

A-4165

PDR - (1)
LPDR - (6)
WM - 10 (2)
WM - 11 (2)
WM - 16 (2)

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January 13, 1987

Mr. K.C. Chang
623-SS
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Chang:

REVIEW OF BUCKLING DOCUMENT

Ref. BHI/ONWI-597, "Buckling Design Criteria for Waste Package Disposal Containers in Mined Salt Repositories", R.H. Mallett, December 1986.

Recently I received a copy of the reference document. I have reviewed it and will pass a copy on to Loren Zaremba for his comments.

You may recall that the NRC comments on the salt Environmental Assessment pointed out what we felt was an inadequate treatment of mechanical loading on the containers. The document may represent work done in response to the comments. The concerns have been addressed well.

Although the document was prepared for the salt program, much of the analysis is applicable to other containers as well. The writing is quite clear, and the reasoning is thoroughly explained.

The author reviewed the literature, applied what I believe is good judgment, and developed guidelines for buckling analysis of salt packages. He further recommends confirmatory testing to verify the appropriateness of the guidelines.

If the author's guidelines and recommendations are carefully followed, the analysis in general should be acceptable to NRC. There are, however, some caveats to keep in mind. One aspect of the buckling analysis is the container thickness. A corrosion analysis is used in determining the thickness. The author clearly recognizes that the preliminary analysis presumes uniform corrosion and that stress-related effects on corrosion rate and corrosion effects on material properties were not considered (see p. 86). He assumes these considerations would be covered in the selection of materials and the specification of allowable stresses.

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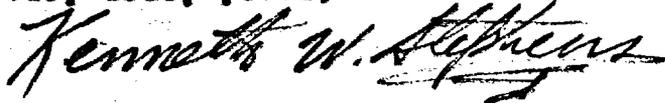
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I must give the author credit for a good sense of humor. On page 85, he says, "Given the temperature history, the time dependence of the container thickness due to corrosion is readily calculated."

In summary, the report represents a good, solid analysis that is clearly explained along with appropriate caveats. The people at NRC who review stress analyses for nuclear power plants should review this document for consistency with NRC practices. However, I am sure they will feel comfortable with the general approach. As with other aspects of the DOE program, NRC will want to review the specific implementation as it progresses.

Please call me if you have any questions.

Very truly yours,



Kenneth W. Stephens

cc: Loren Zareba