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SUBJECT: Forwards C-E repts, "Depressurization & DHR Responses to NRC Questions," Suppl 1 to "PRA of Effects of PORVs on Depressurization & DHR" & "Responses to Plant-Specific Questions on Depressurization,..." per 820327 request.

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June 22, 1983

Director, Office of Nuclear Reactor Regulation  
Attention: Mr. George W. Knighton, Branch Chief  
Licensing Branch No. 3  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362  
San Onofre Nuclear Generating Station  
Units 2 and 3

The NRC's letter of March 27, 1982, requested that SCE provide additional information relative to the existing capability of San Onofre Units 2 and 3 for rapid depressurization and decay heat removal without Power Operated Relief Valves (PORV's). License Conditions 2.C(24) and 2.C(19) of the San Onofre Units 2 and 3 Operating Licenses, respectively, require that SCE provide responses to the NRC's questions by June 30, 1983.

Because of the broad range of concerns, and the substantial effort required to prepare responses to the 14 NRC questions, SCE and other affected CE utilities developed responses to these questions under the sponsorship of the CE Owners Group (CEOG). Responses to Questions 6a, 6b, 12, 13a, 13c, 13d and 14 which address plant specific information were developed separate from the CEOG effort for each plant specific configuration. It should be noted that Question 14 addresses the CE System 80 steam generator design and is not applicable to San Onofre Units 2 and 3. The CEOG effort was separated into two major categories: 1) a performance evaluation of depressurization and decay heat removal, and 2) a probabilistic risk assessment of the effects of PORV's on depressurization and decay heat removal. The basic approach utilized in the CEOG effort was to perform a comparison of the existing plant design without PORV's with a plant design incorporating hypothetical PORV's in order to provide meaningful and valid responses to the NRC's questions.

Enclosed please find seven (7) copies of the following information which responds to the NRC's questions on depressurization and decay heat removal:

ENCLOSURE I - CEN-239, Depressurization and Decay Heat Removal Responses to NRC Questions, June 1983.

Enclosure I provides generic responses to NRC questions regarding the depressurization and decay heat removal capability of CE plants without PORV's. The information and data provided in CEN-239 are applicable to the 3410 Mwt and 3000 Mwt class plants. (San Onofre Units 2 and 3 are in the 3410

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ENCLOSURE II - CEN-239 Supplement 1, Probabilistic and Risk Assessment of the Effects of PORV's on Depressurization and Decay Heat Removal, San Onofre Nuclear Generating Station, Units 2 and 3, June 1983.

Enclosure II provides a probabilistic evaluation of the potential change in risks that would result from the addition of PORV's. The information provided in CEN-239 Supplement 1 is specific to San Onofre Nuclear Generating Station, Units 2 and 3.

ENCLOSURE III - Responses to Plant Specific Questions on Depressurization and Decay Heat Removal (Questions 6a, 6b, 12, 13a, 13c and 13d), San Onofre Nuclear Generating Station, Units 2 and 3, June 1983.

Enclosure III provides responses to NRC questions 6a, 6b, 12, 13a, 13c and 13d which were addressed separate from the CEOG effort by SCE because of the plant specific nature of the questions.

The responses to the NRC's questions regarding depressurization and decay heat removal indicate the following for San Onofre Units 2 and 3:

- o The existing auxiliary pressurizer spray (APS) provides a safety-related method for rapid depressurization enabling effective decay heat removal using the steam generators consistent with the recommendations of NRC Branch Technical Position RSB 5-1.
- o The rate of reactor coolant system depressurization can be more effectively controlled by the APS than with PORV's.
- o The APS provides a performance level comparable to PORV's for mitigating steam generator tube rupture (SGTR) events and for minimizing primary-to-secondary leak rate. As many as three tubes could be simultaneously ruptured in each steam generator and the plant could be cooled to shutdown cooling entry conditions using the safety grade APS without exceeding offsite dose limits.
- o The existing condensate pumps at San Onofre Units 2 and 3 can be aligned to deliver feedwater to the steam generators to facilitate steam generator cool down during certain postulated low probability scenarios, beyond the plant design bases, involving the extended loss of both main feedwater and auxiliary feedwater. Utilization of the condensate pumps for this purpose, in the unlikely event of extended loss of both the main feedwater system and the safety grade three pump auxiliary feedwater system, would decrease core damage frequency by approximately  $2 \times 10^{-6}$  per year per plant.

Mr. G. W. Knighton

-3-

- o The addition of PORV's would have a negligible impact on core damage frequency. The results of the probabilistic risk assessment for San Onofre Units 2 and 3 indicate that core damage frequency would decrease by less than  $1 \times 10^{-8}$  per year per plant for manually actuated PORV's and that core damage frequency would increase by approximately  $6.1 \times 10^{-7}$  per year per plant for automatically actuated PORV's.
- o The initial cost of design and installation of PORV's at San Onofre Units 2 and 3 is estimated to be approximately \$4.6 million. In addition, replacement power cost would be at least an additional \$2 million per plant and may be as high as \$35 million per plant depending on the "critical path" testing time that would be required specific to the PORV installation.

In summary, the results of the information developed in response to the NRC's questions indicate that the existing capability of San Onofre Units 2 and 3 for depressurization and decay heat removal is adequate and comparable to the capability that could be provided by the addition of PORV's, and that from cost/benefit and offsite dose analyses, there appears to be no clear benefit or incentive to justify the addition of PORV's for San Onofre Units 2 and 3.

SCE considers that the enclosed information satisfies the requirements of License Condition 2.C(24) and 2.C(19) of the San Onofre Units 2 and 3 Operating Licenses, respectively.

If you have any questions or comments, please let me know.

Very truly yours,

*VP Baskin*

cc: Mr. J. B. Martin, Regional Administrator  
U. S. Nuclear Regulatory Commission, Region V  
Mr. H. Rood, Project Manager, (to be opened by addressee only)