UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
COMMISSIONER

October 12, 1984

MEMORANDUM TO: Files

FROM: James K. Asselstine

SUBJECT: MEETING WITH REPRESENTATIVES OF SOUTHERN CALIFORNIA EDISON - RESTART OF SAN ONOFRE 1

On October 10, 1984 I met with Don Craven, Dave Piggott, Jim Altman and Ken Baskin, representatives of Southern California Edison, to discuss legal issues associated with restart of San Onofre 1.

The Company representatives stated that they had not read the Commission's 1982 order as amending the license. The issue of license amendments was not raised until June of this year by the staff, and it surprised the company. The company asserts that the Commission has the flexibility to treat the order as not being an amendment. They see no legal barrier to this interpretation and significant policy implications if we do not interpret this order correctly. Further, the equities call for a flexible approach. This was a voluntary upgrade, and the company has relied on consistent staff interpretation that no hearing was required.

I said that I was troubled by the staff's interpretation of the '82 order because it might limit our discretion in future enforcement matters and make voluntary compliance unlikely in the future. However, I asked if this case wasn't closer to Sholly than to the license suspension cases like Bellotti. The company representatives tried to distinguish the Sholly case. They said that in Sholly the Commission's order granted authority not consistent with the suspended license. In this case, however, the upgrade of the plant is not barred by the San Onofre license. No change in tech specs is required and there is no unreviewed safety question so conduct of the upgrade is consistent with the license.

My legal assistant then asked if the .5g design basis earthquake requirement is a part of the license or incorporated into it somehow. Mr. Baskin and Mr. Piggott said they thought it might be, but would have to check. I explained that I was concerned that if the .5g requirement was a license requirement, and the staff did not think that the plant met that requirement then allowing the plant to operate at some lesser or indeterminate level might constitute a license amendment. Mr. Baskin explained that there is substantial evidence which indicates that the plant is designed to withstand .5g. Further, the questions in the minds of the staff are not based on substantial evidence and are based on questionable techniques. Licensee intends to provide additional information to the staff, but practically they cannot go back and recreate the design. The question will be what standard of evidence is necessary for a finding that there is reasonable assurance that the plant does meet .5g.

The Southern California representatives then asked if they had allayed my concerns. I said that as far as allowing restart before all the upgrade to .67 was concerned I did not have major legal problems. I wanted to look at the staff's technical analysis, however. My major concern was whether the plant met .5g and whether .5g is a part of the license. Again, I said I would have to see the staff's technical analysis. I also told them that I had a particular technical concern with not upgrading the saltwater intake. Mr. Baskin said that wasn't a problem because there were several other sources of water available - a water tank, a reservoir and fire trucks.

The Southern California representatives said they would keep in touch with my legal assistant to see if there were any additional questions they could answer or information they could provide.

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REMARKS

RE: SONGS 1

Attached is the paper we prepared for OGC. We still haven't seen the specific request. Please call Eileen McKenna to have any changes made and to transmit by 5520.

Eileen 27468

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

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SAN ONOFRE 1
SEISMIC REEVALUATION FOR RESTART

The "return to service" (RTS) scope proposed by the Southern California Edison Company (SCE) for San Onofre Unit 1 includes all safety-related structures, the reactor coolant pressure boundary, the main steam and main feedwater system boundary, capability to provide reactor coolant system makeup and capability to remove decay heat through the steam generators (to a hot standby condition) using the auxiliary feedwater system. The scope includes control power (nitrogen or electrical) for the required equipment. The spent fuel pool will remain intact, and provides a source of borated water for reactivity control, as well as an additional limited source of cooling water.

In an evaluation dated February 8, 1984, the staff concluded that the scope of seismic upgrades, which SCE proposed to complete, would be sufficient to ensure safe plant shutdown to a hot standby condition following a design-basis earthquake (0.67g) modified Housner ground response spectra. The seismic capability for the balance of plant systems and components, including cold shutdown capability, would be resolved in the SEP integrated assessment. The staff is presently preparing a Safety Evaluation Report for restart which addresses implementation of the RTS plan based on information developed through meetings, site inspections and analyses audits. The staff is issuing a request to SCE to document the findings necessary to complete the Safety Evaluation Report.

The staff's basis for concluding that plant operation would not pose an undue risk to the public health and safety is predicated on: (1) an assumption that a design-basis earthquake could occur before all of the seismic upgrades are completed; (2) the primary system and those portions of the secondary system,

including isolation boundaries necessary to ensure sufficient integrity to remove decay heat, have been upgraded to 0.67g; (3) the systems which would remove decay heat through either the steam generators, with active redundancy [1], have been upgraded to 0.67g; and (4) the auxiliary feedwater storage tank and spent fuel pool have been upgraded to 0.67g, and would provide a cooling water supply and supplementary reactivity control (without impairing safe spent fuel storage), respectively, to maintain the reactor in a hot standby condition for several days or more. Based on these provisions, the staff concludes that it is unlikely that a significant seismic event could occur during the time that it will take to complete the resolution of the seismic design issue, which would cause an accident or transient requiring the function of the systems for which seismic analyses and upgrading are not yet complete. Therefore, the plant would be able to achieve hot standby for a significant seismic event, at least up to 0.67g. This cooling water supply would allow sufficient time to assess plant damage from such an event and develop contingency plans to provide sufficient cooling water to achieve cold shutdown.

For systems and components not within the RTS scope, which principally consist of the accident mitigation systems, some upgrading has been completed. During 1982 and 1983 modifications were made to parts of these systems. Experience has been developed as part of USI A-46, "Seismic Qualification," and generic piping design studies which would suggest that, even though the analyses and

[illegible] There is a single, manual valve in the suction line to the spent fuel pool, which is a potential single failure point for that separate water source. However, the staff does not believe that a failure of this valve (passive or operator omission) coincident with a seismic event is likely for the limited time frame involved.

upgrading has not been completed, these systems would likely survive a significant seismic event and, with some minimal repairs, could perform their intended functions. However, an explicit correlation between this experience and the San Onofre Unit 1 systems, sufficient to quantify their seismic capability, would be almost as extensive and time-consuming as the analyses necessary to resolve this issue. Therefore, despite the improvements made and the related experience, the staff cannot unquestionably conclude at this time, that these systems would or would not properly function following a 0.67g earthquake.

Based on a finding that either (1) the Confirmatory Order established a licensed seismic design basis of 0.67g, or (2) a sufficient basis has been established to invalidate the original seismic design basis of 0.5g for these systems, exemptions or a license amendment may be necessary to authorize plant operation without a complete, established seismic capability for the accident mitigation systems. The licensee will formally be requested to identify and justify any necessary exemptions; they preliminarily have indicated that they do not agree with either of the findings by which exemptions would be necessary. Nevertheless, the staff has screened the regulations and plant license in an effort to identify the exemptions and license amendments that would be necessary, given that either finding is made, with particular emphasis on the GDC. The staff has not identified any license amendments associated with restart, other than that associated with the August 1982 Confirmatory Order for seismic modifications.

It is important to recognize that several issues have been identified which could similarly be related to regulatory requirements. Because these issues have not been the subject of orders or license conditions nor has a basis been developed to invalidate the original licensing basis, the staff has not considered that exemptions for these issues would be required (e.g., containment isolation configuration). This approach is consistent with that taken on other SEP plants.

Criterion 2 - Design Basis for Protection Against Natural Phenomena

In the discussion below, GDC 2, applies for all systems which are not within the RTS scope.

The applicable requirements of GDC 2 are "structures, systems and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions. The design bases for these structures, systems and components shall reflect: (1) appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena and (3) the importance of the safety functions to be performed."

Discussion

The basis for both 0.67g and 0.5g have been adequately documented; the latter in relation to the original license. As previously described, the staff believes that an adequate technical basis exists to conclude the plant can safely shutdown for such events, until the design of the remaining systems and components important to safety have been established and/or upgraded to 0.67g.

Systems Used for Reaching Cold Shutdown

Residual Heat Removal System

Component Cooling Water System

Circulating Water (Salt Water Cooling) System

Criterion 34 - Residual Heat Removal

"A system to remove residual heat shall be provided. The system safety function shall be to transfer fission product decay heat and other residual heat from the reactor core at a rate such that specified acceptable fuel design limits and the design conditions of the reactor coolant pressure boundary are not exceeded."

Criterion 44 - Cooling Water

"A system to transfer heat from structures, systems and components important to safety to an ultimate heat sink shall be provided. The system safety function shall be to transfer these combined heat loads under normal operating [illegible] conditions..."

Discussion

The return to service plan includes cooling capability to reach and maintain a hot standby condition by adding auxiliary feedwater to the steam generators and exhausting the steam to the atmosphere or, if necessary, "feeding and bleeding" the primary system for longer-term cooling with external water sources. This will permit the plant to be held in a stable condition while repairs are made to the above systems or until other sources of water could be obtained for longer-term cooling and eventual cold shutdown.

Accident Mitigating Systems

Safety injection system, including recirculation mode

Containment spray, including chemical addition

Containment Isolation

Criterion 4 - Environmental and Missile Design Bases

"Systems, structures and components important to safety shall be designed to accommodate the effects of conditions associated with...postulated accidents, including loss-of-coolant accidents. These structures, systems and components shall be appropriately protected against dynamic effects...that may result from events and conditions outside the nuclear power unit."

Criterion 35 - Emergency Core Cooling

"A system to provide abundant emergency core cooling shall be provided. The system safety function shall be to transfer heat from the reactor core following any loss of reactor coolant..." Note that, in this case, 10 CFR 50.46 does not apply because the fuel is clad in stainless steel (Interim Acceptance Criteria apply).

Criterion 38 - Containment Heat Removal

"A system to remove heat from the reactor containment shall be provided. The system safety function shall be to reduce rapidly...the containment pressure and temperature following any loss-of-coolant accident."

Criterion 41 - Containment Atmosphere Cleanup and 10 CFR 50.44

"Systems to control fission products...and other substances [including hydrogen] which may be released into containment shall be provided as necessary to reduce...the concentration and quality of fission products released to the environment following postulated accidents."

Criterion 50 - Containment Design Basis

"The reactor containment structure and the containment heat removal system shall be designed such that the containment structure can accommodate without exceeding the design leakage rate and with sufficient margin, the calculated pressure and temperature conditions resulting from any loss-of-coolant accident..."

Criterion 54 - Piping Systems Penetrating Containment

"Piping systems penetrating containment shall be provided with...isolation capabilities having...reliability and performance capabilities which reflect the importance to safety of isolating these piping systems..."

Discussion

GDC 4 relates seismic events to loss-of-coolant accidents. The other criteria relate to systems required to mitigate loss-of-coolant accidents. For the return to service plan the objective was to ensure integrity of components whose failure could lead to a LOCA, to preclude the need for LOCA-related systems.

The reactor coolant pressure boundary and the boundary of main steam and main feedwater piping have been upgraded to withstand the 0.67g earthquake. This scope also encompasses some portions of the containment isolation functions for lines directly connected to the reactor coolant system.

Since piping whose failure could lead to a loss-of-coolant accident has been upgraded to withstand an 0.67g earthquake, the likelihood of a seismically-induced LOCA requiring use of accident-mitigating systems is small.

Start Fuel Pool Cooling

Criterion 61 - Fuel Storage and Handling and Radioactivity Control

[illegible] systems shall be designed...[4] with a residual heat removal capability [illegible] reflects the importance to safety of decay heat and [illegible] residual heat removal."

The spent fuel pool cooling system has not been completely upgraded. Because of the extended outage in the cold shutdown mode, all of the fuel in the pool has been there for more than 2½ years. Thus, the decay heat level is substantially less than the design basis value. For example, during recent maintenance on the component cooling water system, spent fuel pooling was shut down for approximately two weeks with no significant increase in pool temperature.

As part of the RTS program, a connection from the spent fuel pool to the charging pump suction is being installed to provide a borated water source for primary system makeup to compensate for shrinkage. However, even using the system in this manner, procedures would ensure that enough of the pool water inventory will remain in the pool to ensure the integrity of the spent fuel.

The spent fuel pool and liner and connected piping below the top of the pool have been evaluated for structural integrity at 0.67g so that a seismic event will not result in an unplanned loss of inventory. The upper portion of the fuel storage building is composed of masonry walls which have been demonstrated to be capable of withstanding the 0.67g earthquake. Therefore, the walls will not collapse into the pool and damage the stored fuel assemblies.

UNITED STATES
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WASHINGTON, D. C. 20555

March 5, 1984

MEMORANDUM FOR: Frank J. Miraglia, Assistant Director
for Safety Assessment, DL

FROM: Dennis M. Crutchfield, Chief
Operating Reactors Branch #5, DL

SUBJECT: TELEPHONE CONVERSATION WITH CALIFORNIA PUBLIC UTILITIES COMMISSION - SAN ONOFRE UNIT 1.

On February 23, 1984 Walt Paulson, Eileen McKenna and I had a telephone conversation with members of the staff of the California Public Utilities Commission (PUC) concerning the hearings scheduled to begin on February 27, 1984 on whether or not San Onofre Unit 1 should be removed from the rate base. The focus of the conversation was the written testimony filed by David Fogarty on behalf of Southern California Edison Company before the PUC. We indicated that Fogarty's testimony appeared to be an accurate representation of the facts. The PUC staff then asked several questions relating to the following:

1) Schedule for completion of seismic modifications and staff review for restart.

2) What actions must be completed by the NRC staff and by the licensee for restart

3) Extent of NRC staff review of the analysis results, modifications and implementation.

4) The interrelationship of the integrated living schedule with the seismic restart program.

5) The impact of plant modifications of the different requirements for short and long-term operation as well as of staff exceptions to the restart criteria.

6) Any possible new requirements that could be imposed for restart.

7) Costs associated with modification.

We noted that the schedule will be basically determined by the licensee's ability to complete the analysis and modifications. Fogarty's testimony states that SCE's projection for return to operation is by December 31, 1984. The major non-seismic issues needed for restart are technical specifications and the steam generator inspection program.

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The PUC staff seemed particularly concerned with quality control of the implementation of the modifications. We noted the role of the licensee's quality assurance program and of the regional inspection efforts.

In the area of costs the PUC staff was referred to previous licensee submittals as well as to the filed testimony.

Dennis M. Crutchfield

Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Division of Licensing

cc: E. McKenna
L. Chandler
D. Eisenhut
W. Paulson