



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

RHODE ISLAND ATOMIC ENERGY COMMISSION
Nuclear Science Center
South Ferry Road
Narragansett, R. I. 02882

September 15, 1982

U. S. Nuclear Regulatory Commission
Attn: Chief, Standardization and
Special Products Branch
Division of Licensing
Washington, DC 20555

License R-95
Docket 50-193

Dear Sir:

It is hereby requested that the technical specifications for the Rhode Island Nuclear Science Center research reactor be amended to permit the installation and use of graphite reflectors which are slightly different from those presently used. These differences are necessitated by the changes in materials and their standard dimensions and designations which have occurred since the original reflectors were fabricated.

Amendments are requested in two sections of the technical specifications as follows:

Page 7, Section E.1. Principal Core Materials

Change the entry for "Reflector" to read:

AGOT grade (or equivalent) graphite and/or water.

Justification: This change will make it explicitly clear that any graphite the equivalent of AGOT is suitable. AGOT is a designation which was in common usage when the original reflectors were fabricated. At present, graphites with characteristics comparable to AGOT are available with different designations. For example, a graphite called "nuclear grade 2" is available with characteristics comparable to AGOT.

Page 8, Section E.3. Reflector Elements

Change the entire section to read:

overall reflector element dimensions, nominal	3 in. x 3 in. x 40 in.
Nominal clad thickness	.1 in.
Nominal graphite dimensions	2.8 in. x 2.8 in. x 28.7 in.

A020

8209210208

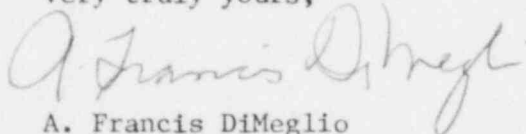
Justification: This change will make it possible to utilize standard size extrusions of aluminum for the fabrication of the "can" (clad) which surrounds the graphite. No change will be made in the outside dimensions and shape (envelope) of the reflector piece. The dimension change is an increase in the wall thickness of the aluminum can which surrounds the graphite and a corresponding decrease in the cross section dimensions of the graphite. This should create no significant differences in the performance of the reflector piece for the following reasons:

1. The center line temperature of a reflector with the thicker clad will be the same or smaller than the center line temperature of a reflector with the thinner clad. This is because the aluminum has a much bigger thermal conductivity than the graphite which it replaces and because the heat generation source terms do not substantially change.
2. The increased amount of aluminum at the interface between the reactor core and the graphite reflector will have a negligible effect on the nuclear characteristics of the overall core. Because the aluminum has a higher neutron absorption cross section than the graphite it replaces, the overall effect will be one of a slight decrease in the reactivity worth of a reflector because of a small increase in absorption of thermal neutrons.
3. The strength of the aluminum container will be greatly improved.

It is requested that these amendments be approved as soon as possible so that the new reflectors may be utilized.

Thank you for your effort in this matter.

Very truly yours,

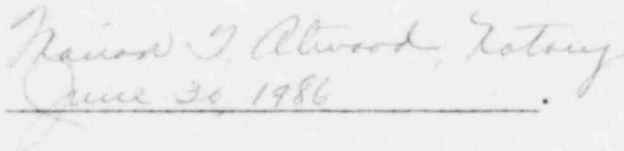


A. Francis DiMeglio
Director

AFD:cd

Signed and sworn to before me this 16th day of
September, 1982.

My Commission expires on



June 30, 1986