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TU ELECTRIC

March 22, 1993

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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NOS. 50-445 AND 50-446
MIXED CORE METHODOLOGY FOR LARGE BREAK
LOCA ANALYSES

REF: TU Electric Topical Report: "Large Break Loss of Coolant Accident Analysis Methodology", RXE-90-007, December 1990

Gentlemen:

This letter describes TU Electric's approach in the analysis of Large Break Loss-of-Coolant-Accidents (LOCAs) for CPSES Unit 1 and Unit 2 with mixed cores.

The referenced topical report describes the application of the NRC approved Siemens Nuclear Power (SNP) (formerly Exxon Nuclear Corporation), "EXEM/PWR Large Break LOCA Evaluation Model" to CPSES Unit 1 and Unit 2. Access to proprietary fuel vendor documentation enables TU Electric to perform detailed evaluations and specific Large Break LOCA analyses for mixed core configurations using the RXE-90-007 methodology.

A mixed core configuration may contain a combination of geometrically and/or hydraulically different fuel rod assemblies. If a single set of operating limits is applied, then the bounding operating limits are applied to all fuel types throughout the analysis. If significant operating limits differences exist, then the respective operating limits for each fuel type may be defined in the Core Operating Limits Report (COLR).

The following description outlines TU Electric's analysis approach. A system blowdown run using computer code RELAP4 is executed for a core model entirely as one fuel type. The boundary conditions from a single RELAP4 System Blowdown analysis can be used because the system behavior is principally governed by the break rather than any fuel types residing in the core. This approach will be verified by executing several RELAP4 system blowdown runs with different core models and comparing important parameters such as volume boundary conditions, end-of-bypass times, and accumulator injection performance.

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With the boundary conditions obtained from this system blowdown run, four separate RELAP4 hot channel analyses are performed for core models comprised of the following average core and hot assembly fuel type combinations;

Avg Core	Hot Assy
A	A
A	B
B	A
B	B

The mixed core transient response in the blowdown phase is determined in the RELAP4 hot channel calculations. For analysis during the reflood phase, a single computer code RFPAC run is executed establishing conservative core flooding conditions employing the highest core flow resistances and the limiting RELAP4 hot channel average core distribution. With the fluid boundary conditions obtained from the RFPAC run, four separate rod heatup calculations are performed using computer code TOODEE2; one TOODEE2 run for each RELAP4 hot channel hot rod temperature distribution.

TU Electric's analytical approach for evaluating the effect of mixed core configurations will ensure calculation of the limiting scenario and peak cladding temperature.

Sincerely,

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