

71-9159

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C. Macdonald  
396-55

DEC 20 1982

FCTC:RHO  
71-9159

Nuclear Packaging, Inc.  
ATTN: Mr. John D. Simchuk  
815 South 28th Street  
Tacoma, WA 98409

Gentlemen:

This refers to your application dated June 25, 1982, as supplemented October 29, 1982, requesting approval of the Model No. NUPAC Series A packagings.

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

Please advise us within thirty (30) days from the date of this letter when this information will be provided. The additional information requested by this letter should be submitted in the form of revised pages. 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

CRMarotta

EPEaston

CEWilliams

Docket File ✓

NRC PDR

IE HQ

Region V

NMSS R/F

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PDR ADOCK 07109159  
C PDR

OFFICE ▶	FCTC R/F	RHO FCTC	HW Lee FCTC	FCTC <i>[Signature]</i>	FCTC	RHO for FCTC	FCTC
SURNAME ▶	RHOdegaarden:alm	HWLee	CEWilliams	EPEaston	CRMarotta	CEMacDonald	
DATE ▶	12/20/82	12/20/82	12/20/82	12/17/82	12/20/82	12/20/82	12/20/82

NUPAC Series A Packaging  
Docket No. 71-9159

Encl to ltr dtd: ~~DEC 20 1982~~

STRUCTURAL

Drawings

1. Delete the words "or equivalent" from Note 1 on Drawing No. X-20-204D. All materials should be specified. The number of each closure and lifting and tie-down device should be specified on the drawing.
2. Indicate on the drawing that all ASTM-A516 Grade 70 steels are normalized or made to "Fine Grain Practice" since the Safety Analysis Report was based on material with these properties.
3. Weld capacity should be reduced if not inspected by non-destructive examinations. If full strength is desired for welded joints, Note 9 on Drawing No. X-20-204D should be revised to specify the means of non-destructive examinations. Either the magnetic particle or liquid penetrant method in accordance with ASME Section V, Article 7 and Article 6 may be used. The acceptance standards should be in accordance with ASME Section VIII Division 1, Appendix 6 and 8, respectively.
4. Dimension "H" (Sheet 1 of Drawing No. X-20-204D) for Model NUPAC 10/140 does not appear to be compatible with the ratchet binder dimensions given on page 2-75 of the SAR. Please clarify.
5. On Sheet 2 of Drawing No. X-20-204D:
  - o Show the weld joint requirements for the long seams of the inner and outer shells of the cask body
  - o In Section A-A, specify the depth of the tapped holes used to retain the secondary lid.
6. Provide engineering drawings of the NUPAC cask binders shown on page 2-75. Also, provide test and acceptance criteria in arriving at rate capacity. This is necessary because there is no indication that the binders are standard, off-the-shelf items.

Analysis

7. The effective throat for partial penetration groove welds combined with fillet welds and the allowable stress should be in accordance with AISC, Manual of Steel Construction. If not, adequate justification should be provided. (Justification provided in the response to our previous comment is applicable to fillet welds alone.) Also, the resultant stress on welds should be the vector sum of all stresses.

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8. The design moment  $M_E$  on page 56 of the Safety Analysis Report is not valid (considers only the weight of the lid). The weight of the content impacted on the lid must be included in the design.
9. More extensive explanation should be provided for the finite element analysis. In this regard, the material properties, the plate thickness, the locations and the magnitudes of the spring forces representing the lead, the boundary conditions, and the reaction forces must be presented. Also, more detailed output should be provided with regard to displacements and stresses. Provide description if the output is not self explanatory. Based on the finite element analysis, evaluate the ratch binder lug induced stresses in the shell.
10. Evaluate the stresses in the lid (including plate bending) for the corner impact condition. Note that the lid plates are joined only at the edge and may not develop full composite action. Also, the opening for the secondary lid should be considered in the analysis. Loads on the secondary lid may be applied to the lid as concentric line load at the opening.
11. Evaluate the stresses in the bottom plate including plate bending under the corner impact condition. If composite action is assumed for the two plates, provide appropriate calculations to show justification. Note that the analysis should include both the weight of the bottom plates and the weight of the content. Also, if the analysis assumes fixed edge boundary, moment resistance capability should be shown.
12. Since the plate sizes (thickness, dimension) and the weight of the content varies for each cask model, analysis should be performed for each model (Items 6, 8, 9) unless an envelope approach (i.e., the worse condition) was adopted.

CONTAINMENT

Show that a meaningful soap bubble leak test can be performed on the gasketed seal(s) of the package.

THERMAL

Revise Section 1.2.1.11, Heat Dissipation, to be consistent with the second paragraph of Section 3.1 (page 3-1).

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OPERATING PROCEDURES

1. Revise the operating procedures to provide details on water (liquid) removal from cask cavity with and without a drain line. Package decontamination should be taken into account. Current package drawing requires each package to be equipped with a drain line but text states the drain line is optional. Please resolve differences.
2. The lid alignment guides referred to in Section 7.4.3(b) (Item 14 on the drawing) do not appear obvious on the cask body. Also, any paint marks should be accounted in the maintenance program. These marks should be clear and unambiguous and a repainting criteria specified.
3. Lubrication of all closure devices (threads) prior to each closure should be specified.

ACCEPTANCE TESTS AND MAINTENANCE PROGRAM

1. Describe the procedure to be followed for periodic inspection of the containment vessel welds or describe the inspections to be performed during fabrication to assure the integrity of the containment vessel welds which are subsequently covered by stainless steel sheet.
2. Appendix 8.3 Gamma Scan for Shielded Containers (Laboratory Calibration Method):
  - o Show how the Acceptance Criteria (Section 7.1) would preclude the acceptance of a large area of the cask having a single reading greater than the value of  $M_1$ .
  - o Acceptance by similar process is acceptable for this cask design since the cask body is the only lead filled weldment. Designs requiring other cask components to be filled with lead would have to be evaluated on a case basis. (No response to this comment is expected at this time.)
3. Appendix 8.4 Gamma Scan for Shielded Containers (Field Calibration Method):
  - o In Section 7.0 Acceptance, show how the calibration curve would accommodate a lead thickness greater than 2.5 inches.
4. Provide your maintenance program.

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