



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DEC 6 1983

MEMORANDUM FOR: Distribution

FROM: J. F. Costello
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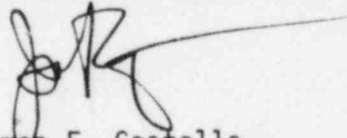
SUBJECT: SMALL STEEL CONTAINMENT EXPERIMENT

Model SC-3, the last in the series of tests on small steel containment models, was pressurized to failure on December 2, 1983. The enclosure shows the geometry of the small model series. Model SC-3 was designed to check the fidelity of analytical predictions of behavior in the vicinity of large penetrations. It included geometrically accurate representations of an equipment hatch and two personnel locks, including reinforcement around the penetrations.

Pressure testing began on November 30. While still in the elastic range, at 50 psig, the equipment hatch closure buckled in a "snap-through" mode. This was anticipated, although at higher pressure. Then, to preclude premature failure by tearing of the closure, a heavy cover plate was welded over the hatch.

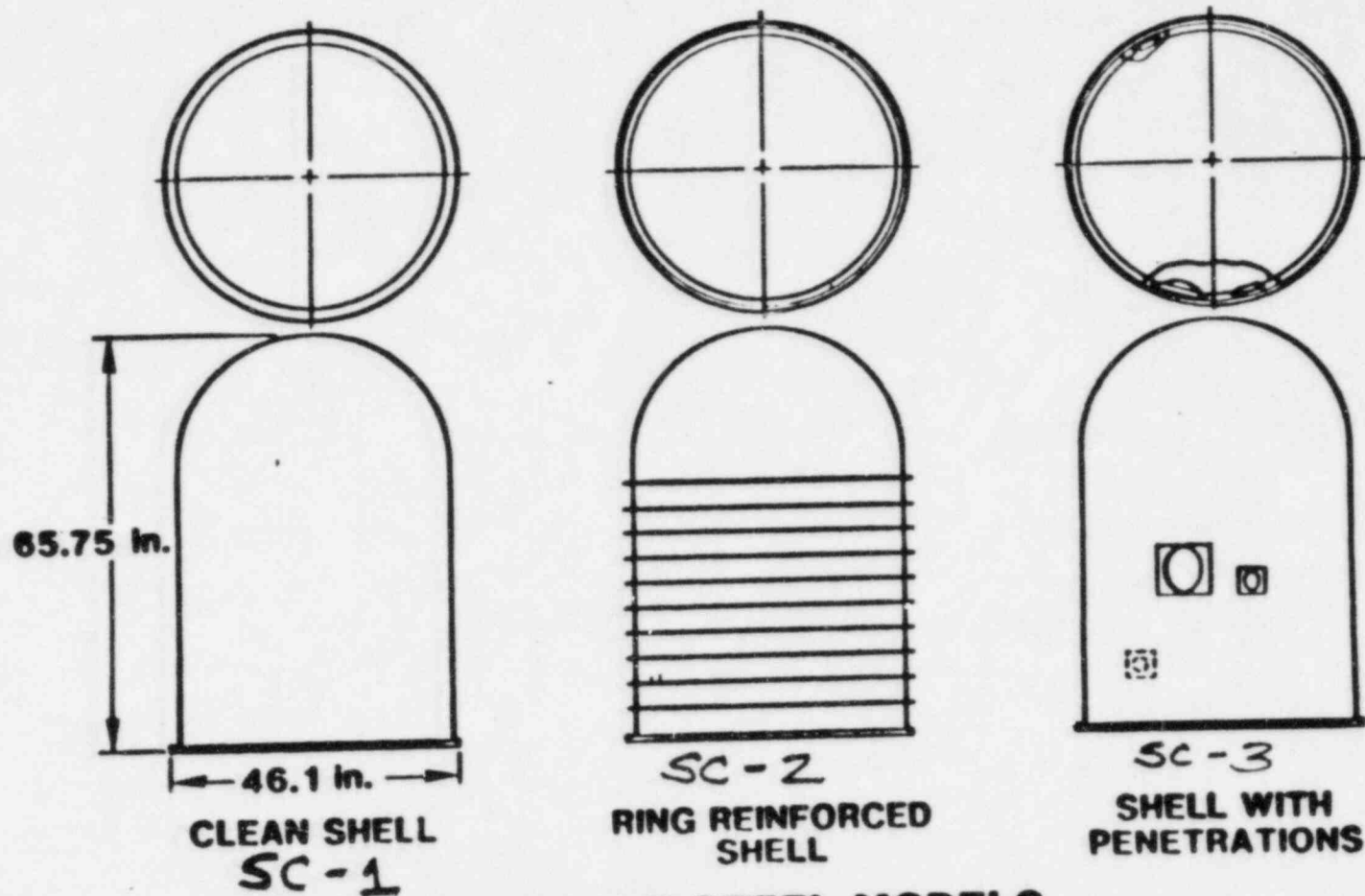
Pressure testing was resumed on December 2. Membrane yielding began at around 80 psig and was clearly evident at 85 psig. After about 30 minutes at 120 psig, the model seemed to have stabilized and measurements were initiated. During the measurements, the vessel failed explosively. The hoop strain was 14 per cent. The last complete set of data was that taken at 115 psig.

Preliminary indications are that failure initiated in regions of strain concentration around the major penetration, but that remains to be verified. A more complete report will be available when the data have been reduced.


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Enclosure: Sketch of Models

831219/84 X A 2pp.



1/32 SCALE STEEL MODELS

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