## SAND80-0701 Addendum

## Addendum to Assessment of Core Penetration of a PWR Reactor Vessel and Part culat. Debris Coolability in TMLB', S2D, and ABG Accidents.

The ZIP report<sup>1,2</sup> raised the concern that the static pressure generated inside the primary vessel of a PWR from the quenching of a molten core in lower plenum water may be sufficient to rupture the ste m generator tubes. The pressure caused by core quenching was assumed to be that calculated by the MARCH code. The pressure required to cause failure was determined by a calculation since at that time the authors were unaware of experimental data available on burst pressures. The calculation used the conservative assumption recommended by the ASME code for nuclear components that failure would occur at the yield point.

Since the time of the report, the authors have become aware of experimental studies performed by Alzheimer, Clark, Morris, and Vagins at Battelle-Pacific Northwest Laboratory recently. In the study, samples of steam generator tubes were subjected to a static internal pressure with a back pressure of 1000 psi and a temperature of 600°F so as to mimic operating conditions. Both normal tubes and tubes with various prepared defects were tested. In addition the material properties of the Inconel-600 used in the tubes were measured.

Group	Tubing Size (inches)	Yield Strength (ksi)	Average Differential Burst Pressure (psi)
B	0.875x0.050	48	9325
Е	0.875x0.050	4.4	9542
F	0.875x0.050	40	9290
С	0.750x0.043	52	9737
D	0.750x0.050	4.4	11503
G	0.625×0.034	53	9413

TABLE 1. Non-Defective Steam Generator Tube Burst Pressure as Reported in Reference 3.

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