

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/87-15, 50-361/87-14 and 50-362/87-16

Docket Nos. 50-206, 50-361 and 50-362

License Nos. DPR-13, NPF-10 and NPF-15

Licensee: Southern California Edison Company
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Facility Name: San Onofre Nuclear Generating Station, Units 1, 2 and 3

Inspection at: San Onofre Site, San Diego County, California

Inspectors:

G. M. Good

G. M. Good, Emergency Preparedness Analyst
Team Leader

9/28/87
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Approved by:

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9/28/87
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Summary:

Inspection on August 10-14, 1987 (Report Nos. 50-206/87-15, 50-361/87-14, and 50-362/87-16)

Areas Inspected: Announced inspection of the emergency preparedness exercise and associated critique and follow-up on weaknesses/open items identified during the 1986 exercise. Inspection Procedures 82301 and 92701 were covered.

Results: No deficiencies or violations of NRC requirements were identified; however, three exercise weaknesses were identified.

DETAILS

1. Persons Contacted

C. Anderson, Emergency Planning Specialist
K. Baskin, Vice President, Nuclear Engineering, Safety and Licensing Department
G. Buzzelli, Emergency Planning Engineer
K. de Lancey, Emergency Planning Engineer
P. Dooley, Supervisor, Emergency Planning
J. Firoved, Emergency Planning Engineer
R. Kratz, Shift Superintendent
E. Medling, Supervisor, Corporate Health Physics
S. Olofsson, Emergency Planning Specialist
L. Phelps, Manager, Corporate Communications
D. Pilmer, Manager, Nuclear Engineering
R. Reed, Associate Emergency Planning Specialist
R. Rosenblum, Manager, Quality Assurance
S. Schofield, Section Supervisor, Health Physics Engineering

2. Action on Previous Inspection Findings

(Closed) Open Item 50-206/86-32-01, 50-361/86-22-01 and 50-362/86-22-01:
Inability of the acting Emergency Coordinator (EC) to detect and classify the emergency. The acting EC (Shift Superintendent) quickly and accurately classified the Alert based on reports of a spent fuel handling accident with a release of radioactive material. Use of the classification procedure was proper and timely, reflecting good familiarity with the contents of the procedure and its use. This item is considered closed.

(Closed) Open Item 50-206/86-32-02, 50-361/86-22-02 and 50-362/86-22-02:
Inability to coordinate protective action recommendations. The licensee has revised their Emergency Plan (EP) to transfer the function of providing protective action recommendations (PARs) to the offsite officials from the Technical Support Center (TSC) to the Emergency Operations Facility (EOF). During the exercise, PARs were developed in the EOF and provided to the offsite officials from the Corporate Emergency Director (CED). This item is considered closed.

(Closed) Open Item 50-206/86-32-03, 50-361/86-22-03 and 50-362/86-22-03:
Inability of the EOF to issue timely and accurate news releases. The licensee has developed a Press Release Log Form to track the timeliness of the issuance of news releases. During the exercise, the news releases were issued to the Emergency News Center (ENC) within about an hour after new information was available. The news releases were reviewed and approved by the CED and discussions were conducted to assure that the news releases did not precede notification of offsite officials. All notifications and news releases were consistent with the PARs. This item is considered closed.

3. Emergency Preparedness Exercise Planning

The licensee's Nuclear Affairs and Emergency Planning (NA&EP) staff has the overall responsibility for developing, conducting and evaluating the emergency preparedness exercise. A member of the NA&EP staff was assigned to act as Lead Controller with the responsibilities of developing the scenario package and conducting the exercise. He was assisted by members of the Station Emergency Preparedness (SEP) staff possessing appropriate expertise (e.g., reactor operations, health physics). Persons involved in the scenario development were not participants in the exercise.

The emergency preparedness exercise objectives were established by the licensee's NA&EP staff. The objectives were discussed and agreed upon by the Interjurisdictional Planning Committee. NRC Region V and the Federal Emergency Management Agency (FEMA), Region IX were provided with an opportunity to comment on the exercise objectives and scenario package. The scenario package, generated under the direction of the Lead Controller, included the objectives, scope, instructions to exercise controllers, controller assignments, guidelines for participants, the exercise scenario, cue cards to be used during the exercise, initial and subsequent plant parameters, meteorological and radiological data and exercise evaluation/response forms. The scenario package was tightly controlled before the exercise. The players did not have access to the scenario package or information on scenario events. The exercise was intended to meet the requirements of IV.F.3 of Appendix E to 10 CFR Part 50.

4. Exercise Scenario

The exercise scenario started with an event classified as an Alert and ultimately escalated to a General Emergency (GE) classification. The initiating event was based on improper operation of the fuel handling crane which resulted in severe damage to a spent fuel assembly and release of solid and gaseous fission products. Due to scenario data inconsistencies, dose rates at the Exclusion Area Boundary (EAB) from this release eventually prompted the EC in the TSC to declare a Site Area Emergency (SAE). The scenario developers had actually planned for an SAE declaration later when there were indications of a 700 gallons per minute (gpm) loss of coolant accident (LOCA) and loss of safety injection. This condition resulted in fuel damage and eventually prompted the CED in the EOF to declare a GE based on the "potential" to lose the third fission product barrier because containment pressure and radiation levels continued to increase. The scenario developers actually planned for the GE to be declared later when containment was lost as a result of a power operated valve being sabotaged opened. Peripheral events included a contaminated injury and an overturned gasoline tank truck which resulted in Interstate 5 being closed in both directions.

5. Federal Evaluators

Six NRC inspectors evaluated the licensee's response. Inspectors were located in the Control Room, TSC; Operations Support Center (OSC) and the EOF. Two inspectors were located in the OSC and the EOF due to the level

of activity in these facilities. The NRC inspectors who were assigned to the OSC accompanied repair/monitoring teams and the Post Accident Sampling System (PASS) team in order to evaluate their performance.

FEMA, Region IX evaluators were also present during the exercise. The FEMA team of evaluators (approximately 20 individuals) were evaluating those portions of the exercise that involved State and local agencies, as well as the interface occurring at the EOF. The results of FEMA's evaluation of the State and local participation will be described in a separate report issued by FEMA.

6. Control Room

The following aspects of Control Room operations were observed during the exercise: detection and classification of emergency events, mitigation, notification and PARs. The following are NRC observations of the Control Room activities. The observations, as appropriate, are intended to be suggestions for improving the program.

- a. Operations staff formality and attention to detail in their communications and use of procedures was excellent.
- b. The initial accident was correctly and quickly classified by the Shift Superintendent.
- c. Following the large break LOCA and loss of high pressure safety injection, the operating crew waited until there were clear signs that the core was becoming uncovered before they considered the possibility of depressurizing the Reactor Coolant System (RCS) so as to reflood the core with safety injection or condensate pumps.
- d. Starting the hydrogen recombiners was delayed after the LOCA, partly because of misleading precautionary statements in Operating Instruction S01-5-11. At one time when there was 0.7% hydrogen in containment, the statements were interpreted to mean that the recombiners could not be started until containment had been vented to reduce hydrogen concentration to less than 0.5%.

7. Technical Support Center

The following aspects of TSC operations were observed: activation, accident assessment/classification, dose assessment, notifications, PARs and Control Room support. The following are NRC observations of the TSC activities. An exercise weakness is a finding identified as needing corrective action in accordance with 10 CFR Part 50, Appendix E, Paragraph IV.F.5. The open items are of sufficient importance to warrant NRC examination during future inspections. The other observations, as appropriate, are intended to be suggestions for improving the program.

- a. Habitability surveys were conducted at regular and frequent intervals.
- b. The Health Physics (HP) group in the TSC needs to be more effective at disseminating essential radiological information.

Examples:

- (1) Results of the initial dose assessment calculations may not have been provided to the EC. During a briefing at 0852, the EC stated that there were no indications of any offsite doses; however, an offsite release of gaseous activity was actually occurring.
- (2) Dose assessment results were not recorded on the status board.
- (3) Plume maps were not utilized during discussions with the EC, nor were they readily available for the entire TSC staff.

The resolution of this matter will be tracked as open item 50-206/87-15-01.

- c. The functioning of the HP group was hampered during the initial stages of the exercise because the controller did not provide the necessary effluent monitor and Pressurized Ion Chamber (PIC) readings. Scenario HP data was to be provided to the TSC via the HP computer. However, the HP group experienced some problems with the HP computer data during the initial stages of the exercise, and was forced to obtain effluent monitor readings directly from the Control Room (PIC readings are not available in the Control Room). The HP controller should have supplied these readings verbally or by data sheet, since this information would normally be available to the HP staff in the TSC. Monitor and PIC readings were not provided to the HP staff until approximately 0845-0850.
- d. An inconsistency in the scenario data had the potential to disrupt exercise play and cause considerable confusion for the players. Subsequent to the exercise, it was determined that there was a major inconsistency between the Wide Range Gas Monitor (WRGM) and PIC readings. Due to an error introduced by a scenario developer, the PIC readings were a factor of 10 higher than they should have been. According to the licensee, the error was caused by using a wrong noble gas correction factor. As a result of the error, PIC readings at the EAB were calculated as 170 mrem/hour at 0815, reducing to 43 mrem/hour by 0915. The release rate through the WRGM was assumed to be 0.8 curies/second. This release rate would not produce the dose rates seen on the PIC (#3 which is located at the EOF). For the purpose of the exercise, the PIC readings were assumed to be real. Once the PIC data was made available to the HP group in the TSC (see item c. above), the EC declared an SAE. This was the appropriate action for the EC, based on the PIC readings. If the TSC had been provided the PIC readings at 0815-0845, it would have been appropriate for the TSC to declare the SAE earlier. In addition, it would also have been appropriate for the TSC to provide special instructions regarding protective actions to the EOF so that appropriate precautions could be taken during EOF activation, since personnel arriving at the EOF would have had to traverse the plume. Prior to EOF activation, the TSC has full responsibility for HP considerations.

It should be noted that this PIC data was not provided in the scenario package that was sent to the NRC and FEMA for review.

- e. Feedback regarding implemented protective actions (offsite) were not provided to the TSC from the EOF. The lack of this information could hamper the TSC's ability to provide support to the EOF in the area of PARs. Emergency Plan Implementing Procedure (EPIP) S0123-VIII-40, "Health Physics Leader Duties," provides for this support.
- f. Important information about the sabotage of plant equipment was not provided to the TSC in a timely manner. This information did not reach the TSC until 1236, 1 hour and 21 minutes after this information would have been available.
- g. Objective 11, which concerned demonstration of the ability to implement appropriate measures for controlled recovery and reentry in accordance with EPIPs, was not met because the exercise was terminated before recovery discussions had been completed. Controllers had not predetermined the minimum criteria for meeting this objective, nor had they developed a method for directing the players' responses if discussions were not proceeding with the appropriate level of detail. That is, if the players do not know how far to take the discussions, the controllers must step in to encourage the discussions to continue or possibly alter the scenario time to get the desired effect. This potential problem had been discussed with the licensee prior to the exercise.
- h. Objective 13, concerning the demonstration of the onsite emergency siren system in accordance with EPIPs, was not met.

Examples:

- (1) Public address (PA) announcements did not always follow siren activation.
- (2) PA announcements did not include information on problem areas in the plant (e.g., areas to avoid).
- (3) PA announcements could not be heard in some areas of the plant (outside the OSC proper and in parts of the TSC).
- (4) Notification of plant personnel via the siren did not occur until 25 minutes after the GE was declared. A PA announcement did not follow the siren activation.

It should be noted that there were problems associated with activating the Unit 1 siren during the exercise. This condition did present a situation where siren activation and PA announcements had to be coordinated from a different location (Units 2/3 Control Room). Since this has the potential to be a "real" situation, coordinating these actions could become a necessity.

The inability to adequately notify inplant personnel during an exercise is considered to be an exercise weakness and it will be tracked as open item 50-206/87-15-02.

- i. Objective 13, concerning the assembly of plant personnel outside the protected area, was not met due to pre-staging activities. A memorandum was distributed to all personnel on August 6, 1987, which stated that only individuals in the "N" trailers would have to respond if assembly during the exercise was required. In addition to this memorandum, individuals working in the "N" trailers were contacted prior to the exercise to discuss and coordinate the assembly. All of this occurred even though the exercise PA announcements had been specially scripted to provide for this selective response.
- j. The post-exercise critique in the TSC could be improved. All players did not get together as a group to discuss facility problems and the controllers/evaluators did not provide input from their perspective. It appeared that most players completed critique sheets. Conducting an integrated critique may be the only opportunity for some players to learn about problems. Also, discussing the exercise as a group usually surfaces some additional problems.

8. Operations Support Center

The following OSC operations were observed: activation of the facility, functional capabilities, disposition of the various inplant repair/monitoring teams and PASS capabilities. The following are NRC observations of the OSC activities. An exercise weakness is a finding identified as needing corrective action in accordance with 10 CFR Part 50, Appendix E, Paragraph IV.F.5. The open item is of sufficient importance to warrant NRC examination during a future inspection. The other observations, as appropriate, are intended to be suggestions for improving the program.

- a. The OSC staff demonstrated good ability to track and maintain multiple teams in the field. At one time there were nine teams in the field with a total of twenty-five members.
- b. Logging in and issuing of dosimetry to OSC personnel seemed cumbersome and inefficient. The timed sequence for logging in and issuing equipment took about 2 minutes per person.
- c. Contamination control was not set up in a timely manner. Frisking stations were not provided until 1242, well after many returning teams could have brought contamination into the OSC. In addition, initial frisking was performed in the center of the OSC so that team members would have to walk through half the building before determining if they were contaminated or not. The inability to provide for proper contamination control within the OSC is considered to be an exercise weakness and it will be tracked as open item 50-206/87-15-03.

- d. The OSC staff's ability to track and control exposure received by team members could not be evaluated because this type of data was not provided in the scenario package. This is an exercise preparation/control problem.
- e. Returning team debriefings were practically non-existent.
- f. Regarding the spent fuel building accident, the HP technician did not indicate that he would evacuate the spent fuel building upon an area radiation monitor (ARM) alarm, but indicated he would perform surveys. For ALARA purposes, this portion of the exercise was conducted outside the spent fuel building. No props, simulated areas or phantom personnel were utilized to enhance realism. This is considered to be an exercise preparation/control problem.
- g. Regarding the response to the injured crane operator, count rates were provided to the HP technician even though he did not frisk the injured person. This is an exercise preparation/control problem (controller/player training).
- h. The victim player was not briefed as to his injury and symptoms before the drill. No make-up, blood or prosthetics were used. This is considered to be an exercise preparation/control problem.
- i. Demonstration of the licensee's ability to sample and analyze inplant liquids in accordance with post-accident sampling procedures (Onsite Objective Number 10) was threatened because a controller(s) to provide chemistry data and radiological data did not accompany the PASS team. This is an exercise preparation/control problem (player/controller training).
- j. Onerous communication problems between the PASS team, exercise Control Room, actual Control Room and OSC caused significant delays. Only one telephone line was available. It should be noted that the HP technician's two-way radio did not operate in the PASS pit.
- k. The HP technician made minimal effort to survey the PASS laboratory. This may have occurred because there was no controller to provide data.
- l. The PASS team removed their respirators when the exercise was terminated; however, PASS team activities continued for another 15 minutes.

9. Emergency Operations Facility

The following EOF operations were observed: activation of the facility, functional capabilities, offsite dose assessment, accident assessment/classification, notifications, PARs and interface with offsite officials. The following are NRC observations of the EOF activities. An exercise weakness is a finding identified as needing corrective action in accordance with 10 CFR Part 50, Appendix E, Paragraph IV.F.5. The open items are of sufficient importance to warrant NRC examination during a

future inspection. The other observations are intended to be suggestions for improving the program.

- a. Accountability and access control were not maintained at the EOF. Personnel reporting to the EOF did not sign in on the appropriate form. The security guard responsible for maintaining accountability appeared to be unaware of his duties. Persons leaving the EOF were supposed to trade badges at the door, indicating they were no longer in the EOF. This procedure was not consistently followed. This matter will be tracked as open item 50-206/87-15-04.
- b. The security guard issued dosimetry to personnel who left the EOF, however, he did not obtain the names of the individuals who left, nor did he record the doses (in/out).
- c. Adequate HP precautions to insure the long-term habitability of the EOF were not established. Personnel entering the EOF during the initial activation were not frisked for contamination. During the period of activation (0815-0915), scenario dose rates outside the EOF were noted to range from 170 mrem/hour to 43 mrem/hour (RO-2 window closed reading). PIC readings at the EOF reflected the same values. A frisker was located by the EOF entrance, however, it was never used by personnel who left and later returned, including field monitoring teams. Also, individuals entering the EOF were not instructed to use the monitor. Surveys and air samples were not taken in accordance with procedures. The inability to establish and enforce appropriate HP controls at the EOF is considered to be an exercise weakness and it will be tracked as open item 50-206/87-15-05.
- d. The radiological status board was not always updated in a timely manner. At 1022, the status board did not indicate that there were any projected or measured dose rates.
- e. The effectiveness of the post-exercise critique could be improved. Controller/evaluator participation was minimal and players were not instructed to complete the critique sheets.

10. Critiques

Immediately following the exercise, critiques were held in each of the ERFs. In most cases, players completed critique sheets and submitted them to the lead controller at the facility. A formal critique involving site and management personnel was conducted on August 13, 1987. The purpose of the formal critique was to summarize the earlier critique sessions and to discuss the exercise objectives and deficiencies identified by licensee personnel during the exercise. The following represent the types of comments made at this meeting.

- a. The controllers concluded that all thirteen exercise objectives were met except for two. Objective number 9 concerned demonstration of SCE radiation monitoring team deployment to provide continuous monitoring assessment. Objective 9 was not met because some of the field teams did not provide continuous assessments and were not

- equipped with the appropriate equipment. Objective 11 was not met because the exercise was prematurely terminated. Object 11 concerned the ability to determine and implement appropriate measures for controlled recovery and reentry.
- b. The objective to demonstrate PASS analysis (number 10) was satisfactorily met, however, it took too long to get the results.
 - c. The objective to demonstrate the use of the onsite emergency siren system was satisfactorily met, however, the procedural process needs to be reviewed because it may take too long to complete.
 - d. HP surveys at the EOF were not adequate.
 - e. Accountability at the EOF was not accomplished.
 - f. More assembly area coordinators are needed.
 - g. There were coordination problems encountered with inplant siren activation and PA announcements.
 - h. Field monitoring teams need to be dispatched sooner.
 - i. More controllers are needed and their assignments need to be based on expertise.

11. Exercise Summary

FEMA representatives held a debriefing on August 14, 1987, to present a general summary of their preliminary findings to the offsite agencies involved in the exercise. Representatives from each of the offsite agencies were given an opportunity to comment on the exercise from their perspective. A utility representative also made a brief statement. The NRC Team Leader was present at this debriefing.

12. Exit Interview

An exit interview was held on August 14, 1987 to discuss the preliminary findings of the NRC inspection team. The attachment to this report identifies some of the personnel who were present at the meeting. The NRC was represented by the six evaluator team members and Mr. A. Hon, NRC Resident Inspector. The licensee was informed that no deficiencies or violations of NRC requirements were identified during the inspection. The findings as described in Sections 2 and 6-9 of this report were mentioned, except as otherwise specified below.

During the exit interview, the Team Leader stated that the three open items identified during last year's exercise would be closed. The licensee was informed that four exercise weaknesses had been identified and four exercise objectives had not been met. The Team Leader also stressed the significant number of exercise preparation/control problems that were identified. Based on these preliminary findings, discussions with NRC management and FEMA representatives, and the knowledge that the licensee performs quarterly site wide drills (more than other

facilities), the licensee was informed that a management meeting might be necessary to discuss appropriate corrective actions.

Subsequent to the inspection, based on a thorough review of the scenario data, further discussions with NRC evaluator team members and discussions with licensee personnel, it was determined that the objective to demonstrate PASS operations had actually been met and an exercise weakness associated with HP activities in the TSC was no longer appropriate, since the problems were attributed to inconsistent scenario data and improper controller response. In light of these modifications and further discussions with FEMA, it was determined that a management meeting was no longer necessary and that corrective actions would be tracked through the normal inspection process.

ATTACHMENTEXIT INTERVIEW ATTENDEESA. Licensee Personnel

C. Anderson, Emergency Planning Specialist
K. Baskin, Vice President, Nuclear Engineering, Safety and Licensing Department
R. Beatty, Security
K. Bellis, Manager, Nuclear Affairs and Emergency Planning
D. Bennette, Supervisor, Station Emergency Planning
P. Bucelli, Security
G. Buzzelli, Emergency Planning Engineer
J. Curran, Manager, Nuclear Safety
D. Dack, Quality Assurance Engineer
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R. Santosuosso, Assistant Manager, Maintenance
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R. Waldo, Supervisor, Unit 1 Engineering
M. Wharton, Assistant Technical Manager

B. Other Personnel

J. Hartranft, Health Physicist, Orange County