5/11/66

MAY 11 1966

Docket No. 50-146

Saxton Nuclear Experimental Corporation
P. O. Box 99
Saxton, Pennsylvania

Attention: Mr. W. H. Layman
General Manager

Gentlemen:

Based upon our review of the report "Safeguards Report for the Saxton Reactor Partial Plutonium Core II," and meetings held on May 4 and May 5 with an ACRS Subcommittee and members of the Division of Reactor Licensing Staff respectively, we request that the additional information listed in the attachment be supplied in support of your proposed partial plutonium core loading program.

Your reply should be submitted with three copies signed under oath or affirmation plus 37 additional copies.

Sincerely yours,

Original Signed By
R. L. Doan

R. L. Doan, Director
Division of Reactor Licensing

Enclosure:
As stated above

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Additional Information

1. In order to provide a basis for evaluating the conservatism of the parameters used in the accident evaluation sections of the report, provide verification that the physics parameters measured in the critical experiment at [redacted] are at least as conservative as those assumed for the accident evaluations. In addition, verify that the proposed loading will be with a central plutonium region.

2. It is proposed that some of the PuO_2 fuel in Core II will operate at specific power levels of up to 16 kw/ft. To enable us to evaluate any significant safety problems associated with operation at this proposed specific power, provide a discussion of the results of such operation involving UO_2 fuel at the Saxton reactor.

3. We understand that new information concerning the conductivity of uranium dioxide at high temperatures is available. Provide a curve of uranium dioxide conductivity as a function of temperature on which these new data points are included.

4. The Saxton reactor is the first licensed nuclear power reactor in which a plutonium core loading is to be used. To enable us to evaluate a possible manner in which plutonium might be released to the environs, provide a discussion of those operating procedures which will assure that plutonium which may be in the containment building as contamination will not be transported to the remainder of the site or to the environs. In addition, discuss why the limits of sensitivity of the various monitoring equipment and the health physics procedures proposed are adequate to assure that 10 CFR 20 limits for plutonium will not be exceeded.

5. In the accident analysis section of the report it is stated that each accident was analyzed using that combination of system parameters which would give the most serious consequences. Indicate the manner in which it can be assured that the most adverse combination of parameters has been selected, and provide the range of parameters considered for each accident analysis.

6. In the report it is stated that the results of the chemical shim experiment program have demonstrated that a boron release accident as originally postulated is not credible and, accordingly, the requirements of an unexplained reactivity limit are no longer required. Provide a description of the results of the chemical shim work at Saxton so that we may evaluate the safety considerations of deleting this requirement.

7. Provide an estimate of the amount of plutonium that might be released to the containment in the event of the "maximum hypothetical accident" to enable a more definitive evaluation of the consequences of this accident. In addition, provide an evaluation of the amount of plutonium that might subsequently reach the environs.

3. Since plutonium requires somewhat more stringent considerations of the reactivity requirements for fuel storage than uranium, provide an evaluation of the adequacy of the Hanford fuel storage facilities for plutonium fuel.