71-9192

RETURN TO
A. Machlin
396-SS

FCTC:RHO
71-9192

MAY 17 1985

ANEFCO, Inc.
ATTN: Dr. John D. Murphy, Sr.
P.O. Box 433
Ridgefield, CT 06877

Gentlemen:

This refers to your application dated May 1, 1984; supplemented July 31, August 3, November 29, and December 4, 1984; and February 13 and April 9, 1985; requesting approval of the Model No. AP-300 Type A packaging.

In connection with our review, we need the information identified in the enclosure to this letter.

The additional information requested by this letter should be submitted in the form of revised pages to your original application within 90 days from the date of this letter. If you have any questions regarding this matter, we would be pleased to meet with you and your staff.

Sincerely,

Original Signed by
CHARLES E. MACDONALD

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

Enclosure: As stated

Distribution: w/encl
RHOdegaarden (2)
HWLee
WHLake
CRMarotta
CEWilliams
Docket File
NRC PDR
IE HQ
Region I
NMSS R/F
FCTC R/F

OFFICE	FCTC	FCTC	FCTC	FCTC	FCTC	FCTC
SURNAME	RHOdegaarden:alm	HWLee	WHLake	CRMarotta	CEWilliams	CEMacDonald
DATE	05/17/85	05/17/85	05/17/85	05/17/85	05/17/85	05/17/85

NRC FORM 318 (10-80) NRCM 0240

OFFICIAL RECORD COPY

ANEFCO, Inc.
Model No. AP-300A Package
Docket No. 71-9192

Encl to ltr dtd: MAY 17 1985

STRUCTURAL

1. On Drawing No. 133-1, Rev. 3, the required number of parts B-8 (lifting pad) should be four rather than one as shown.

2. Section 2.4.4 - Tie-down Devices

   a. Since the tie-down cables can resist tensile force only, the analysis should not assume the resultant force is equally distributed to all four tie-down lugs. The maximum tie-down force acting on one lug should be derived on equalibrium condition considering the angles between the tie-down cable with the vertical and the direction of travel and also the reaction force of the chocking ring at the base of the cask.

   b. For fillet welds, the effective throat area should be used (see page 2.4-12).

   c. Page 2.4-14 states that the tie-down lugs were welded to the cask body using full penetration weld all around. Drawing No. 138-1, Rev. 4, however, shows 5/8" fillet weld all around. Please clarify the size and type of welds for the tie-down lugs.

3. The evaluations of the top end drop is not adequate. Since the cask lifting lugs are stronger than the welds attaching the lugs to the cask, the lugs would be sheared off rather than be crushed. Therefore, the analysis should show that the lid closure bolts can sustain an impact force large enough to shear off the lugs without damage. For simplicity, the analyses may use a dynamic load factor of two against the static value of the lifting lug weld capacity to simulate an impact condition. After the cask lifting lugs are sheared off, the cask will then impact on the lid lifting lugs (see Drawing No. 133-1, Rev. 3). It would be necessary then to show that the lid would not deform significantly under this secondary impact condition and that the cask would remain sealed.

4. For the Heli Coil inserts, show explicitly how the bolt thread length, the overall bolt length, the insert length, and the full tapped depth are selected based on the strength of the base metal and the bolts.

5. The response to our question regarding the corner drop is not adequate. Provide the following information:

OFFICE ▶							
SURNAME ▶							
DATE ▶							

a. Since the cask is constructed by thin plates and shells filled with lead, it is not reasonable to assume that all cask deformation will be crushing of steel without any indention or flexure. The applicant should show (by elastic analysis) that the cask indention or flexure deformation is insignificant when the cask is subjected to the impact force associated with the corner drop so that the lid will remain sealed.

b. On page 2.6-17a, it appears that the equivalent "g" load has been resolved into vertical (parallel to cask axis) and horizontal (perpendicular to cask axis) components. Thus, there is no justification to further reduce the moment arm by multiplying sin 40.28° to the cask radius. It is also noted that the analysis has not combined the effects of tension and shear on the bolts. These factors should be considered in analysis.

6. The evaluation for the bottom drop condition is not adequate. Provide an analysis to show that the lid would not have significant deformation due to the large equivalent "g" load associated with the bottom end drop so that the cask would remain sealed.

SHIELDING

Provide a shielding analysis demonstrating the package can transport 150 thermal watts of radioactive material.

ACCEPTANCE TESTS AND MAINTENANCE PROGRAM

In Section 8.2.2, provide an acceptance criterion for the annual 1×10^{-3} atm-cc/sec helium leak test.