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ILLINOIS POWER COMPANY



CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

October 29, 1985

Docket No. 50-461

Director of Nuclear Reactor Regulation
Attention: Mr. W. R. Butler, Chief
Licensing Branch No. 2
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Clinton Power Station
Safety Relief Valve (SRV) In-Plant Testing

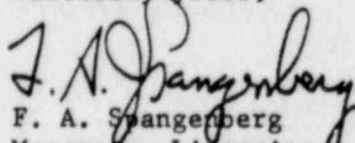
Dear Mr. Butler:

The Clinton Power Station (CPS) Safety Evaluation Report (NUREG-0854), Supplement #4, Section 6.2.1.8, states that SRV in-plant testing is not required for CPS. The NRC Staff further required that any specific concerns identified during the Grand Gulf Nuclear Station SRV in-plant tests would have to be assessed for impact on the CPS design. The attachment to this letter provides a comparison of the Grand Gulf Nuclear Station test data, Kuosheng Station test data (as supplied by Mississippi Power & Light Letter AECM-85/0268, dated 8/23/85) and the Clinton Power Station design.

Based on these comparisons, there are substantial margins in the SRV discharge loads and their predicted effects at CPS. Therefore, the results of the Grand Gulf in-plant tests further support the conclusions that SRV hydrodynamic loads have been adequately addressed in the CPS design and that additional in-plant tests at CPS are not required.

If you have any questions concerning this information, please contact me.

Sincerely yours,


F. A. Spangenberg
Manager - Licensing
and Safety

LRH/kaf

Attachment

cc: B. L. Siegel, NRC Clinton Licensing Project Manager
NRC Resident Office
Regional Administrator, Region III, USNRC
Illinois Department of Nuclear Safety

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Attachment

Comparison of the Grand Gulf Nuclear Station and Kuosheng Station
SRV In-Plant Test Data to the Clinton Power Station Design

Information related to SRV in-plant testing for the Grand Gulf (GG) and Kuosheng stations has been reviewed for applicability to the Clinton Power Station (CPS) SRV in-plant testing issue.

This review has determined the following:

1. The measured peak pressures for the single valve actuations, the consecutive valve actuations and the multiple valve actuation tests at GG were well below their expected values and the Kuosheng test results. For the single valve actuations and the consecutive valve actuations, the peak positive/negative pressure measured at GG were 7.47/-5.78 psid. These compare favorably with the values of 12.05/-9.44 psid measured at Kuosheng. The design values for GG, Kuosheng and CPS are 18.2/-7.7, 16.6/-7.38 and 20.2/-8.1 psid, respectively. For the multivalve actuations the peak positive/negative pressures measured at GG are 4.06/-2.60 psid. These compare favorably with the values of 10.11/-8.89 psid measured at Kuosheng. The design values for GG, Kuosheng and CPS are 10.3/-6.4, 9.85/-6.15 and 12.5/-6.5 psid, respectively.

The reduction in measured pressures at GG, compared with those measured at Kuosheng, are attributed to the difference in the taper of the inlet to the quencher device. At Kuosheng, GG and CPS the taper angle on the quencher inlet is 17.1°, 10.4° and 10.75°, respectively. Therefore, pressure reductions similar to those observed for GG would be expected at CPS.

2. The peak pressure measured inside the SRV discharge line and quencher at GG was 282 psig. This was higher than the 179 psig value measured at Kuosheng but well below the design pressure of 550 psig. The CPS design value is 625 psig.
3. The measured strains for the containment basemat and wall liners, the quencher support and the submerged piping for the tests were only a small fraction of the allowable values. The measured stresses for the piping and quencher supports were less than 1.0 ksi. The measured containment liner stresses were less than 5% of the yield values. These low stresses observed for GG would also be anticipated for CPS and would represent only a small fraction of the CPS allowable values.
4. The majority of the peak measured structural accelerations for the tests were less than 50% of the predicted values, and measured extreme values of the acceleration did not exceed the predicted values. The measured equipment responses were generally an order of magnitude less than the predicted values. This demonstrates that the high frequency content of the SRV pressure time histories are greatly attenuated by the attached piping systems and floors. The structural accelerations and equipment responses observed at the GG tests would also be expected at CPS.

5. The enveloped spectra developed for the single, consecutive and multiple valve cases were small compared to the design spectra for frequencies less than 60 Hz. In three of the twenty-three cases, the test spectra exceeded the design spectra at frequencies above 40Hz. However, this is not considered significant because the piping and quencher support acceleration and strain data show the actual response to be low due to attenuation of the high frequency responses by the structures. The enveloped spectra developed in the GG tests would be anticipated for CPS.
6. The frequencies of the pressure oscillations observed during the single valve actuation tests were in the 7 to 12 Hz range, which is also specified for design in GESSAR-II.

In conclusion, the above comparisons do not identify any special concerns requiring any further action to close this issue for CPS.