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SNUPPS
Standardized Nuclear Unit
Power Plant System

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November 22, 1983

SLNRC 83-0060 FILE: 0491.10.2
SUBJ: Interim Significant Deficiency Report (SDR) 83-12 re Class 1E/HVAC Duct Combination Supports

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U.S. Nuclear Regulatory Commission
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Administrator, Region IV
U.S. Nuclear Regulatory Commission
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Dockets: STN 50-482 and STN 50-483

Gentlemen:

The purpose of this letter is to provide an interim report of design deficiencies reportable per 10CFR50.55(e) involving combination supports used for (1) Class 1E electrical cable trays and (2) non-Category I Seismic HVAC ductwork located within seismic Category I buildings and subject to Regulatory Guide 1.29 (designated as II/I). The problem was initially reported to Region III (Konklin, Neisler) and Region IV (Johnson) on October 25, 1983 on behalf of the SNUPPS Utilities; i.e. Union Electric Company and Kansas Gas and Electric Company, as a generic deficiency applicable to both Callaway and Wolf Creek plants.

The problem initially involves the misclassification of 9 combination supports designed by Bechtel Power Corporation to support Class 1E cable trays and II/I HVAC ductwork. These supports, located in the Reactor and Auxiliary Buildings, were seismically analyzed by Bechtel; however, because of their incorrect classification, procurement and installation of these items was on the basis of the graded quality assurance program controls established for special scope items; e.g. fire protection; II/I, as opposed to the full-scope, design and construction quality assurance programs specified for safety-related, seismic Category I systems and components. The consequences, if any, resulting from these nine (9) safety-related supports having been procured and installed under the special scope, graded QA program is under investigation and will be addressed in the final report.

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In addition to the misclassification, four of the supports, all located in the Reactor Building, had been analyzed using an assumption that the supports were rigid. These items were confirmed to have been seismically analyzed on the basis of ZPA* accelerations appropriate for rigid structures. This assumption of rigidity and the use of ZPA accelerations appears to be invalid. A fifth support, also located in the Reactor Building, had not been previously analyzed for seismic loading. Reanalysis of all five supports, using proper seismic support frequencies and accelerations for Seismic Category 1 structures, indicates these supports will undergo plastic deformation possibly resulting in excessive deflection of Class 1E electrical cable trays. As a result, uninterrupted supply of electrical power to safeguard systems cannot be guaranteed. Furthermore, plastic behavior for these supports violates the design criteria for Seismic Category 1 items that such supports remain elastic under all loading conditions. These five supports will require redesign and field modification.

The remaining four supports are located in the Auxiliary Building. Upon re-examination, each was found to have been conservatively designed for SSE loadings based on peak accelerations. OBE loadings were also determined to be adequate. Consequently, these supports will not require design modification. The need for field modifications, if any, of these supports will be determined upon assessment of the acceptability of the quality assurance controls actually used during procurement and installation.

A follow up final report on this matter, detailing cause and corrective actions, will be provided to the NRC within 60 days from the date of this letter. If, in the interim, there are any questions, please feel free to contact the undersigned at (301)869-8010. Please note that the deficiencies described in this letter were also reported by Bechtel on October 25, 1983 to NRC Region 1 under Part 21 regulations and reporting criteria.

Very truly yours,

S. D. Seiken
Quality Assurance Manager

SJS/dck/22a20

*ZPA = Zero period acceleration

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