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MEMORANDUM FOR: John T. Greeves, Chief
Engineering Branch, WM, NMSS

FROM: Charles E. MacDonald, Chief
Transportation Certification Branch, FC, NMSS

SUBJECT: STRUCTURAL REVIEW OF THE NUPAC FAMILY OF HIC'S UNDER BURIAL LOADING CONDITIONS

In response to your memorandum of May 30, 1985, we have reviewed the adequacy of the NUPAC family of HIC's under burial loading conditions. In general, the topical report is not adequate. This is because design criteria for the HIC's has not been established and all HIC's within the family shown to meet the criteria. Enclosed are additional comments on the report.

Mr. D. T. Huang is our contact for this review.

Charles E. MacDonald, Chief
Transportation Certification Branch
Division of Fuel Cycle and
Material Safety, NMSS

Enclosure: As stated

Encl to memo dtd: JUL 0 9 1985

1. Design criteria for the HIC's that will be used in conjunction with the analysis should be stated and each proposed HIC shown to be within the criteria.

   Note that since primary bending stresses are negligible for the plate thickness used, the allowable stress intensity value should be Sm.

2. The applied load (or stress) on the HIC's is limited to two-thirds of the value of the buckling load (or stress) calculated. The adequacy and the basis of such a safety factor should be addressed.

3. The family of HIC's should be analyzed for burial on the side.

4. The three smaller drum type containers should be analyzed for all burial conditions.

5. The adequacy of welds and closure bolts for the NUPAC family of HIC's, including the smaller drum type containers, under burial loading conditions should be analyzed.

6. The computer inputs for the beam elements including sectional properties, material properties, and end conditions for the 24-inch lid configuration HIC's should be provided.

7. The internal vertical stiffeners for the 24-inch lid configuration HIC's should be checked for stability.

8. Several places in the topical report refer to the lid and bottom stiffeners as the vertical stiffener or internal stiffener for the full open top configuration. This should be clarified.