

NRC PDR



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

July 20, 1979

Docket No.: 50-243

Dr. C. H. Wang
Reactor Administrator
Oregon State University
Corvallis, Oregon 97331

Dear Dr. Wang:

On July 5, 1979, our staff discussed your request of April 16, 1979, for amendment to the license for the Oregon State TRIGA Reactor with your Mr. Terry Anderson. During that discussion we requested additional information. The enclosure to this letter provides the documentation for that request. We request the requested information or a schedule for providing the information within 30 days.

Sincerely,

A handwritten signature in cursive script that reads "Robert W. Reid".

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Enclosure:
Request for Additional
Information

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REQUEST FOR ADDITIONAL INFORMATION
OREGON STATE UNIVERSITY TRIGA REACTOR
NEW INSTRUMENTATION

Upon review of your submittal of April 16, 1979 concerning modifications to the O.S.T.R. Technical Specifications, several areas are in need of clarification for proposed changes 1 through 4. Specifically.

1. Please document that the new linear "safety power level" channel and the existing percent power channel will use separate ion chambers?
2. Provide additional supporting information and test results or analyses that will support your contention that the new instrumentation package (modification) will be more reliable than the previous system.
3. Describe the "burn-in" procedures to be used for the new instrumentation. What criterion will be used to establish an adequate level of reliability?
4. Describe the new calibration circuits for linear and log power and period, and discuss test methods employed (a) prior to startup and (b) during operation.
5. We understand that, because the fission chamber for the new Linear-Log channel is physically larger than the existing fission chamber, it cannot be located in the same position.

Discuss and compare the new fission chamber location to the previous location with regard to source-fuel-detector geometry, including consideration of potential detector shadowing. Provide a diagram indicating the positions of all other proposed instrumentation detectors relative to the source and fuel.

6. Provide a diagram similar to Fig. 3-10 of the Safety Analysis Report for the O.S.U. Triga Reactor reflecting the new ranges of the proposed channels.
7. The letter of April 16, 1979 (enclosure 2, page 2, item 8) indicates that the proposed change includes new "power supplies, including a high voltage supply (Model HV-6)." For each channel of the existing instrumentation and of the proposed instrumentation, provide a list indicating the detector power supply, loss-of-high-voltage protection (i.e., alarm, scram), and other power supplies.
8. Describe the new pulsing logic.

9. It is our view that the new instrumentation would consist of 3 safety channels instead of the 4 safety channels in your present instrumentation. Please provide your design bases for determining that this reduction in the number of safety channels will provide an acceptable degree of protection.
10. We understand that by failure of the proposed log-linear channel detector, the linear channel could read low, and consequently cause the control system to automatically start pulling control rod(s). In such an event, period protection would also be lost. It appears that in this situation, the new instrumentation does not provide the degree of safety present in the existing instrumentation, where period protection would still be available. Please provide your basis for determining that the proposed instrumentation will provide adequate protection.
11. For the proposed log-linear channel, will loss-of-high-voltage generate a scram? If so, modify Figure 2 accordingly.
12. Both Figures 1 and 2 of the proposal show the 1-kw interlock. Clarify this discrepancy by providing documentation indicating clearly the function point from which the 1-kw interlock is derived.
13. For the new instrumentation, will an overpower condition, such as 200% full-power flux at the detector be appropriately accommodated by both the detector and the instrumentation without "fold-over"? Explain.
14. The existing linear channel trips at a percentage of each range. It is our understanding that the proposed safety power level channel will only trip at a percentage of full power. Please provide your design bases (or transient analysis) for determining that the new safety power level channel will provide adequate protection.