APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-382/92-13

Operating License No. NPF-38

Licensee: Entergy Operations, Inc.
P.O. Box B
Killona, Louisiana 70066

Facility Name: Waterford Steam Electric Station, Unit 3

Inspection At: Waterford-3 Site, Killona, St. Charles Parish, Louisiana

Inspection Conducted: July 27-31, 1992

Inspectors: Dr. D. Blair Spitzberg, (Team Leader)

Dr. L. Cohen, NRC Headquarters
L. Smith, Senior Resident Inspector
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Accompanied by: D. Faris, Battelle Pacific Northwest Laboratories
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Approved: _____ Date 8/20/92
Elaine Murray, Chief, Facilities Inspection Programs Section

Inspection Summary

Inspection Conducted July 27-31, 1992 (Report 50-382/92-13)

Areas Inspected: Routine, announced 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, the Emergency Operations Facility, and the 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. One exercise weakness was identified (See paragraph 7).

The following is a summary of the inspection findings:

- The Control Room staff performed effectively during the exercise. Teamwork in the control room was found to be a strength.

- The Technical Support Center staff performed efficiently during the exercise. Personnel proficiency was a strength noted with Technical Support Center staff.

- The Emergency Operations Facility performed well. There were some observations that should be considered as improvement items.

- The overall command and control of the Operational Support Center was good. An exercise weakness was observed in the composition of a repair team.

- Personnel accountability following evacuation of nonessential personnel was performed within time requirements.

- The scenario permitted an adequate demonstration of emergency response capabilities. The lack of accuracy with some of the scenario data was noted.

- The medical team responded efficiently. Some contamination controls improvement items were noted regarding the handling of the injured person.

- The self-critique demonstrated that the licensee was capable of identifying and properly characterizing their own weaknesses.

DETAILS

1. PERSONS CONTACTED

EOI

*R. P. Barkhurst, Vice President, Operations
*D. E. Baker, Project Manager, Steam Generators
*F. J. Drummond, Director, Site Support
*F. J. Englebracht, Manager, Emergency Planning and Administration
*T. J. Gaudet, Operational Licensing Supervisor
*J. Houghtaling, Director, Plant Modifications and Construction
*T. R. Leonard, Technical Services Manager
*J. J. Lewis, Supervisor, Onsite Emergency Preparedness
*A. S. Lockhart, Quality Assurance Manager
*R. S. Stackey, Manager, Operations and Maintenance
*C. J. Thomas, Licensing Engineer

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*J. L. Dixon, Resident Inspector

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

*Indicates those present during the exit meeting on July 31, 1992.

2. FOLLOWUP ON PREVIOUS INSPECTION FINDINGS (92701)

(Closed) Exercise Weakness (382/9127-02): This item was identified during the 1991 exercise and involved the detection and assessment of failed fuel barrier and its use for classification purposes without having met the criteria for this condition. During the 1992 exercise, assessments of the status of the fuel barrier were performed appropriately and in accordance with applicable procedures.

(Closed) Exercise Weakness (382/9127-03): This item was identified during the 1991 exercise and involved the failure to enter certain applicable entries in the notification messages provided to offsite authorities. During the 1992 exercise inspectors noted no significant errors or omissions in the notification messages conveyed to offsite authorities.

3. PROGRAM AREAS INSPECTED

The licensee's annual emergency exercise began at 9 a.m. on July 29, 1992. The exercise involved participation by the state of Louisiana. The NRC emergency response team did not participate in this exercise.

The inspection team observed licensee activities in the Control Room, Technical Support Center, Operational 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 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 medical teams, repair teams, security and accountability activities, and recovery operations. Inspection findings are documented in the following paragraphs.

The exercise scenario events were started by several electrical and mechanical malfunctions as a result of a simulated earthquake. A steam generator developed a large leak resulting in escalating emergency classifications. Later, radioactive steam was released through a failed valve into the environment resulting in a Site Area Emergency requiring protective actions. Additionally, a contaminated injured individual was transported to an offsite hospital. The exercise realism was enhanced by the use of the simulator in a dynamic mode, the use of radiation survey instruments that actually responded to electromagnetic signals from the exercise controllers, and the use of several mock-ups for repair and medical scenarios.

The inspectors identified a concern during the course of the exercise; however, it was not of the significance as defined in 10 CFR 50.54(.)(2)(ii).

The observed concern 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. This weakness is discussed in paragraph 7.

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 implementing corrective measures, notifications of offsite authorities, and adherence to the emergency plan and implementing procedures.

The Control Room simulator was used to initiate the exercise. Dynamic simulation of major events was accomplished throughout the majority of the exercise.

The Control Room staff was observed to recognize, diagnose, and respond to various equipment malfunctions and degrading plant conditions in an excellent manner. Following a seismic event the Control Room staff quickly and accurately performed a notification of unusual event. An Alert was promptly declared when a leak of reactor coolant greater than 44 gallons to the secondary system of the steam generator was detected. Notifications were correctly performed within the required time frames.

Overall, the shift supervisor and the Control Room supervisor provided good direction of operating staff activities. Tasks were appropriately prioritized and clear direction was given for performing assigned tasks. Control Room supervision was also proactive in their assessment of plant conditions. For example, several times during the exercise the Control Room supervisor briefed the operating staff regarding contingency actions which would be required if plant conditions degraded. Repair tasks were prioritized correctly while still maintaining control of more routine aspects of plant operation such as waste water processing.

The operating staff demonstrated excellent teamwork as noted by the following examples:

- The shift technical advisor recognized that the dose projections provided by the Technical Support Center as a basis for declaring the Site Area Emergency were not consistent with current plant conditions.

- The reactor auxiliary operator requested that the procedure for transferring the control element subgroup to the hold bus be read to him rather than risking a memory error.

- The assessment of the increase in steam generator leakage was performed considering the possible effects of changes in the secondary side on the primary side.

- The nuclear plant operator reminded the Control Room supervisor of actions which had not yet been taken to respond to the control element drive mechanical control system timer failure alarm.

- On two occasions, permission was denied to rack in electrical breakers because the operating staff determined it would be imprudent.

- The pressurizer pressure stabilized late in the drill while the steam generator cooldown continued. The operating staff discussed the nonsaturated temperature pressure relationship in the reactor coolant system. After determining noncondensable gases were in the reactor vessel head, they vented the reactor vessel.

The overall performance of the operating staff and their ability to respond to plant conditions was viewed as a strength.

The inspector noted some areas that could be improved. Summary status briefs were not held after major changes in plant status, nor were Technical Support Center activities routinely related to the operating staff by the shift supervisor. As a result, overall operating staff knowledge of actions being taken by others was lacking. On one occasion, the Control Room Supervisor checked on the status of an action which had been completed over an hour previously. On another occasion, a nuclear plant operator was concerned about primary plant performance when the problem was actually being caused by actions taken on the secondary side.

No violations or deviations were identified in this program area.

Conclusion:

The Control Room staff performed effectively during the exercise. Teamwork demonstrated by the Control Room staff was a strength.

5. THE TECHNICAL SUPPORT CENTER (82301)

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 Emergency Coordinator in the Technical Support Center demonstrated excellent command and control skills. Communications were timely and clear within the Technical Support Center. The Emergency Coordinator provided team members with pertinent information throughout the drill and made sure he understood all communications from other team members and requested clarification when necessary. He was observed to stay involved, to anticipate problems, and to provide guidance where necessary. The Emergency Coordinator was very proficient in establishing goals and setting priorities and remained flexible as plant status changed with additional malfunctions and equipment failures.

The status boards were maintained current at all times. All duty stations maintained clear and concise logs. Secretarial assistance was very proficient and helpful to the Emergency Coordinator.

The Operations Coordinator in the Technical Support Center demonstrated excellent proficiency in his position. He also demonstrated excellent command and control skills. He remained in constant communication with the Control Room, stayed aware of the continually changing plant conditions and demonstrated an excellent understanding of how the plant, systems, and components operated. He provided many constructive ideas to the Emergency Coordinator. The Operations Coordinator correctly assessed the potential impact of all failed equipment and instrument malfunctions and assured all personnel, both in the Technical Support Center and Control Room, were aware of his assessment.

Personnel in the Technical Support Center were reminded many times during the early stages of the drill to sign in on the roster and used their keycards in for accountability. Access to the Technical Support Center area was strictly enforced. A frisking station, established at the entry point to the Technical Support Center, was effective in preventing the spread of contamination.

The Technical Support Center staff gave specific guidance to all field teams, including the evacuation of the injured party, with regard to avoiding the radioactive plume. The Technical Support Staff made a recommendation to the

Emergency Operations Facility to be aware of potential radioactive contamination when entering and exiting the Emergency Operations Facility because of the plume. Health physics personnel conducted regular radiological surveys throughout the Technical Support Center, and staff members were made aware of changing radiological conditions.

A very good exchange of information between the Operations Coordinator and the Emergency Coordinator was observed throughout the exercise. Plant status and recommended corrective actions were given and received on a regular basis. The Emergency Coordinator made numerous briefing statements (every 30 to 45 minutes) to the Technical Support Center staff. The attention of all affected personnel was required or the briefing was halted until such time that they were in attendance.

Repeat back communications were observed both in internal Technical Support Center communications and communications with the Technical Support Center and field teams. All means of communication utilized in the Technical Support Center were observed to be adequate to perform their intended function, and no weaknesses were observed.

The high dose rates the Technical Support Center projected at the site boundary at 11 a.m., which were later found to be a scenario error, were questioned by Technical Support Center staff members and correctly classified per Procedure EP-02-001, "Emergency Classification Guidelines," at 11:02 a.m.

The Emergency Coordinator set goals and priorities based on a thorough assessment of potential hazards. Continued reassessment of these goals and priorities was performed as plant conditions changed including a plan for cleanup following termination of the release. The Emergency Coordinator reviewed radiological conditions for visitors in the Training Center and personnel at nearby Waterford fossil Units 1 and 2.

No violations or deviations were identified in this program area.

Conclusion:

The Technical Support Center staff performed efficiently and effectively during the exercise.

6. EMERGENCY OPERATIONS FACILITY (82301)

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 decisionmaking, preparations for entering the recovery phase, and interaction with state and local officials.

Staffing and activation of the Emergency Operations Facility started at 11:15 a.m. and ended at 12:30 p.m. Various staff members coordinated different parts of the activation. Although activation was accomplished within the time prescribed by licensee's procedures, the licensee recognized

that activation efficiency of the Emergency Operations Facility can be improved and stated that they will review the criteria for initiating activation and consider starting Emergency Operations Facility activation at an Alert classification condition instead of at a Site Area Emergency.

The Emergency Operations Facility staff performed well during the exercise. The overall coordination and direction from the Emergency Operations Facility was observed to be adequate during the exercise. Because of the limitations of the scenario, the actions taken by the Emergency Operations Facility were limited since most of the decisions (up to a Site Area Emergency) were made in the Technical Support Center.

Internal coordination of information flow was adequate. However, information flow within the Emergency Operations Facility could be improved by plotting certain parameters to establish important trends indicative of changes in plant status. This could be done by assigning one person to interpret digital data parameters posted in status boards and to structure meaningful information packages that would be useful to decisionmakers in the Emergency Operations Facility. In addition, information flow within the Emergency Operations Facility could be improved by providing announcements of operational and radiological status to ensure a uniform distribution of information available to key emergency responders within the Emergency Operations Facility. Information flow between the Emergency Operations Facility and other facilities was adequate.

Briefing of the simulated NRC Response Team was performed by the Emergency Operations Facility director without any assistance from his staff. Some questions posed by the simulated NRC Response Team were not answered. A checklist and assistance from the staff could improve the briefings to the NRC Response Team.

Security in the Emergency Operations Facility was satisfactory, although for a length of time one door remained open and was not guarded. This could have had the potential of compromising the security of the Emergency Operations Facility.

No violations or deviations were identified in this program area.

Conclusion:

The Emergency Operations Facility performed well. Some observations were made that should be considered for improvement.

7. OPERATIONS SUPPORT CENTER (82301)

The inspectors evaluated the performance of the Operations Support Center staff as they performed tasks in response to the exercise to determine whether the Operations Support Center would be effective in providing support to operations. The inspectors also observed in-plant medical rescue, repair, and survey teams as they responded to the simulation of an injured and contaminated individual.

The first responders arrived at 9:48 a.m., 7 minutes after the Notice of Unusual Event was announced. The Alert was declared at 10:23 a.m. Within 17 minutes the Operations Support Center supervisor announced that the Operations Support Center was activated. The inspector noticed that certain setup activities were started before the Alert was declared. The inspectors also noted that the Operations Support Center was activated prior to all the checkout forms being completed.

The Operations Support Center Supervisor demonstrated good command and control. He routinely provided status of plant conditions and priorities of on-going and proposed in-plant work activities. The Operations Support Center staff appeared to be familiar with the tasks to be performed and carried them out efficiently in a timely manner. Noise levels were kept at workable levels throughout the exercise.

Status boards were maintained and kept up-to-date. Each team dispatched from the Operations Support Center was listed on the status board with pertinent information regarding task, location, and team makeup. Emergency team briefing sheets were used for each team prior to leaving the Operations Support Center. On return to the Operations Support Center, timely debriefings were documented on the emergency team debriefing sheet. The inspectors noted that the Operations Support Center staff maintained good and complete logs to document their activities.

The Operations Support Center staff performance during this exercise showed an understanding of their various assigned jobs and their ability to implement the specific portions of the Operations Support Center procedure.

The Operations Support Center was monitored to ensure habitability, step-off pads, air monitors were setup and operated throughout the exercise. Routine monitoring was also observed in the main Operations Support Center as well as the muster areas.

The Operations Support Center was equipped with telephone and radio communications. Flow of information between the Operations Support Center and Technical Support Center appeared to be adequate to get the work accomplished. Some difficulty was noted between the in-plant teams and Operations Support Center using the radios. Volume of traffic appeared to be the problem in this situation. The Operations Support Center supervisor provided status updates using a portable microphone system that was audible throughout the Operations Support Center and personnel muster areas. Team briefings and debriefings were thorough and timely.

In-plant teams were selected, briefed, and dispatched from the Operations Support Center in a timely manner. Team briefing were clear and concise. At the health physics control point, the team members were questioned about their dose limits and qualifications for using self-contained breathing apparatus. Health physics coverage was very good. For the exercise, licensee controllers employed radio controlled survey instruments which added an exceptional element of realism. The inspectors observed the dress out of several teams. All team members properly donned safety related apparel and equipment. The

inspectors noted that the teams maintained frequent communications with the Operations Support Center.

The composition of one emergency repair team dispatched from the Operational Support Center was observed not to conform to station procedures. Specifically, Team 10 was dispatched to enter containment to close blowdown Valve 102 without assigning to this team a qualified operator. Emergency Plan Implementing Procedure EP-002-130, "Emergency Team Assignments" states that a qualified emergency team should be selected from Attachment 7.1, "OSC Emergency Team Matrix". This matrix indicates that for emergency repair operations, the team leader and primary team members should be selected from operations and maintenance. In addition, Station Administrative Procedure OP-00-001, "Duties and Responsibilities of Operators on Duty", Section 5.8.1.1 states that operational evolutions shall be conducted only by those personnel who have been appropriately trained, qualified and, where required, licensed.

The manipulation of the blowdown valve by an emergency repair team which did not include a qualified operations team member was identified as an exercise weakness (50-382/9213-01).

No violations or deviations were identified in this program area.

Conclusion:

The overall command and control of the Operational Support Center was good. An exercise weakness was observed in the area of emergency team composition.

8. SECURITY/ACCOUNTABILITY (82301)

The inspection team observed and evaluated the security staff response to the exercise. The tasks included personnel accountability of the protected area during site evacuation, access control, and evacuation of the owner controlled area.

The licensee used both manual and computer based systems to account for site personnel. The inspector observed that personnel accountability within the protected area was accomplished within 30 minutes.

No violations or deviations were identified in this program area.

Conclusion:

Personnel accountability following the evacuation of nonessential personnel was performed within time requirements.

9. SCENARIO INADEQUACIES (82301)

During the course of the exercise, several errors in the scenario data and controllers errors contributed to minor problems in the anticipated course of the exercise. The licensee identified many of the same problems in its

self-critique. Despite the errors the scenario was found to be adequate to achieve the exercise objectives.

Conclusion:

The scenario permitted an adequate demonstration of the licensee's emergency response capabilities.

10. EMERGENCY MEDICAL SERVICES (82301)

The inspectors observed the performance of the medical team involving the handling of a simulated contaminated injured person. The medical scenario involved an operator that was injured while attempting to load resin in the Condensate Polisher Building. The injured person slipped and fell down a ladder, breaking his arm and striking his head on a building support.

The first-aid team responded promptly and efficiently. The team quickly assessed the condition of the injured party and surrounding area which included the radiological survey of the individual and area. The team identified the contaminated area and setup proper radiological controls. The team collected vital signs and determined the extent of the injury. The team removed the contaminated clothing and applied first aid. At the same time, information regarding the injured party was provided to the Technical Support Center with a request for offsite medical support. The injured party was transported to a clean area and prepared for transport to the heliport. Within 1 hour, the injured party was in route to hospital by helicopter.

The inspector observed that the team had to improvise splinting material. Consideration should be given to provide a more complete first-aid kit. The inspector also noted that contamination control by the responders could be improved. Specifically, after removing the injured victim's contaminated clothing, the technicians did not change gloves prior to treating the open wound. Although treatment of severe injuries should take priority over contamination control, the changing of gloves following the handling of known contaminated items prior to treating open wounds would diminish the potential for adding contamination to an injured area.

No violations or deviations were identified in this program area.

Conclusions:

The medical team responded efficiently. Contamination controls regarding the handling of the injured person could be improved.

11. LICENSEE SELF-CRITIQUE (82301)

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 senior management. The inspectors noted that the licensee was able to properly identify and characterize exercise weaknesses and that, for the most part, coincided with findings identified by the inspectors.

Conclusion:

The self-critique demonstrated that the licensee was capable of identifying and properly characterizing their own weaknesses with the intention of implementing corrective measures that would result in an enhanced program.

12. EXIT INTERVIEW

The inspection team met with the licensee representatives indicated in paragraph 1 on July 31, 1992, and summarized the scope and findings of the inspection as presented in this report. The licensee acknowledged their understanding of the weakness and agreed to examine it 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.