

APR 9 1971

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Aerojet Nuclear Systems Company  
ATTN: Mr. Barry Breindel  
Post Office Box 13070  
Sacramento, California 95813

Gentlemen:

This is in reference to your petition dated February 18, 1971, to the Department of Transportation (DOT) for a special permit for the shipment of the URIPS-8 radioisotope thermoelectric generator. As you are aware, we have been requested by DOT to review this generator against the applicable standards of 10 CFR Part 71.

We have completed our review of the thermal aspects of your petition and will complete the structural review in the near future. From page 46 of your petition we note that the Hastalloy C-276 temperature reaches a maximum of 2300°F during the fire test. Because this temperature is very close to the melting point of the Hastalloy C-276 capsule (2318 to 2331°F), we need the following additional information:

1. A demonstration that the capsule will not rupture during the fire test. This demonstration should take into account internal gas pressure, strengths of welds and capsule material at these elevated temperatures, and the maximum thermal power of the capsule (the present thermal analyses assume 350 watts whereas page 1 of Appendix A indicates a possible 365 watts). In addition, uncertainties in the calculations should be identified and taken into account.
2. A list of the values and the sources of the values for the thermal conductivities of the generator materials as a function of temperature. Special attention should be given to the T/E converter including the micro quartz and the bellows. In addition, we desire the atom densities and the specific heats of the materials. Also, calculations should be submitted showing how the generator fins were taken into consideration in the thermal calculations.

Sincerely,

Original Signed by  
Donald A. Nussbaumer

Donald A. Nussbaumer, Chief  
Fuel Fabrication and

OFFICE ▶	DML	DML	Transportation Branch	DML	DML
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	Mr. Alfred W. Grella				
DATE ▶	Department of Transportation			4/ /71	4/ /71