ENCLOSURE

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Facility:	San Onofre Nuclear Generating Station, Units 2 and 3
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Attachment:	Supplemental Information

EXECUTIVE SUMMARY

San Onofre Nuclear Generating Station, Units 2 and 3
NRC Inspection Report 50-361/97-21; 50-362/97-21

A routine, announced inspection of the licensee's performance and capabilities during the full-scale biennial exercise of the emergency plan and implementing procedures was performed. The inspection team observed activities in the Control Room (CR), simulator, Technical Support Center (TSC), Operations Support Center (OSC), and Emergency Operations Facility (EOF).

Plant Support

- Overall performance during the exercise was good. The scenario was sufficiently challenging. Events were quickly recognized and properly classified. Notifications were timely. Off-site protective actions were formulated and issued consistent with dose assessment results.

- The CR staff's performance was very good. Operations personnel were aggressive and proactive throughout the exercise. Accident detection and classification were prompt and accurate. Analysis of plant conditions and resultant corrective actions was well thought out and implemented. Notifications were made promptly. Communications between CR personnel were clear and effective. The shift superintendent conducted periodic briefings to keep the operations personnel aware of performed actions. Noise levels were kept at a minimum. Operations personnel implemented the emergency plan correctly, using appropriate procedures. Command and control were very good; the shift superintendent provided effective direction and guidance and with support from the operations leader. The operations leader position could create confusion with regard to who was in command (Section P4.2).

- The TSC staff's performance was good. Activation was well coordinated and efficient. Emergency classifications were timely and based upon the correct emergency action levels. Notifications were correct and timely. The station emergency director exercised good command and control and made announcements that were concise, clear, and timely, and identified the TSC priorities. On-site protective measures were thorough and comprehensive. Dose assessments were timely and generally correct. When the health physics radio would not function properly, communications with the survey teams were established using a radio obtained from the OSC (Section P4.3).

- The OSC staff's performance was generally good. A strength was identified for proactive review of the release path by health physics technicians. Briefings were conducted on a regular basis, contained relevant event information, and maintained focus on event response priorities. Assigned emergency response personnel effectively formed and dispatched emergency response and repair teams as directed by the TSC. Teams were properly briefed concerning work tasks and protective measures. Health physics coverage for teams was commensurate with encountered radiological conditions. Teams maintained frequent contact with the OSC to provide updated status on task completion. An exercise weakness was identified for failure to properly conduct OSC habitability

surveys. Improper storage of self-contained breathing air bottles posed an industrial safety issue for OSC personnel (Section P4.4).

- The EOF staff's performance was good. Off-site agency notifications were timely, but approval of some verbal notifications was not properly documented. Procedural guidance was unclear concerning who should approve the notifications. Protective action recommendations were timely and consistent with implementing procedures; however, Federal guidance concerning protective action recommendations for severe core damage events has not been incorporated into the emergency plan and implementing procedures. Briefings were held at regular intervals but were ineffective at times because personnel did not pay attention or could not hear speakers. Incorrect and potentially confusing terminology was used for emergency classification levels. Dose assessment activities effectively supported protective action recommendation formulation. Interactions with off-site dose assessment center personnel contributed to the response effort by identifying and resolving differences in dose projections (Section P4.5).

- The scenario was sufficiently challenging to test on-site response capabilities. The scheduling of the 1995 and 1997 general emergencies to occur at noon was a potential prompting issue. Simulator modeling problems resulted in inaccurate data, which prompted players to take actions that were not planned in the exercise scenario. Exercise control was generally good with some inappropriate or incorrect actions taken by controllers. Some activities were over simulated (Section P4.6).

- Post-exercise critiques were thorough, open, and self critical. The management critique was detailed and informative. However, there appeared to be an overall defensive attitude regarding negative findings that detracted from the ability of the critique process to improve the program (Section P4.7).

Report Details

IV. Plant Support

P4 Staff Knowledge and Performance in Emergency Preparedness

P4.1 Exercise Conduct and Scenario Description (82301 and 82302)

The licensee conducted a full-scale, biennial emergency preparedness exercise beginning at 7:15 a.m. on October 28, 1997. The exercise was conducted to test major portions of the on-site (licensee) and off-site emergency response capabilities. The licensee activated its emergency response organization and all emergency response facilities. The Federal Emergency Management Agency evaluated the off-site response capabilities of the state and local participants. The Federal Emergency Management Agency will issue a separate report.

The scenario for the exercise was dynamically simulated using the licensee's plant-specific simulator. The initial scenario conditions included Units 2 and 3 both operating at 100 percent power with all plant parameters normal and stable. Boric Acid Makeup Pump 2P174 was out of service for seal replacement. Component Cooling Water Pump 2P025 had been taken out of service as part of a complete train outage, and was disassembled with a broken casing half stud. The Turbine Plant Cooling Water Heat Exchanger 2E025 was removed from service with the tube side manways removed for tube sheet cleaning.

Steam Generator E088 main steam line Radiation Monitor 2RE7874A was out of service for detector replacement. Fire Water Pump 2MP222 had been taken out of service to repair a leaking inboard pump seal. The seal backing plate was not readily available to the licensee, and a replacement would not be available until 6 p.m. The Unit 1 spent fuel pool weir gate had been removed for sanding and painting.

Subsequent simulated events were as follows:

- At 8 a.m., the Unit 1 spent fuel pool transfer tube isolation valve failed, allowing water from the spent fuel pool to enter the transfer tube. The subsequent head of water created by this leak was felt at the transfer tube blind flange inside containment that came loose due to failed fasteners. This resulted in water draining from the spent fuel pool to the refueling cavity at a rate of about 5000 gpm. Due to this leak, a spent fuel pool low-level alarm was received in the Unit 1 CR, followed shortly by a containment sump high level alarm. The Unit 1 shift supervisor dispatched the shutdown CR operator to investigate.

- As the level of the Unit 1 spent fuel pool decreased, the radiation levels increased in the vicinity of the fuel handling building due to the loss of water shielding.

- At 8:23 a.m., Unit 2 Steam Generator E088 level transmitter No. LT-111 trended upwards due to a failed diaphragm. Operators took manual control to stabilize level and removed the faulted data input from the level control system.

- At 9:25 a.m., the source breaker for the 1E 480V bus 2B06 tripped on overcurrent due to a ground that developed on the Train B upper dome air Circulating Fan A072. This resulted in the unavailability of a number of Train B equipment including emergency safety features valves, one charging pump, and the battery chargers for two 1E 125V DC buses.

- At 9:40 a.m., the shaft for Reactor Coolant Pump 2P001 sheared in three places inside the seal area of the pump and severely damaged the seal package. This caused an initial reactor coolant system leak rate of 3000 gpm. Low differential pressure in Steam Generator E089 caused a Unit 2 automatic reactor trip.

- Prior to the reactor trip, departure from nucleate boiling occurred in a portion of the upper core due to the loss of flow following the failure of Reactor Coolant Pump 2P001. The departure from nucleate boiling caused cladding failure and a release of 9 percent of the total clad gap activity to the reactor coolant (4000 µCi/gm Dose Equivalent Iodine).

- At 11:14 a.m., the 1E 480V bus 2B06 was re-energized.

- At 11:50 a.m., a flooding alarm for the Train B shutdown cooling heat exchanger room was actuated when the gasket for the component cooling water inlet flange on the Train B shutdown cooling heat exchanger failed. Due to the loss of Train B safety equipment cooling, the operators stopped the Train B equipment to maintain its availability for future service.

- At 12 noon, the containment penetration for the auxiliary feedwater line leading to Steam Generator 2E089 began to leak. This led to a ground level, unmonitored release of radioactive material from the containment to the atmosphere that was discovered by a roving health physics technician.

- At 12:50 p.m., the motor for Containment Spray Pump 2P012 tripped on overcurrent when its shaft seized due to the loss of lube oil through a faulty seal. As a result, all trains of containment spray were removed from service.

- Exercise activities were terminated at 2:15 p.m.

P4.2 Control Room (CR)

a. Inspection Scope (82301-03.02)

The inspectors observed and evaluated the CR operating crew in the plant-specific simulator as they performed tasks in response to the exercise scenario conditions. These tasks included event detection and classification, diagnosis of plant conditions,

off-site agency notifications, internal and external communications, and adherence to the emergency plan and procedures. The inspectors reviewed applicable emergency plan sections, procedures, conduct of operations guidance, logs, checklists, and notification forms.

b. Observations and Findings

The operating crew responded well to the event conditions experienced during the exercise. Action requirements set forth by the plant Technical Specifications were promptly identified and acted upon. Examples included:

- When the 1E 480V bus 2B06 tripped on overcurrent, causing the battery chargers for two 1E 125V DC buses to become de-energized, the operating crew identified that the loss of chargers for two DC buses was not covered by the plant Technical Specifications. As a result, the operating crew determined that Technical Specification 3.0.3 applied.

- When the operating crew commenced a plant cooldown in accordance with SO23-12-3, "Loss of Coolant Accident," with only one startup channel, the operating crew identified that this was contrary to plant Technical Specifications. As a result, the shift superintendent authorized a deviation in accordance with 10 CFR 50.54(x) to continue with the cooldown.

The operating crew quickly recognized emergency conditions and correctly used the emergency action levels to classify the alert. The shift superintendent declared the alert based on the uncontrolled loss of the Unit 1 spent fuel pool level below the lowest piping penetration which indicated a significant trend leading to a degradation of safety. Off-site notifications of local and state agencies were made within the required time frame.

Communications within the CR were very good. Two- and three-part communications, peer checks, and self-verification were frequently performed and contributed to the event mitigation efforts. Three-part communications involved a statement made by one person, repeated by the person who was listening to the statement, then confirmed as correct by the first person. All two- and three-part communications observed were performed with both parties facing each other, thus minimizing potential errors.

External communications were very good with only one notable error made by the CR communicator. This error involved communications with the EOF where it was communicated that the alert was declared at 8:20 a.m., when in fact the alert was declared at 8:12 a.m.

The inspectors observed that the operating crew was kept well informed through frequent briefings by the shift superintendent and the operations leader. Briefings were well organized, solicited operator input and questions, and had a definitive end. Briefings also contained discussions about success paths, actions required to bring needed equipment back into service, and considerations for potential environmental hazards for response teams. For example, the operating crew anticipated the advent of the

recirculation actuation signal and made all the appropriate preparations, including notifications regarding expected increases in radiation and recommended evacuation of personnel from affected areas. After the emergency coordinator's responsibilities were transferred from the CR, the results of these discussions and recommendations were conveyed to the station emergency director.

The inspectors identified that the emergency organization in the CR included an operations leader position. This position was described in SO23-VIII-30, "Units 2/3 Operations Leader Duties," Revision 2 (draft). The inspectors noted that the operations leader provided significant support to the shift superintendent by handling communications between the CR and the other emergency facilities, thus allowing the shift superintendent to concentrate more fully on the event. The operations leader also provided strong technical support for the operating crew without hindering their actions.

According to Section 5.2.2 of the emergency plan, the primary responsibility of the operations leader was to advise the emergency advisor for operations and/or the station emergency director on matters concerning plant operations. As described in the emergency plan, upon declaration of an emergency, the shift superintendent became the station emergency director, and the operations leader reported to the control room. The inspectors observed that the operations leader provided valuable support to the shift superintendent and the operating crew. However, direct interactions with the operators, combined with the fact that the individual held a senior management position, had the potential to confuse personnel as to who was in command. Operators appeared compelled to keep both the shift superintendent and the operations leader informed of their actions.

c. Conclusions

The CR staff's performance was very good. Operations personnel were aggressive and proactive throughout the exercise. Accident detection and classification were prompt and accurate. Analyses of plant conditions and resultant corrective actions were well thought out and implemented. Notifications were made promptly, meeting all timeliness requirements. Communications between CR personnel were clear and effective. The shift superintendent conducted periodic briefings to keep the operations personnel aware of performed actions. Noise levels throughout the event were kept at a minimum. Operations personnel implemented the emergency plan correctly, using all of the appropriate procedures. Command and control were very good; the shift superintendent provided direction and guidance and with support from the operations leader. The operations leader position could create confusion with regard to who was in command.

P4.3 Technical Support Center (TSC)

a. Inspection Scope (82301-03.03)

The inspectors observed and evaluated the TSC staff as they performed tasks necessary for response to exercise scenario conditions. These tasks included staffing and activation, accident assessment and mitigation strategies, event classification,

off-site notifications, facility management and control, on-site protective action decisions and implementation, internal and external communications, assistance and support to other activated emergency response facilities, and prioritization of response activities for accident mitigation. The inspectors reviewed applicable emergency plan sections, emergency plan implementing procedures, checklists, and logs.

b. Observations and Findings

The TSC activation was coordinated and efficient with personnel logging into the protected area personnel accountability system and signing the minimum staffing board as applicable as they entered. The TSC was activated within approximately 20 minutes after declaration of the alert.

Minimum staffing requirements for the TSC were not clear. The emergency planning procedures and the emergency plan appeared to be inconsistent. Procedure SO123-VII-10.1, "Station Emergency Director Duties," Revision 3, Section 6.1, "Activation," specified that two positions are to be filled by qualified emergency responders (emergency advisor for notifications and emergency advisor for operations) with no other reference to a minimum staffing requirement. Emergency Plan table 5-2, "Emergency Response Leader's Duties," Revision 6.1, lists eight positions in the TSC. A minimum staffing status board was maintained in the TSC but was not controlled by procedure and was not consistent with the procedure or emergency plan.

An individual did not know the proper use of the minimum staffing board. One position that was not preprinted on the minimum staffing board was entered by hand at the beginning of the exercise. The licensee confirmed that this position was not a minimum staffing position, therefore, was entered by the individual in error.

The station emergency director (TSC) exercised good command and control. Frequent announcements were concise, clear, and timely, and identified the TSC's priorities. Announcements were made when the TSC was activated, when significant events occurred, when emergency classifications changed, and periodically throughout the exercise. These announcements were effective in that all personnel in the TSC stopped and listened, the major leaders were given an opportunity to address the TSC, and the TSC priorities were clearly stated TSC priorities or current tasks. On occasion there was incorrect interchangeable use of terminology; specifically, "site area emergency," "site assembly," and "site evacuation" could have resulted in confusion.

The station emergency director made good use of the notifications status board. It indicated when each notification was due and when it was completed. Notification time limits specified in SO123-VIII-10.1, "Station Emergency Director Duties," Revision 3, were met, although an inconsistency was noted related to the time required to notify the NRC. Step 6.2.1 of SO123-VIII-10.1 specified 20 minutes to verbally notify the NRC, whereas the notification status board indicated 1 hour, which is consistent with 10 CFR 50.72(a)(3).

An incorrect process was used to identify individuals for the technical team shift relief. During the process, it initially appeared that some personnel in the TSC would need to be sent home to return for a later shift. Although sufficient off-duty personnel were eventually identified to provide shift relief, it was not clear that sufficient information was available to the TSC.

Plant conditions were closely monitored and evaluated, and emergency classifications were correctly determined and timely. Classifications were coordinated with the CR and EOF. Plant parameters were trended and corrective actions were developed, evaluated, and implemented, where appropriate. On-site protective measures were thorough and comprehensive. Several precautionary measures, above those required by procedures, were proposed and taken. The protection of on-site personnel sheltered in the downwind areas was reevaluated each time radiological conditions changed. Site assembly in upwind, alternate assembly areas was completed within the required time.

TSC status boards were generally used effectively, although the plant status board entries were somewhat cryptic due to the use of acronyms that may not be common knowledge to everyone in the TSC. The meteorological status board was infrequently updated, approximately once per hour. The TSC clocks were reset after being used to determine the time of activation of the TSC. This could have resulted in difficulty in reconstructing the timing of initial TSC activities.

Dose assessments and core damage assessments were generally performed well. Dose calculations were performed correctly and timely, although at one point the source term determined by radiation data was inconsistent with the results of the alternate preplanned method due to a calculational error. The error was quickly found and corrected. The health physics radio in the TSC did not function at the beginning of the exercise. A radio was obtained from the OSC to permit communication with the survey teams while the health physics radio was successfully repaired. The results of the reactor coolant post-accident sampling system sample were not shared with the technical leader or station emergency director, because the results were inconsistent with other data.

c. Conclusions

The TSC staff's performance was good. Activation was coordinated and efficient. Emergency classifications were timely and based upon the correct emergency action levels. Notifications were correct and timely. The station emergency director exercised good command and control and made announcements that were concise, clear, and timely, and identified the TSC priorities. On-site protective measures were cautious and comprehensive. Dose assessments were timely and generally correct. When the health physics radio would not function properly, communications with the survey teams were established using a radio obtained from the OSC.

P4.4 Operations Support Center (OSC)

a. Inspection Scope (82301-03.05)

The inspectors observed and evaluated the OSC staff as they performed tasks in response to the scenario conditions. These tasks included functional staffing and emergency response team dispatch and coordination in support of CR and TSC requests. The inspectors reviewed applicable emergency plan sections, emergency plan implementing procedures, logs, checklists, and forms.

b. Observations and Findings

Following the alert, the OSC was activated in a timely, coordinated, and efficient manner. The OSC was declared as activated at 8:33 a.m. The OSC was staffed with a sufficient number of individuals with the appropriate expertise. There were some difficulties experienced in the set up of the phones and with the health physics radio. These were quickly addressed as part of the exercise.

The OSC director exercised good command and control. The director conducted effective staff briefings. Following the briefing, personnel located in the OSC assembly area were briefed using a public address system.

The inspectors noted that the emergency classification was confusing in that, throughout the exercise, Unit 1 remained in an alert, while Unit 2 was in a site-area emergency then a general emergency. Since the emergency plan covers all three units, the highest classification level should have applied to the entire site. The inspectors determined that the listing of multiple classifications for different units could prove confusing as to which actions were necessary. The licensee acknowledged the need to clarify this process.

Habitability was confirmed and periodically assessed primarily using area radiation surveys and contamination surveys. Geiger-Mueller type friskers were set up at various locations to be used for detecting contamination. These friskers were also used to monitor changes in radiological conditions.

An air sampler was used at the entrance to the OSC. When the health physics technician removed the sample cartridge from the air sampler head, the inspectors noted that one of the o-rings inside the sampler head was missing. The technician then inserted another cartridge, installed the sampler head on the air sampler unit, and set it aside for future use. The inspectors observed this sampler head used for two additional air samples with the o-ring missing. These two air samples were performed at 12:12 p.m. and 12:38 p.m.; following the start of a release from containment that started at approximately 12 noon. There were no air samples taken between 12:38 p.m. and 2:15 p.m., the time the exercise was terminated.

The missing o-ring was supposed to serve as a seal against the filter cartridge to ensure that air passed through instead of around the cartridge. With the o-ring missing, airborne

radioactive material could bypass the cartridge. This would result in nonconservative measurement of the airborne radiation.

Emergency Plan Implementing Procedure SO123-VIII-40.1, "OSC Health Physics Coordinator Duties," Revision 16, Section 6.6.4.4, stated, in part:

> If an unplanned radiological release occurs or is imminent, perform surveys to monitor for contamination outside of radiologically controlled areas . . . . Monitor those Emergency Response Facilities as follows:
>
> - Radiation: Continuously
> - Contamination: Every ½ hour or as requested by the TSC HP Leader.
> - Airborne: Every ½ hour or as requested by the TSC HP Leader.

Emergency Planning Implementing Procedure SO123-VIII-40, "TSC Health Physics Leader Duties," Revision 12, Section 6.3.1.1, stated, in part:

> If any of the hazards listed below exist, then initiate a local area evacuation or contact the Operations Leader recommend a local area evacuation, as appropriate . . . .
>
> - Spills or airborne release of radioactive material that may result in excessive personnel exposure.

The inspectors determined that air sampling was not performed at the frequency required by the licensee's procedure and those samples that were performed were not valid due to the missing o-ring. Since this information would be used to assess the need to evacuate the OSC, protection of personnel within the OSC was not adequately demonstrated. The improper performance of air sampling for OSC habitability surveys was identified as an exercise weakness (50-361; -362/9721-01).

During the exit meeting conducted on October 31, 1997, the licensee stated that the friskers would have provided early warning if radiological conditions changed, since these friskers were not alarming, (simulated) conditions did not require air sampling. The inspectors confirmed that there was no record of this determination in the logs following the onset of the release at noon.

During the exit meeting, the licensee also stated that if the friskers had alarmed and air sampling had been performed, an inconsistency between the sample cartridge analysis results and the frisker reading would have indicated a problem with the air sampling. The inspectors determined that this position was not valid, because there was no direct correlation between the frisker reading and the various combinations of airborne concentrations and the effect of shine and ambient radiation. Accordingly, the committed

dose equivalent derived from analyzing the cartridge would have been considered correct, unless it was determined that the equipment was defective through other means.

OSC personnel exhibited very good teamwork and coordination. For example, immediately following the announcement of the release from containment penetration No. 75, health physics technicians located in the OSC assembly area were very proactive in locating the penetration on a map, determining the system associated with this penetration, then attempting to determine the potential radiological concerns associated with a release through this penetration. This information was then passed on to the health physics personnel in the OSC and supported future task planning. This example of good teamwork was identified as a strength.

Status boards were updated in a timely manner. The location, task, and status for emergency response teams were monitored using a team tracking board and a team tracking sheet. Tasks and priorities were tracked on an ongoing basis and were routinely discussed by center management to identify alternative means of addressing the problems.

Emergency response teams exhibited good teamwork and coordination. Prior to departure, teams were briefed on the task assigned, expected radiation levels, stay times, and routes. The teams were appropriately dressed for the activity assigned with minimal simulation. The OSC maintained communication with the team. Upon return, teams were debriefed on the tasks performed.

The inspectors noted that the briefings often occurred in the OSC assembly area. The noise level made it difficult to hear. As a result, important information could have been misunderstood or not heard.

The process used for issuing respiratory protection to one emergency response team was thorough and correct. The process included verifying team member qualifications and testing and donning of self-contained breathing apparatus. Training was verified as current, medical qualifications were satisfactory, and fit testing was current for the team members selected. Team members used proper techniques to don and test the respiratory protection equipment.

During tours of the access paths to the OSC, step-off pads and friskers were set up in areas where there was no phone or means to contact the OSC health physics personnel if contamination was detected. There was no one in the immediate area to observe these locations on a continual basis. Therefore, a potentially contaminated individual would have to wait to be found or elect to take other actions, some of which may be inappropriate.

During the activation of the OSC, an industrial safety issue was identified involving improperly secured/stored compressed gas cylinders (self-contained breathing apparatus air bottles) in the OSC assembly area. This situation could have jeopardized the safety of personnel located in the facility. Examples included:

- Equipment was piled on the lunchroom floor where OSC team members were assembled. Self-contained breathing apparatus bottles were mixed in the pile. At least one bottle was observed to be tipped such that it was resting on the neck of the bottle.

- A single self-contained breathing apparatus air bottle was laying on a table in the lunchroom with no one in immediate reach of the bottle.

These conditions were quickly corrected by the licensee when identified by the inspector.

c. Conclusions

The OSC staff's performance was generally good. A strength was identified for proactive review of the release path by health physics technicians. Briefings were conducted on a regular basis, contained relevant event information, and maintained focus on event response priorities. Assigned emergency response personnel effectively formed and dispatched emergency response and repair teams as directed by the TSC. Teams were properly briefed concerning work tasks and protective measures to ensure safety. Health physics coverage for teams was commensurate with encountered radiological conditions. Teams maintained frequent contact with the OSC to provide updated status on task completion. An exercise weakness was identified for failure to properly conduct OSC habitability surveys. Improper storage of self-contained breathing air bottles could have jeopardized personnel safety.

P4.5 Emergency Operations Facility (EOF)

a. Inspection Scope (82301-03.04)

The inspectors observed the EOF staff as they performed tasks in response to the exercise. These tasks included facility activation, notification of state and local response agencies, development and issuance of protective action recommendations, dose projections, and direct interactions with off-site agency response personnel. The inspectors reviewed applicable emergency plan sections, emergency plan implementing procedures, forms, dose projections, and press releases.

b. Observations and Findings

The EOF was promptly staffed after the 8:12 a.m. alert declaration. The EOF was declared activated at 8:52 a.m. when minimum facility staffing was achieved. Off-site agency notifications and protective action recommendations were transferred to the EOF at 9:13 a.m. The turnover was conducted in a systematic fashion.

Off-site agency notifications were timely; however, approval of two off-site agency verbal notifications was not properly documented prior to transmission. Although message forms were reviewed with the corporate emergency director, there were no approval initials on the "free form" message and message No. 5. Inspectors noted that procedural guidance was unclear concerning who should approve the message forms.

Specifically, SO123-VIII-30.6, "EOF Communicator Duties," Revision 4, and SO123-VIII-10.2, "Corporate Emergency Director Duties," Revision 1, Temporary Change Notice 5, did not specify who should approve the message form. The form used in the CR and TSC, from SO123-VIII-30.5, "Shift Communicator Duties," Revision 6, Editorial Correction 1, required emergency coordinator approval.

At least three different people approved the verbal message forms generated in the EOF: the corporate emergency director, the emergency advisor for notifications, and the yellow telephone operator. As a result, the documents indicated there was no single point of contact for control of information released to the public. The licensee acknowledged the unclear procedural guidance.

Protective action recommendations made following the site area and general emergencies were timely and consistent with emergency plan implementing procedures. The corporate emergency director recommended a beach evacuation after the site area emergency declaration. Following the general emergency declaration, a recommendation to shelter the 10-mile emergency planning zone was recommended. The recommendation was upgraded to evacuation about 35 minutes later after thyroid committed dose equivalent values at the exclusion area boundary exceeded protective action guides.

Pertinent to this matter, inspectors noted that Federal guidance concerning protective action recommendations for severe core damage events had not been properly incorporated into the emergency plan and implementing procedures. Supplement 3 to NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," (published in July 1996) identifies evacuation as the preferred recommendation for severe core damage events. However, Procedure SO123-VIII-10.3, "Protective Action Recommendations," Revision 3, identifies sheltering as the initial general emergency protective action recommendation. The licensee acknowledged that the new guidance had not yet been incorporated.

Dose assessment personnel properly computed dose projections to support protective action recommendations. Dose projections, based on field team samples, were used to upgrade protective action recommendations and to confirm that protective actions were not needed beyond the 10-mile emergency planning zone. Interactions with off-site dose assessment personnel were very effective. When differences in dose calculations were obtained, the two teams quickly determined the cause(s).

Communications into and within the EOF were ineffective or challenged at times. For example:

- Initially, there was some confusion concerning the alert declaration time (8:12 versus 8:20 a.m.). The error was recognized and corrected about 30 minutes later. The CR initially confirmed the incorrect time.

- Some EOF personnel did not pay attention during briefings, and it was difficult to hear speakers, even with the portable microphone. As a result, some EOF personnel may not have been aware of important information.

- EOF personnel did not stop to listen to plant public address announcements. As a result, important plant information could have been missed.

- Inconsistent and potentially confusing terminology was used in the EOF. Examples included site general emergency, general area emergency, site emergency, and plant emergency director.

Habitability of the EOF was properly determined during the exercise. Periodic internal and external surveys were conducted to verify that the radiological plume did not affect the EOF. As a result, the health physics leader determined there was no need to isolate the facility ventilation; however, thermoluminescent dosimeters were distributed to EOF personnel in accordance with procedures.

The corporate emergency director properly approved press releases transmitted to the emergency news center. The content of the releases was generally clear and accurate. The first press release contained an error regarding the alert declaration time (8:20 versus 8:12 a.m. as discussed above). The time was promptly corrected in the second press release. Confusing information was issued in the fifth press release. The release incorrectly stated that there was a site area emergency and an alert at the site. The plant was in a site area emergency at the time; however, the scenario conditions for Unit 1 still existed.

c. Conclusions

The EOF staff's performance was good. Off-site agency notifications were timely, but approval of some verbal notifications was not properly documented. Procedural guidance was unclear concerning who should approve the notifications. Protective action recommendations were timely and consistent with implementing procedures; however, Federal guidance concerning protective action recommendations for severe core damage events has not been incorporated. Briefings were held at regular intervals but were ineffective at times because personnel did not pay attention or could not hear speakers. Incorrect and potentially confusing terminology was used for emergency classification levels. Dose assessment activities effectively supported protective action recommendation formulation. Interactions with off-site dose assessment center personnel contributed to the response effort by identifying and resolving differences in dose projections.

P4.6 Scenario and Exercise Control (82301)

a. Inspection Scope (82301 and 82302)

The inspectors evaluated the exercise to assess the challenge and realism of the scenario and exercise control.

b. Observations and Findings

The licensee submitted the exercise objectives and scenarios for review on July 29, 1997, and August 29, 1997, respectively. A revision to the exercise scenario was incorporated to address off-site objectives and was submitted for review on October 2, 1997. The exercise objectives were considered appropriate to demonstrate emergency response capabilities and commitments.

During the scenario review, the timing of the scenario events was compared to the 1995 evaluated exercise scenario. Event timing was considered repetitive and predictable since the general emergency conditions were established for both the 1995 and 1997 exercises to occur at noon. This could prompt personnel to "expect" the general emergency at noon. The licensee was informed that, in the future, regularly scheduling the general emergency to occur at noon would be a basis for requesting a scenario revision. The exercise scenario was sufficiently challenging to test on-site emergency response capabilities.

The following aspects of exercise conduct and control detracted from the realism and training value of the exercise and were considered areas for improvement:

- Some aspects of the exercise were overly simulated, thus creating conditions that masked the impact these activities could have on operations personnel. For example: (1) A radiation protection technician was not posted in the CR to perform routine surveys, and (2) NRC operations officer simulation did not challenge the shift superintendent.

- Simulator modeling problems resulted in inaccurate data which prompted players to take actions that were not planned in the exercise scenario. For example: (1) when operators attempted to perform hot leg/cold leg injection, the simulator was unable to properly emulate expected plant conditions; (2) the 480 V Bus 2B06 was not able to be started as expected; (3) placing normal containment cooling into operation resulted in a step increase in containment temperature with containment temperature eventually exceeding 200 degrees; and (4) pressurizer level and pressure spiked inexplicably when spray was initiated.

- The emergency planning coordinator position was inappropriately double staffed in the EOF making it difficult to determine if emergency plan staffing was adequate.

- Players were unable to trend data from the "drill" computer which provided plant parameters. This prevented them from visually reviewing containment pressure response to the breached penetration.

- TSC radiation and contamination survey results were provided to the health physics technician without an adequate simulation of the surveys, although this simulation improved later in the exercise.

- There were inappropriate interactions between controllers and participants in the EOF. The radiation controller asked questions to determine participant actions (could have prompted actions). The notification controller answered a participant's question concerning affected sectors. The participant correctly noted the error.

- At 10:30 a.m., the OSC was told that bus No. 2B06 had been restored and energized, then later the OSC was told that the bus would not be energized until 11 a.m. By being told in advance that the bus would not be energized until 11 a.m., no efforts were taken to get the bus energized earlier. This was considered an example of prompting.

- Team 20 was provided "unearned" information by the controller. The team was dispatched to investigate/repair 2HV9368. When the team arrived at the breaker panel, they checked the wrong breaker but were provided information as if it were the correct breaker. The controller did not know that the team was at the wrong breaker. This was identified when the team called into the OSC to report the results of its investigation.

c. Conclusions

The scenario was sufficiently challenging to test on-site response capabilities. Scheduling the general emergency to occur at noon was identified as a potential prompting issue. Simulator modeling problems resulted in inaccurate data, which prompted players to take actions that were not planned in the exercise scenario. Exercise control was generally good with some inappropriate or incorrect actions taken by controllers. Some activities were over simulated.

P4.7 Licensee Self Critique

a. Inspection Scope (82301-03.13)

The inspectors observed and evaluated the licensee's post-exercise facility critiques and the formal management critique on September 18, 1997, to determine whether the process would identify and characterize weak or deficient areas in need of corrective action.

b. Observations and Findings

Post-exercise critiques for all of the emergency response facilities were generally thorough and self critical. Comments were provided by participants, controllers, and evaluators. The OSC critique was not attended by all participants in the exercise; therefore, valuable insight related to facility performance was potentially lost. The participants tended to focus on positive performance rather than on areas to improve performance.

The management critique was detailed and informative. There was good overlap between the licensee and NRC evaluation teams' observations. Overall, the critique process effectively identified issues in need of corrective action. However, there appeared to be an overall defensive attitude regarding negative findings. Accordingly, some findings that may have had merit tended to be resisted rather than looking for ways to improve them.

c. Conclusions

Post-exercise critiques were thorough, open, and self critical. The management critique was detailed and informative. However, there appeared to be an overall defensive attitude regarding negative findings that detracted from the ability of the critique process to improve the program.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on October 30, 1997. The licensee acknowledged the findings presented. No proprietary information was identified.

The Federal Emergency Management Agency held a public meeting in San Clemente, California, on October 31, 1997. Representatives from FEMA and NRC provided a brief discussion of preliminary exercise results.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Kreiger, Vice President, Nuclear Generation
D. Richards, Supervisor, Emergency Preparedness
G. Plumlee, Compliance
G. Gibson, Compliance
P. Handley, Supervisor, Off-site Emergency Preparedness
R. Warnock, Project Manager
C. Anderson, Manager, Emergency Preparedness

INSPECTION PROCEDURES USED

IP 82301	Evaluation of Exercises at Power Reactors
IP 82302	Review of Exercise Objectives and Scenarios for Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-361; -362/9721-01	IFI	Exercise Weakness - improper performance of air sampling for OSC habitability surveys.

LIST OF ACRONYMS USED

CR	Control Room
EOF	Emergency Operations Facility
OSC	Operations Support Center
TSC	Technical Support Center

LIST OF DOCUMENTS REVIEWED

Emergency Plan Implementing Procedures

SO123-VIII-1	Recognition and Classification of Emergencies	Revision 9
SO123-VIII-10	Emergency Coordinator Duties	Revision 9
SO123-VIII-10.1	Station Emergency Director Duties	Revision 3
SO123-VIII-10.2	Corporate Emergency Directors Duties	Revision 1
SO123-VIII-10.3	Protective Action Recommendations	Revision 3
SO123-VIII-30.1	Emergency Planning Coordinator Duties	Revision 13
SO123-VIII-30.3	OSC Operations Coordinator Duties	Revision 3
SO123-VIII-30.4	Emergency Services Coordinator Duties	Revision 3
SO123-VIII-30.5	Shift Communicator Duties	Revision 6
SO123-VIII-40	TSC Health Physics Leader Duties	Revision 12
SO123-VIII-40.1	OSC Health Physics Coordinator Duties	Revision 16
SO123-VIII-40.100	Dose Assessment	Revision 8
SO123-VIII-50	Technical Leader Duties	Revision 9
SO123-VIII-50.1	Chemistry Coordinator Duties	Revision 3
SO123-VIII-50.4	Chemistry Leader Duties	Revision 1
SO123-VIII-60	Security Leader Duties	Revision 10
SO123-VIII-60.1	OSC Security Coordinator Duties	Revision 9
SO123-VIII-70	Administrative Leader Duties	Revision 9
SO123-VIII-80	Emergency Group Leader Duties	Revision 8
SO23-VIII-30	Units 2/3 Operations Leader Duties	Revision 2 (DRAFT)
SO23-VIII-50.3	Units 2 and 3 Core Damage Assessment	Revision 4

Other Documents

SONGS Emergency Plan, Revision 6.1