APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-382/94-16

License: NPF-38

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

Facility Name: Waterford Steam Electric Station, Unit 3

Inspection At: Killona, Louisiana

Inspection Conducted: July 5-8, 1994

Inspectors: A. D. McQueen, Emergency Preparedness Analyst (Lead Inspector), Facilities Inspection Programs Branch

J. I. Tapia, Reactor Engineer/Examiner, Operations Branch, Division of Reactor Safety

J. B. O'Brien, Emergency Preparedness Specialist, Office of Nuclear Reactor Regulation

Approved: Blaine Murray 7/19/94
Blaine Murray, Chief, Reactor Inspection Branch Date

Inspection Summary

Areas Inspected: Routine, announced inspection of the operational status of the emergency preparedness program, including changes to the emergency plan and implementing procedures; emergency facilities, equipment and supplies; organization and management control; training; internal reviews and audits; and effectiveness of licensee controls.

Results:

- Changes to the emergency plan and implementing procedures were properly reviewed, approved, and submitted to NRC (Section 2.1).
- The licensee had maintained a close relationship with offsite radiological emergency response organizations (Section 2.1).
- Emergency facilities, equipment, and supplies were maintained in a proper state of operational readiness (Section 3.1).

- An appropriate number of emergency response personnel were trained and qualified. The emergency planning staff was fully staffed with qualified personnel (Section 4.1).

- The emergency plan training program was effective in preparing emergency response personnel to perform response duties (Sections .1.1 and 5.1.3).

- During simulator walkthrough scenarios, Control Room personnel demonstrated knowledge of emergency response duties; including classification of emergency events, notifications to onsite and offsite personnel and agencies, and making appropriate protective action recommendations (Section 5.1.2).

- Audits of emergency preparedness had been conducted in accordance with 10 CFR 50.54(t). Audits and surveillances was performed by qualified personnel and were of sufficient scope and depth (Section 6.2).

- An effective program was maintained regarding safety issues, events/problems, early detection of problems, elevation of problems to an appropriate management level, thorough root cause analysis, and effective implementation of corrective actions (Section 7.1).

- Since the last emergency preparedness inspection, one Alert level emergency event was classified and reported to the NRC Headquarters Operations Officer. Timely required notifications were made to the appropriate local and state agencies and to NRC (Section 9.3).

Summary of Inspection Findings:

- Weakness 382/9308-01 was closed (Section 8.1).

- Weakness 382/9308-02 was closed (Section 8.2).

- Exercise Weakness 382/9328-01 was reviewed and remains open pending completion of corrective action (Section 8.3).

- Exercise Weakness 382/9328-02 was reviewed and remains open pending completion of corrective action (Section 8.4).

Attachments:

Attachment 1 - Persons Contacted and Exit Meeting

Attachment 2 - Emergency Preparedness Inspection Scenario Narrative Summary

DETAILS

1 PLANT STATUS

During this inspection, the plant was operating at full power.

2 EMERGENCY PLAN AND IMPLEMENTING PROCEDURES (82701-02.01)

The inspectors reviewed changes in the licensee's emergency plan and implementing procedures to verify that these changes had not decreased the effectiveness of emergency planning and that the changes had been reviewed properly and submitted to NRC.

2.1 Discussion

Since the previous operational status inspection, three emergency plan revisions had been implemented. Revisions 17 (Change 2), 18, and 19 had been submitted to NRC as required. The licensee had performed a documented review of these emergency plan revisions in accordance with 10 CFR 50.54(q) to determine that the revisions did not decrease the effectiveness of emergency preparedness.

The inspectors reviewed documentation involving about 58 emergency plan implementing procedure changes implemented since March 1993. These changes had been submitted to NRC within 30 days of implementation as required by 10 CFR Part 50, Appendix E.V.

The inspectors reviewed letters of agreement established with support agencies and determined that they were current and that the licensee annually reconfirmed these agreements. The licensee had initiated efforts to reconfirm the Letters of Agreement for 1994 and all but four letters had been reconfirmed at the time of the inspection. Meetings had been held with offsite organizations to review the emergency action levels and to discuss changes made to the default protective action recommendations. The licensee met with offsite agencies on a regular basis to discuss emergency preparedness issues. Training support was provided to offsite agencies on an annual basis or as requested.

2.2 Conclusions

Changes to the emergency plan and implementing procedures had been properly reviewed, approved, and submitted to NRC. The licensee had maintained a close relationship with offsite radiological emergency response organizations.

3 EMERGENCY FACILITIES, EQUIPMENT, INSTRUMENTATION, AND SUPPLIES (82701-02.02)

The inspectors toured onsite and near site emergency facilities including the Control Room, Operations Support Center, Technical Support Center, and the Emergency Operations Facility and reviewed the licensee's emergency equipment inventories to verify that facilities and equipment had been maintained in a state of operational readiness.

3.1 Discussion

A tour was made of each emergency response facility which included the inspection of various equipment items, instrumentation, and supplies. No significant changes in the onsite and nearsite emergency response facilities had been made since the previous inspection and the facilities were found to be configured as indicated in the emergency plan and implementing procedures. The inspectors noted that the facilities were secure, well maintained, and ready for emergency activation. Emergency response facilities were noted to have current controlled copies of the Emergency Plan, Emergency Plan Implementing Procedures, and emergency telephone directories. Spot checks verified that the lockers and kits were stocked with the equipment and supplies listed in the Emergency Equipment Inventory. Random inspections were performed of radiation monitoring and respiratory equipment at each emergency response facility. All selected items were verified as being in calibration or had been appropriately inspected on a scheduled basis.

A problem was identified regarding the Plant Monitoring Computer displays in the Technical Support Center and the Emergency Operations Facility. The licensee determined this was a software problem and immediate corrective action was taken. The problem had occurred before and should be fully rectified by a new computer system to be installed during the next refueling outage. In the event of an actual emergency prior to installation of the new computer, computer technicians are on duty 24 hours a day and could respond quickly from the Operations Support Center to correct such a problem.

The licensee stated that since the last routine inspection, the Louisiana Power and Light Company Corporate Command Center had been eliminated. Corporate support to emergency response now comes from Entergy Operations, Inc. (Entergy), through an Entergy Liaison position in the emergency response organization. In that Entergy also manages several other nuclear power facilities and has more resources with nuclear expertise to call on in event of an emergency response need, the licensee feels this is a substantive program enhancement. The licensee stated the change had been documented in an Emergency Plan revision reviewed by NRC.

3.2 Conclusion

Emergency facilities, equipment, and supplies had been maintained in a state of operational readiness for activation.

4 ORGANIZATION AND MANAGEMENT CONTROL (82701-02.03)

The inspectors reviewed the emergency response organization staffing levels to determine whether sufficient personnel resources were available for emergency response. The emergency planning organization was reviewed to ensure that an effective programmatic management system was in place.

4.1 Discussion

The Emergency Planning group reported through the Director of Site Support to the Vice President, Operations. The Manager, Emergency Planning and

Administration, had been assigned responsibility for emergency preparedness. Reporting to the Emergency Planning and Administration Manager was an Onsite Emergency Planning Supervisor and an Offsite Emergency Planning Coordinator. No changes had been made since the previous inspection in the staffing levels of the licensee's Emergency Planning staff. The inspectors found that the emergency planning group was staffed with an appropriate number of qualified personnel.

The inspectors reviewed the staffing of the emergency response organization and the selection process for those positions. The inspectors determined that no significant changes had been made in the licensee's emergency response organization since the previous inspection. Duties and responsibilities of response personnel were clearly defined. An appropriate number of response personnel had been trained and qualified to fill the designated response positions.

A current listing of the emergency response organization's positions and staff assignments was reviewed. No significant changes in the emergency response organization position responsibilities or management had occurred since the previous inspection in this functional area. A proper level of staffing depth was assigned to the emergency response organization to ensure that trained personnel would be available to respond initially and that staff augmentation could occur for prolonged responses. The emergency response organization was activated by an emergency paging system with automated coded messages.

4.2 Conclusions

The licensee had trained and qualified an appropriate number of emergency response personnel. The emergency planning department was fully staffed with qualified personnel.

5 TRAINING (82701-02.04)

The inspectors met with personnel responsible for conducting the licensee's emergency response training program. The training program was reviewed to determine whether adequate emergency response training had been given to personnel designated to respond to emergencies and to determine compliance with the requirements of 10 CFR 50.47(b)(15); 10 CFR Part 50, Appendix E.IV.F; and the Emergency Plan.

5.1 Discussion

5.1.1 Training Program

The licensee's Emergency Plan training program and supporting records were reviewed during this inspection. The inspection included interviews with personnel responsible for administering and conducting the program. Appropriate documents were reviewed to determine that adequate emergency response training had been given to personnel designated to respond to emergencies and to determine compliance with the requirements of 10 CFR 50.47(b)(15); 10 CFR Part 50, Appendix E.IV.F; and the Emergency Plan.

Training procedures were found to be current and comprehensive. Training records for randomly selected individuals confirmed that the tracking system to monitor training status was effective in ensuring that training was scheduled and completed in a timely manner. A review of training requests submitted in the area of emergency plan implementation over the past 2 years confirmed that changes to procedures are reviewed and evaluated for training needs.

Selected lesson plans used to train specific emergency response positions were also reviewed. The inspectors confirmed that lessons learned from the 1993 emergency exercise were incorporated in applicable lesson plans. The inspectors reviewed the examination bank used to develop tests given after each course. Recently administered examinations indicated that trainees were being adequately examined for content and level of knowledge.

5.1.2 Simulator Scenario Walkthroughs with Operating Crews

The inspectors conducted walkthroughs on the plant specific control room simulator to evaluate the current knowledge and ability of personnel assigned emergency response duties in the control room. The scenario used in the evaluations was developed by the inspectors to determine if control room teams were able to classify events accurately, perform the required notifications in a timely manner, perform offsite dose assessments, and make adequate protective action recommendations. The inspectors observed three operating crews during the walkthroughs using the control room simulator in the dynamic mode. The scenario consisted of a sequence of events requiring an escalation of emergency classifications, culminating in a General Emergency. A narrative description of the scenario is contained in Attachment 2 to this report. Each walkthrough lasted approximately 90 minutes. During the walkthroughs, the inspectors were able to observe the interaction of the response crews to verify that authorities and responsibilities were clearly defined and understood. The walkthroughs also allowed the evaluation of the crews' abilities to assess and classify accident conditions, perform dose assessments, develop protective action recommendations, and make timely and complete notifications to offsite authorities.

The simulator was found to be a highly effective tool for evaluating crew emergency response capabilities. There were no simulator problems identified during the performance of the scenario.

The three control room teams evaluated were representative of a normal group of early responders to an emergency. Each crew consisted of an emergency coordinator (shift supervisor), control room supervisor, shift technical advisor, two reactor operators, and two auxiliary operators. The auxiliary operators were called to the control room to perform as communicators.

Operationally, the crews responded well to a challenging scenario. Communications were good and control board operators interacted very well as a group. Command and control was generally effective; however, minor instances of a lack of direction during the implementation of the Safety Function Recovery Procedure were noted. The licensee was concurrently performing an operating crew requalification evaluation during the implementation of the

scenario for one of the three crews. The inspector shared the observed minor problem with the licensee evaluators.

5.1.3 Emergency Preparedness Drills and Exercises

The inspectors reviewed summary drill reports for seven emergency response training drills and the 1993 annual exercise.

The drill reports and critiques for the drills reviewed by the inspectors included lessons learned, findings by the licensee, and punch lists of items for close-out and planning action items, as appropriate. Attendance lists of personnel and Emergency Planning Action Item Entry Forms were included as part of the drill reports.

5.2 Conclusions

The emergency plan training program was being well implemented and was effective in preparing and maintaining personnel to fulfill emergency response duties. During simulator walkthrough scenarios, Control Room personnel demonstrated knowledge of emergency response duties, including classification of emergency events, notifications to onsite and offsite personnel and agencies, and making appropriate protective action recommendations.

6 INDEPENDENT AND INTERNAL REVIEWS AND AUDITS (82701-02.05)

The inspectors met with quality assurance personnel and reviewed independent and internal audits and surveillances of the emergency preparedness program performed since the last routine inspection to determine compliance with the requirements of 10 CFR 50.54(t).

6.1 Discussion

The inspectors reviewed and discussed with quality assurance personnel, the most recent annual audit, SA-94-026.1, of the emergency preparedness program which had been performed on January 7 through February 11, 1994. The audit team members appeared to be well qualified, and the team leader was an ANSI certified auditor with current Lead Auditor Annual Recertification. The Audit Team included an emergency planning specialist from another power reactor facility. The inspectors reviewed the audit plan, scope of the audit and th audit check list. The audit was thorough and complete. The audit verified that seventeen letters of agreement with offsite agencies were current, and four offsite organizations were interviewed that had agreements with the licensee for assistance during an emergency. The inspectors discussed procedures for the characterization of audit findings and followup. An appropriate system had been established for classifying and tracking findings according to their safety significance. Condition Report identified problems were tracked by Quality Assurance until corrected. This last annual audit resulted in no findings requiring Condition Reports. The inspectors found that the scope and depth of the audit met the requirements of 10 CFR 50.54(t). The audit report was addressed to the General Manager, Plant Operations, and the Director, Site Support.

The inspectors also reviewed six Quality Assurance Process Surveys (surveillances) performed by the quality assurance organization of emergency preparedness activities since the last routine inspection.

6.2 Conclusion

Audits of emergency preparedness had been conducted in accordance with 10 CFR 50.54(t). Audits and surveillances had been performed by qualified personnel and were of proper scope and depth.

7 EFFECTIVENESS OF LICENSEE CONTROLS (82701-02.06)

The inspectors reviewed the adequacy of the licensee's controls system pertaining to safety issues, events, or problems. The review included discussions with quality assurance and emergency planning staff personnel, and review of procedures and documentation of problem identification, root cause analysis, management review of problem identification and solution, and corrective actions.

7.1 Discussion

The licensee's controls were effective in identifying, resolving, and preventing problems by reviewing such areas as corrective action systems, root cause analyses, safety committees, and self assessment in the area of emergency preparedness.

General Employee Training emphasized problem identification as a responsibility for all personnel. All personnel on site were trained in initiating Condition Reports, the primary means of documenting problems. The tools for reporting problems were made readily available throughout the site. The licensee also used the condition report to document and track action on NRC enforcement actions, licensee event reports, and hardware problems. The quality assurance organization assigned responsibility for action on condition reports and tracked actions until completed. After 120 days, if the action had not been satisfactorily completed, it was referred to the cognizant corporate Vice President. A root cause analysis was performed on all significant condition reports.

The site maintained a Quality Team fulltime to hear allegations, problems, or other such reports. The Quality Team maintained the confidentiality of individuals reporting problems or allegations to protect their identities. The Quality Team had the choice of tracking items by condition report or could refer any matter directly to plant management for resolution.

Upon departing the site, all employees leaving the company or transferring were required to process out through Quality Assurance. They were debriefed regarding any item they felt to be a problem which needed action.

7.2 Conclusions

In the area of emergency preparedness, the licensee maintained an effective system of controls pertaining to the identification of potential safety

issues, events, or problems, which emphasized early detection of problems, elevation of problems to an appropriate management level, thorough root cause analysis, and effective implementation of corrective actions.

8 FOLLOWUP ON PREVIOUS INSPECTION FINDINGS (92702)

Four open items and the status of licensee corrective actions were reviewed.

8.1 (Closed) Weakness 382/9308-01: Improper Emergency Classification.

The inspectors reviewed revisions to training lesson plans for Control Room emergency response personnel which included emphasis on the relationship between initiating conditions and indicators in the classification process. Records of training seminars, conducted by Emergency Planning, to emphasize the classification process with each operations shift were also reviewed. In walkthroughs conducted during this inspection, crews properly classified each event.

8.2 (Closed) Weakness 382/9308-02: Insufficient Dose Assessment Training.

The inspectors reviewed revisions to training lesson plans and supplemental reading lists for auxiliary operators who served as communicators during implementation of the emergency. The Emergency Plan and implementing procedures were revised to indicate that auxiliary operators may be used to perform dose assessment functions. Records of dose assessment training given to auxiliary operators were reviewed. In walkthroughs conducted during this inspection, dose assessments were the primary responsibility of the Shift Technical Advisor, and no problems were noted in this area.

8.3 (Open) Exercise Weakness 382/9328-01: Nonaggressive Assessment of Plant Conditions.

Corrective actions in response to this weakness were:

- Revised lesson plans to incorporate a discussion of the accident assessment problems in the 1993 annual exercise as lessons learned for Control Room, Technical Support Center, and Emergency Operations Facility positions concerned with assessment of plant conditions. This corrective action had been completed.

- Incorporation of the above lessons learned discussion in the annual tabletop program during 1994. Four tabletop exercises are conducted each year for the affected positions. The licensee stated this corrective action will be completed by December 14, 1994.

This item remains open pending completion of the appropriate tabletop training discussions.

8.4 (Open) Exercise Weakness 382/9328-02: Approval/Issuance of Protective Action Recommendations.

Corrective actions in response to this weakness were:

- Emergency Plan Implementing Procedure EP-002-052, "Protective Action Guidelines," was revised with an effective date of January 1, 1994.

- Emergency Plan Implementing Procedure EP-002-010, "Notifications and Communications," was revised prior to the committed date of April 1, 1994.

- Special training seminars were conducted by emergency planning for each operations shift and appropriate emergency response organization positions. A portion of the seminars was devoted to a discussion of the problems with protective action recommendations in the 1993 annual exercise as lessons learned. Training on the generation of protective action recommendations using the revised procedure was also included in the seminars.

- A discussion of the 1993 annual exercise problems associated with protective action recommendations as lessons learned was incorporated into lesson plans for appropriate emergency response positions at the Technical Support Center and the Emergency Operations Facility.

- The Emergency Planning Department incorporated special training on the generation of protective action recommendations and a discussion of 1993 annual exercise problems associated with protective action recommendations as lessons learned in the annual tabletop exercises during 1994. The licensee stated this corrective action will be completed by December 14, 1994.

This item remains open pending completion of the appropriate tabletop training discussions.

8.5 Conclusions

Two open items were closed and two remain open pending completion of corrective actions.

9 ONSITE FOLLOWUP OF EVENTS AT OPERATING POWER REACTORS (93702)

One licensee event was reviewed during this inspection wherein the licensee had declared an Alert.

9.1 Event

On March 19, 1994, the licensee telephonically notified the NRC Headquarters Operations Officer that an Alert had been declared at the site as a result of a release of toxic chemicals at about 1 a.m. (CST). The release was chlorine gas from a plant within 2 miles of Waterford. The licensee terminated the

alert at 2:15 a.m. (CST) when the release was stopped and the threat to the plant decreased (NRC Event Number 26965).

9.2 Conclusions

A review of this event verified that the event classification was appropriate and that timely notifications were made to the parish, State of Louisiana, and NRC in accordance with approved procedures.

ATTACHMENT 1

1 PERSONS CONTACTED

1.1 Licensee Personnel

*T. D. Brown, Operations Training Supervisor
*R. F. Burski, Director, Nuclear Safety
R. J. Ciminel, Senior Operations Instructor
*F. J. Drummond, Director, Site Support
*F. J. Englebracht, Manager, Emergency Preparedness and Administration
R. W. Fletcher, Senior Operations Instructor
*T. J. Gaudet, Licensing Supervisor
*J. Houghtaling, Technical Services Manager
K. A. Landry, Emergency Planning Specialist
M. J. Langan, Technical Training Supervisor
*R. LeBlanc, Licensing Manager (Acting)
*J. J. Lewis, Jr., Emergency Planning Supervisor
B. V. Lietzke, Senior Operations Instructor
*S. Lockhart, Quality Assurance Manager
A. S. Lubinski, Senior Emergency Planner
M. L. Mills, Technical Trainer
*J. M. O'Hearn, Training Manager
*D. F. Packer, General Manager, Plant Operations
G. P. Perque, Emergency Planner (Procedures/Plans)
R. J. Perry, Offsite Emergency Planning Coordinator
*P. V. Prasankumar, Electrical/Instrumentation & Controls Manager
A. Roberts, Quality Assurance Specialist
*G. Scott, Licensing Engineer
*W. L. Smith, Simulator Training Supervisor
R. S. Starkey, Manager of Operations and Maintenance
D. W. Vinci, Operations Superintendent
G. Wimmet, Shift Supervisor

*Denotes personnel present at the exit meeting.

The inspectors also held discussions with and observed the actions of other members of the licensee's emergency planning, administrative, operations, and technical staff during the course of the inspection.

1.2 NRC Personnel at the Exit

E. Ford, Senior Resident Inspector, Region IV

2 EXIT MEETING

An exit meeting was conducted on July 8, 1994. During this meeting, the inspectors reviewed the scope and findings of the inspection as presented in this report. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspectors during the inspection.

ATTACHMENT 2

EMERGENCY PREPAREDNESS INSPECTION SCENARIO NARRATIVE SUMMARY

Simulation Facility: Waterford 3

Initial Conditions: The unit has been operating at 100% power for 288 days. HPSI pump B and EDG B are out of service. The HPSI pump failed a surveillance test on the previous shift and the EDG is undergoing preplanned maintenance to change out the oil.

A spurious toxic chemical actuation has occurred on the Train A Control Room Emergency Filtration Unit and the control room is in the recirculation mode while I&C troubleshoots the problem.

RCS activity has increased rapidly over the last several hours. The previous routine chemistry sample results were 0.8 μCi/gm D.E. I-131. Another sample was taken 20 minutes ago in response to a Letdown Radiation Monitor high activity alarm and entry into OP-901-410, "High RCS Activity." Results are expected shortly.

Meteorological conditions are: Winds from the South at 1 mph, ambient temperature is 80° F.

Sequence of Events: Fuel failure continues and the Chemistry Dept. will report the following conditions to the control room: DEI=350 μCi/gm, Gross Activity=500 μCi/gm, PCIX DF=15. RCS activity now corresponds to declaration of an **Alert** and shutdown of the reactor.

After the event is declared and off site notifications transmitted, the A main feedwater pump turbine speed controller and the A main feedwater regulating valve fail. The A feedpump speed increases above setpoint resulting in an overfeed condition. The feed regulating valve fails to close and the A steam generator level increases. This will cause either an automatic or manual reactor trip.

The A main feedwater isolation valve also fails to close and the A steam generator continues to fill. As the steam generator overfills, water spills into the main steam line, resulting in a main steam line break due to the static and dynamic water loads on the piping. The break occurs outside containment and upstream of the main steam isolation valve.

The steam generator experiences a pressure transient upon blowdown of the secondary side following the

steam line break. The pressure differential across the steam generator tubes induces several tube ruptures. After the crew has completed the immediate actions and diagnostics of the Emergency Entry Procedure, they will enter Procedure OP-902-004, "Excess Steam Demand." Based on the main steamline radiation monitor indication, the crew will be forced into Procedure OP-902-008, "Safety Function Recovery Procedure." The crew will either declare a **Site Area Emergency** as a result of steam generator tube leakage >44 gpm with a steam release and high RCS activity, and then a **General Emergency** based on dose projections, or, go directly to a **General Emergency** based on dose projections.

EMERGENCY PREPAREDNESS INSPECTION SCENARIO EVENTS

Simulation Facility: Waterford 3

Initial Conditions: 100% power for 288 days, HPSI pump B and EDG B out of service for maintenance. RCS activity has increased over last several hours. Previous sample indicated 0.8 μCi/gm D.E. I-131.

Event	Time	Malf.	Description
1	0	CR01	Fuel Cladding Failure (50%).
2	+5		Plant shutdown from 100% power.
3	+30	FW04A & RX04A	MFW Turbine speed control failure (100%) and MFW regulating valve failure (100%)
4	+31		Reactor/turbine trip (auto or manual)
5	+32		A MFW isolation valve fails to close (100%)
6	+33	MS13A	MS line break outside containment before MSIV (50%)
7	+36	SG01A	SG tube rupture 3500 gpm (50%)