



VIRGINIA ELECTRIC AND POWER COMPANY, RICHMOND, VIRGINIA 23261

June 5, 1979

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Serial No. 453
PSE&C/CMRjr:mc

Docket Nos.: 50-280
50-281

License Nos.: DPR-32
DPR-37

Dear Mr. Denton:

REPORT ON THE REANALYSIS OF SAFETY
RELATED PIPING SYSTEMS
SURRY POWER STATION UNIT 1

The Nuclear Regulatory Commission Order to Show Cause of March 13, 1979 required that certain piping systems associated with Surry Power Station Units 1 and 2 be reanalyzed using an appropriate piping code to account for seismic loads. We complied with the Order requiring shut-down of the Units within 48 hours.

Since that time, an intense effort has been under way to analyze all affected piping systems in a manner acceptable to the NRC staff and commensurate with our commitment to provide a safe and reliable source of power for our customers. We have had the benefit of numerous discussions with the NRC staff to clarify and amplify their specific concerns with regard to the details of our reanalysis effort. We have been and are totally committed to provide the staff, on an expedited basis, with any information they require for their review of the Surry units.

We believe the culmination of the pipe stress analysis effort is at hand. The analysis to date, while continuing, has shown that the piping systems are impacted only slightly even after a thoroughly rigorous reanalysis. It has been unequivocally demonstrated that the impact on the piping systems is wholly incompatible with the severity of the Commission's Order. It is on this basis that we submit the attached Report and request immediate start up of Surry Power Station Unit 1.

Correspondence with the staff has transmitted a vast amount of information between the parties. A compilation of the transmitted information is tabulated in the attached Report in Appendix G for your convenience and reference.

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We would not feel justified in requesting an immediate lifting of the Order if the reanalysis had shown demonstrable and persistent modifications to piping systems. Such has not been the case. For example, of the approximately 74 piping problems to be reanalyzed, 29 have been completed as of June 2, 1979. Results show that no piping of any size will have to be replaced or repaired. Of the approximately 873 total supports to be reanalyzed, 138 analyses have been completed. None of those supports will require modification. In a cursory look at the balance of the supports to be completely reanalyzed, we have so far identified four supports which will require some modification. These modifications include addition of one snubber, shimming of one support and lateral braces for two supports. These modifications are not only minor, they do not even occur because of seismic stress conditions. Modifications are discussed in some detail in Section 5 of the Report. On the basis of these analyses and conservatisms contained in our analysis techniques as explained in our attached Report, we believe we have substantial justification for start up of Surry Unit 1.

As we continue our reanalysis effort, it is possible that other potential support modifications may surface. We will evaluate each of these potential modifications on a case by case basis in accordance with the guidelines delineated in Section 5 of the attached Report. We have several methods available to evaluate the necessity of a potential modification. For those modifications which we deem to be major in nature, we will contact you and solicit your involvement. Such modifications, once identified, will be expedited.

Modifications for the design basis earthquake (DBE) case which are considered to be less than major in nature in accordance with the guidelines in Section 5 of the Report will be made at advantageous times in the operating schedule of the unit.

The following two paragraphs specifically address the two items of your May 25, 1979 letter.

Your letter of May 25 requested information regarding operating basis earthquake (OBE) design requirements. For those supports which meet DBE requirements but do not meet the FSAR OBE design requirements, we have not as yet identified a requirement to reduce the present FSAR OBE design value. We will evaluate the OBE requirement as stipulated in Item 2 of your May 25 letter on a continuing basis for those piping systems which meet DBE design requirements but do not meet OBE design requirements. The basis for evaluation will be amplified response spectra (ARS) compatibility between the DBE and OBE cases. That is, if soil structure interaction is used in a piping system evaluation for the DBE case, it will also be used in the OBE case.

Your May 25 letter also requested information on the capability of piping systems to safely withstand all earthquakes up to and including the DBE. An investigation of the effects of earthquakes smaller than the DBE leads to the conclusion that the effects of the DBE are not exceeded by smaller earthquakes. This investigation will be covered in Section 7 of a detailed report on SSI-ARS to be submitted on or before June 8, 1979. Capability of piping systems can also be addressed in terms of the numerous conservatisms involved in the overall analysis. These are addressed in detail in the attached Report in Section 7.

Enclosure three of your April 2 letter addressed verification of certain computer codes, including the NUPIPE code being used on Surry Units 1 and 2, with standard benchmark problems developed by the staff and Brookhaven National Laboratory. These have all been previously forwarded except for one benchmark problem involving the analysis of a two loop NSSS, the results of which will be forwarded to the staff on or before June 8, 1979 by Stone & Webster Engineering Corporation.

Prolonged discussions have been held with the staff regarding the methodology and use of soil structure interaction in the development of amplified response spectra. A detailed report is presently being prepared to fully describe its use on Surry Units 1 and 2. The report will be submitted on or before June 8, 1979 and will be entitled "Soil Structure Interaction in the Development of Amplified Response Spectra for Surry Power Station, Units 1 and 2."

With the submittal of the SSI-ARS report (on or before June 8, 1979), the submittal of the two loop benchmark problem (on or before June 8, 1979), the submittal of information regarding the status and schedule of IE Bulletin 79-02 (letter dated June 4, 1979, Serial No. 146/030879A), and the information contained in the Report attached to this letter, we believe we have complied with all of the staff's outstanding requests for information. We plan no further submittals, except the final report on the piping analysis, unless subsequent evaluation of the above information by the staff leads to further inquiries. Because of the severe economic consequences of the present shutdown status of the plant, we plan to respond as quickly as possible to any questions the staff may have. However, we believe there is sufficiently detailed information available to the staff from this and past submittals, meetings, and telephone conversations to evaluate quickly and with confidence our request to lift the Order and resume operation of Unit 1.

We believe it to be in the best interests of our customers and the citizens of the Commonwealth of Virginia to minimize this country's dependence on oil. For Surry to be allowed to restart and to function during the coming hot months is commensurate with that goal. To be allowed

to do this requires a commitment to address safety concerns to the satisfaction of both ourselves and the NRC. We believe we have gone the extra mile in the case of the Surry pipe stress reanalysis effort and our findings fully justify our position to start up.

As stated in Section 4 of the Report, all reanalysis of Unit 1 systems will be completed and fully reviewed by Engineering Assurance personnel by October 1, 1979.

The staff's accessibility during our reanalysis effort is gratefully acknowledged and appreciated.

Prompt consideration and affirmation of our proposal would be appreciated.

Very truly yours,



W. C. Spencer
Vice President - Power Station
Engineering and Construction Services

Attachment