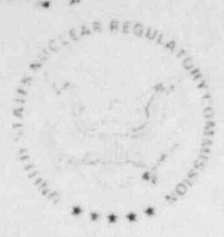


Docket 70-371

DCS



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

OCT 1980

FCUP:RLS
70-371

United Nuclear Corporation
Naval Products Division
ATTN: Mr. William F. Kirk, Manager
Nuclear and Industrial Safety
67 Sandy Desert Road
Uncasville, Connecticut 06382

Gentlemen:

We have reviewed the classified application dated September 19, 1980, concerning changes in your storage criteria. Our review has revealed a need for additional information as identified in the Enclosure. We will continue our review following receipt of the additional information.

Sincerely,

Robert L. Stevenson

Robert L. Stevenson
Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle and
Material Safety

Enclosure: Comments and Questions
on Application Dated September 19,
1980, Docket 70-371

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Comments and Questions on Application
Dated September 19, 1980, Docket 70-371

1. Page 8.3-2 -- Proposed changes to the text of Section 8.3 imply that additional material (other than described in the existing text of Section 8.3) is to be stored in the room. It is not clear where the material will be stored or what interaction criteria were used for the overall analysis of the total room inventory. Please explain and provide additional justification if deviations from the existing analyses and storage arrangements are to be made.
2. Pages 7.3-1 and 7.3-2 -- Paragraph 7.3.1.1.1 quotes surface density criteria from Document LA-3366, Rev., by H. C. Paxton. It is not clear what requirements you plan to impose in the use of the criteria, whether the criteria apply to your situation and whether the criteria provide for safe conditions. Further information to justify your use of the criteria is necessary for reasons explained below.
 - a. There are no limits on array reflection.
 - b. The quoted maximum unit mass exceeds 0.3 of the bare critical mass. (See Table 4.4 of TID-7016, Revision 2.)
 - c. There are no limits on the material of the packaging, notably moderator content.
 - d. There are no vertical spacing requirements for stacked units (subparagraph 5 of 7.3.1.1.1).
 - e. The safety margin provided by the use of the LA-3366 criteria may be inadequate:
 - (1) Use of the storage criteria based on Tables 4.1 and 4.2 of TID-7016, Rev. 2, indicates that a finite array (about 192 units) of Mass Category HH would have a surface density of about 3 kg/ft^2 as a single layer array and would approximate Paxton's criterion for surface density as a 4 deep finite array of units of smaller mass than you would allow without restriction on number of units.
 - (2) Use of the formula on page 85 of TID-7016, Rev. 2, to calculate the surface density of a concrete-reflected slab of enriched uranium of high density indicates that the critical mass per unit area is about 5.9 gm/cm^2 . This is only a fraction of Paxton's "safe" criterion.
3. Was the application given an internal review in accordance with the license requirements quoted in subparagraph 6 of 7.3.1.1.1 and if not, why not?
4. On what basis are the materials you plan to store equated to the material listed in Table VII of LA-3366, Rev.?

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