the team.

Generally the proficiency of the control room staff was excellent. Classification and notification of emergency events were effectively carried out. There was good information flow between the control room staff who acted in a coordinated manner under the emergency director (shift supervisor). There was, however, some lack of realism in the control room.

The actions taken by the technical support center staff to support the control room, mitigate events, propose alternative solutions, and coordinate and direct emergency response activities were very effective and much improved over the 1991 exercise. A weakness was identified due to the failure to promptly give critical information to the emergency director.

The recovery manager effectively coordinated and directed overall emergency response actions. The formulation of protective action recommendations was accurate, notifications were prompt, and the staff's performance in the emergency operations facility was efficient and supportive.

The operations support center staff and in-plant response teams were, for the most part, well coordinated. The operations support center state boards were greatly improved from the 1991 exercise and were very effective in coordinating in-plant response teams. The operations support staff and in-plant response teams provided excellent support to operations. A weakness was identified pertaining to an instance of poor radiological controls.

The results of the licensee's self-critique process indicated that the licensee was successful in identifying and characterizing their own weaknesses and implementing appropriate corrective measures to improve their emergency preparedness program.

DETAILS

1. PERSONS CONTACTED

Licensee

- *P. Graham, Plant Manager
- K. Suhrke, General Manager, Engineering and Administration
- J. Booker, Manager, Nuclear Industry Relations
- *W. Odell, Manager, Oversight
- *T. Crouse, Manager, Administration
- *W. Smith, Supervisor, Emergency Planning
- *D. Lorring, Supervisor, Nuclear Engineering

The inspection team also held discussions with other station and corporate personnel in the areas of security, health physics, operations, training, and emergency response.

*Denotes those present at the exit interview.

2. FOLLOWUP ON PREVIOUS INSPECTION FINDINGS (92701)

(Closed) Exercise Weakness (458/9108-01): During the 1991 exercise, several discrepancies were identified in the notification process in the control room and other emergency response facilities. In addition, the clocks in the facilities and computers were not synchronized. During the 1992 exercise, the inspectors noted that notifications were effectively performed, and clocks were well synchronized throughout the exercise.

(Closed) Exercise Weakness (458/9108-02): During the 1991 exercise, delays were identified in classifying and acting upon the general emergency condition. In addition, the inspectors noted that the licensee staff used an unapproved method to estimate reactor core damage. During the 1992 exercise, notifications, classifications, and protective actions were satisfactory. In addition, Procedure COP-1050, "Post Accident Estimation of Fuel Damage," incorporated the various methods for estimating core damage. This procedure was used during the 1992 exercise.

(Closed) Exercise Weakness (458/9108-04): During the 1991 exercise, the inspectors noted that status boards in the Operations Support Center did not effectively display: the available manpower pool and its composition, the status of task completion, and the working priorities of teams dispatched from the Operations Support Center. In addition, during the 1991 exercise, technical briefings of in-plant teams were not coordinated in an effective manner, and briefings were conducted without appropriate checklists. During the February 1992 exercise, the inspectors noted that the licensee had upgraded the status boards in the Operations Support Center in such a manner that team composition, location, and prioritization of tasks were now effectively accomplished. Team briefings were effective and coordinated properly, and approved checklists were used.

3. PROGRAM AREAS INSPECTED

The licensee's annual emergency exercise began at 7:30 a.m. on February 26, 1992. The exercise involved participation by the State of Louisiana and the various local governments. An NRC emergency response team participated.

The inspection team observed licensee activities in the control room, Technical Support Center, Operations Support Center, and Emergency Operations Facility during the exercise. The team evaluated the licensee's implementation of the emergency plan and procedures including emergency response organization staffing; emergency response facility's activation, detection, classification, and notification of emergencies; technical assessment; emergency communications; dose assessment; and formulation of protective action recommendations. In addition, the inspectors evaluated in-plant corrective action teams, security and accountability activities, and recovery operations. Inspection findings are documented in the following paragraphs.

The exercise scenario events centered on several malfunctions, such as: a feedwater line break, a check valve failure which resulted in reactor system depressurization, and the loss of the core spray function. This resulted in decreased reactor water level, fuel degradation, and an unfiltered release of radioactivity to the environment with high radioiodine content.

The inspectors identified various concerns during the course of the exercise; however, none were of the significance as defined in 10 CFR 50.54(s)(2)(ii). Each of the observed concerns has been characterized as an exercise weakness according to 10 CFR Part 50, Appendix E.IV.F.5. An exercise weakness is a finding that a licensee's demonstrated level of preparedness could have precluded effective implementation of the emergency preparedness plan in the event of an actual emergency. It is a finding that needs licensee corrective action.

4. CONTROL ROOM (82301)(1)

The inspection team observed and evaluated the control room staff as they performed tasks in response to the exercise. These tasks included detection and classification of events, analysis of plant conditions, implementation of corrective measures, notifications of offsite authorities, and adherence to the emergency plan and implementing procedures.

The RBS plant specific control room simulator was not used in the dynamic mode during any part of the exercise. As a consequence, dynamic simulation of events in the control room was not accomplished.

The performance of the control room staff was observed to be very effective during the exercise. The inspection team noted that the control room staff worked well as a team and made noteworthy efforts to technically cope with and resolve the postulated plant problems. For example, after soliciting a technical consensus within the control room staff, the shift supervisor was

able to make a recommendation to the Technical Support Center which could have partially relieved the driving force on the leak in the steam tunnel.

The shift supervisor demonstrated the ability to detect abnormal events and to classify those events in accordance with the emergency action levels. The declaration of Alert was timely, and notifications were promptly directed by the shift supervisor. There was good interaction between the members of the control room staff except as noted below.

Lack of realism and free play were observed in the control room during the exercise as follows:

- (1) At 8:47 a.m., when the reactor scrammed, the atmosphere in the control room was not realistic with respect to operator actions. While the operators did enter Emergency Operations Procedure 1 as expected, the control room panels were not manned, there were no directives to observe instrument readings or panel status, nor to manipulate the panel controls. Subsequently, after the inspector asked questions regarding these items, the expected simulations were observed.
- (2) When questioned, the shift technical advisor seemed knowledgeable of his duties regarding critical parameter monitoring utilizing the Safety Parameter Display System, control panel indications, and flagged deviant parameters to the shift supervisor. However, this was not readily apparent from observations because the simulator was neither energized nor utilized in a realistic mode. Thus, the inspector could not observe the shift technical advisor actions as he was engaged in assisting the shift supervisor in response to emergency conditions.
- (3) At 10:45 a.m., the shift supervisor had not yet announced to his control room staff that the Emergency Director had declared a General Emergency. This declaration occurred approximately 25 minutes earlier in the Technical Support Center.
- (4) A plant electrical distribution chart, which is utilized in the actual control room to status the plant's electrical configuration, was available and actively consulted by the operators in the control room simulator. However, there were no markings on the simulator chart to indicate electrical status despite a Preferred Station Transformer (IRTX-XSRIC) being unavailable as an initial condition (initial conditions mimic actual shift turnover information). Not maintaining the display current may have contributed to the shift supervisor stating at 8:34 a.m. that he believed the transformer was available. The shift supervisor had not received prior information that the transformer was not available for service.
- (5) Two individuals (a communicator and an equipment operator) were prestaged in the control room simulator at 7:50 a.m. They would normally have to be summoned to the control room in an emergency. The

individuals were able to follow the accident conditions from the control room before the time they would normally have been called in.

No violations or deviations were identified in this program area.

Conclusion

Generally, the proficiency of the control room staff was excellent. Classification and notification of emergency events were effectively carried out. There was good information flow between the control room staff, who acted in a coordinated manner under the Emergency Director (shift supervisor). A lack of realism and freeplay was identified.

5. TECHNICAL SUPPORT CENTER (82301)(2)

The inspectors observed and evaluated the Technical Support Center staff throughout the exercise as they performed tasks in response to the simulated accident conditions of the scenario. The inspectors evaluated staffing; command and control; technical assessment and support to operations; detection, classification, and notifications; dose assessment; formulation of protective action recommendations; and adherence to the emergency plan and implementing procedures.

The inspectors noted that the Technical Support Center staff performed well during the exercise. Examples of good performance in the Technical Support Center were as follows:

- (1) The inspection team observed that the Technical Support Center staff worked very effectively as a team. The Emergency Director demonstrated excellent ability to detect abnormal plant conditions and the ability to classify the events in accordance with the emergency action levels. The declarations of Site Area Emergency and General Emergency were timely. Notification of events to State and local response agencies were ordered promptly by the Emergency Director and implemented by the communications team. The Emergency Director effectively used protective action recommendation decisionmaking procedures and flow charts. Protective action recommendations were formulated accurately and communicated promptly to offsite response agencies.
- (2) The Emergency Director and his staff in the Technical Support Center demonstrated an excellent understanding of plant systems and properly used approved procedures to develop repair plans and corrective measures. The scenario was adequate to demonstrate the Technical Support Center staff emergency response organization capabilities and procedures.
- (3) The Emergency Director demonstrated superior command and control proficiency. Plant status briefings were conducted frequently, including detailed plant conditions and established action priorities.

The inspectors, however, made the following negative observation: vital information regarding a simulated major leak in the feed system was not adequately communicated to the Emergency Director.

At about 8:45 a.m., a feedwater line break was simulated to have occurred in the steam tunnel. The control room staff recognized that a feedwater line break had occurred at about 8:55 a.m., and the control room staff discussed a probable feed line break failure. At that time, the location was unknown to them. This critical information was not conveyed to the Emergency Director and Technical Support Center Manager by the Technical Support Center Operations Coordinator until 10:17 a.m.

The failure to promptly give critical information to the emergency director pertaining to the feed water line break is identified as an exercise weakness (458/9201-C1).

Conclusion

Coordination and direction, classifications, notifications, and the formulation of protective action recommendations by the emergency director were excellent. The actions taken by the Technical Support Center staff to support the control room, mitigate events, propose alternative solutions, and coordinate and direct emergency response activities were very effective and much improved over the 1991 exercise. A weakness was identified due to the failure to promptly give critical information to the emergency director.

6. EMERGENCY OPERATIONS FACILITY 82301(3)

The inspectors observed and evaluated the Emergency Operations Facility staff as they performed tasks in response to the exercise. These tasks included activation of the Emergency Operations Facility, accident assessment and classification, offsite dose assessment, notifications, protective action decision-making, preparations for entering the recovery phase, and interaction with State and local officials. The Emergency Operations Facility staff performed very well during the exercise. No weaknesses were identified.

Examples of good performance in the Emergency Operations Facility were as follows:

- (1) Coordination and direction by the recovery manager were very effective, and the formulation of protective action recommendations was accurate and prompt. This represents a considerable improvement from the 1991 exercise.
- (2) Notification messages were communicated to off site officials expeditiously.
- (3) Dose assessors in the Emergency Operations Facility performed well and were anticipatory taking into consideration probable future

developments. An example of efficient dose assessment was the extrapolation of early release rates to project future release rate based on rate of increase experienced.

- (4) The reactor vessel level and pressure status board was useful for assessors and decisionmakers in Emergency Operations Facility. Status boards in Emergency Operations Facility were in general well maintained.
- (5) The Emergency Operations Facility was orderly, and staff members appeared to be well trained and understood their duties and responsibilities.

Conclusion:

The recovery manager effectively coordinated and directed overall emergency response actions. The formulation of protective action recommendations was accurate, notifications were prompt, and the staff's performance in the emergency operations facility was efficient and supportive.

7. OPERATIONS SUPPORT CENTER (82301)(4)

The inspectors evaluated the performance of the Operations Support Center staff as they performed tasks in response to the exercise. These tasks included activation of the Operations Support Center and its effectiveness in providing support to operations, including the coordination of emergency in-plant response teams.

The Operations Support Center Coordinator and the Radiation Protection Foreman communicated frequently and effectively with their counterparts in the Technical Support Center. These communications combined with frequent briefings of the Technical Support Center and Operations Support Center staffs over the public address system by the Emergency Director provided an excellent basis for exchanging information.

The use of radiological data in team briefings was very good. Prior to each task, team members were given all relevant ambient dose rates, dose limits, and turn back dose rates, among others. Attachment 3 of Procedure EIP-2-017 was used effectively in this regard. The Operations Support Center Radiation Protection Foreman instructed his staff to review actual radiation exposure histories and to gather other related data on individuals who might be called upon to support the emergency response effort; this showed excellent judgement under existing conditions.

During the exercise, simulated entries were made to the steam tunnel to free stuck valves. Prior to these entries, team members were appropriately briefed regarding external exposure hazards. Team members were told to don a self-contained breathing apparatus to protect themselves from internal exposure. The use of a thyroid blocking agent, while checked-off by the Operations Support Center Radiation Protection Foreman during the team briefing, was not considered because of the use of self-contained breathing

apparatus; notwithstanding, the fact that protection factors for self-contained breathing apparatus are finite (e.g., 10,000). Under the extremely high concentrations of airborne radioactive materials involved in the simulated accident for the steam tunnel, exposures could result in a worker's inhaling airborne radioactive concentrations in excess of the 10 CFR Part 20 limits. The scenario data indicated that radioiodine I-131 concentrations were several orders of magnitude above the maximum permissible concentration (MPC). The inspectors noted that after adjusting for a protection factor of 10,000, team members entering the steam tunnel could have been exposed to radioiodine concentrations greater than 3,000 MPC in the air inside the self-contained breathing apparatus face piece. This concentration, combined with a 15-minute exposure time, could have resulted in exposures in excess of the 520 MPC-hour quarterly limit.

The failure to identify this internal exposure pathway is identified as an exercise weakness (458/3201-02).

Conclusion

The operations support center staff and in-plant response teams were, for the most part, well coordinated. The operations support center state boards were greatly improved from the 1991 exercise and were very effective in coordinating in-plant response teams. The operations support staff and in-plant response teams provided excellent support to operations. A weakness was identified pertaining to an instance of poor radiological controls.

8. LICENSEE SELF-CRITIQUE

The inspectors observed and evaluated the licensee's self-critique for the exercise and determined that the process of self-critique involved adequate staffing and resources and involved the participation of higher management. The inspectors noted that the licensee was able to identify properly and characterize exercise weaknesses and that they, for the most part, coincided with findings by the inspectors.

Conclusion

The results of the licensee's self-critique process indicated that the licensee was successful in identifying and characterizing their own weaknesses in order to implement corrective measures to improve their emergency preparedness program.

9. EXIT INTERVIEW

The inspection team met with the licensee representatives indicated in paragraph 1 on February 25, 1992, and summarized the scope and findings of the inspection as presented in this report. The licensee acknowledged their understanding of weaknesses and agreed to examine them to find root causes in order to take adequate corrective measures. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspectors during the inspection.