

Washington State University

Nuclear Radiation Center, Pullman, Washington 99164-1300 / 509-335-8641

June 27, 1990

Alexander Adams, Jr.
Project Manager
Non-Power Reactors, Division of Reactor Projects III, IV, V
Office of Nuclear Reactor Regulations
US Nuclear Regulatory Commission
Washington, DC 20555

Re: Docket No. 50-27

Dear Mr. Adams,

In response to your letter dated June 21, 1990, requesting additional information and clarification of certain aspects of the application for amendment of the license for the Washington State University modified TRIGA research reactor submitted on April 19, 1990, the following information and clarifications are submitted:

1. Attached is a revised copy of Table 3.2 that reflects the proposed change in the maximum power level of the reactor.
2. Attached is a revised copy of specification 3.14(3) which addresses the concerns raised by your question number 2. Specification number (1) now sets a maximum curie limit of 100,000 curies and requires that sources be designed so that a loss of pool water will not compromise the cladding on the sealed source. The 100,000 curie limit would approximately double the long-term sky shine dose above the pool in the event of a loss of pool water accident. Specification number (3) has been modified for a maximum analysis interval not to exceed six weeks and to specifically refer to radionuclides from sealed sources in the pool. A basis for specification 3.14(3) is also attached.
3. The maximum verification interval for proposed technical specification 4.3.3 is hereby change from 60 days to 45 days.
4. Add item (d) to amendment request item 9 to correct the regional office address to read as follows:

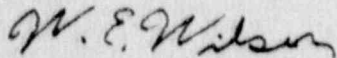
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- (d) Replace the words, "NRC Region V Office of Inspection and Enforcements," in 6.10(1), (2), (3) and (5) with the words, "Regional Administrators USNRC Region V Office."

Sincerely,



W. E. Wilson
Associate Director

Enclosures
WEW:crc

3.6.3 Reactor Safety System

Applicability: This specification applies to the reactor safety system channels.

Objective: The objective is to specify the minimum number of reactor safety system channels that must be operable for safe operation.

Specification: The reactor shall not be operated unless the safety channels described in Table 3.2 are operable.

Table 3.2 Minimum reactor safety channels

Safety channel	Function	Number operable in specified mode	
		SS	Pulse
Fuel temperature	Scram if fuel temperature exceeds 500°C	1	1
Power level	Scram if power level exceeds 1100 kW	1	1
Manual scram, wide range	Prevent initiation of a pulse above 1 kW		1
	Prevent control element withdrawal when neutron count is less than 2 cps	1	
High-voltage monitor	Scram on loss of high voltage to power channels	1	1
Pulse-mode switch	Prevent withdrawal of standard control and regulation elements in pulse mode		1
Preset timer	Transient rod scram 15 seconds or less after pulse		
Pool level	Alarm if pool level falls below 16 ft over the core	1	1
Transient rod control	Prevent application of air unless fully inserted	1	

Note: SS = steady state

Specification: 3.14(3)

- (1) Sealed sources shall only be stored and used in the east end or storage portion of the reactor pool and not in the portion of the pool in which the reactor core is normally situated. Sealed sources shall not at any time be stored or used closer than five (5) feet away from the face of an operating reactor core. The total activity of all sealed sources stored in the pool shall not exceed 100,000 curies. All sealed source configurations shall be designed so that a loss of pool water accident will not precipitate a sealed source incapsulation integrity problem.
- (2) All storage and use of sealed sources in the reactor pool shall be considered as an experiment and shall be reviewed and approved by the Reactor Safeguards Committee. A written operating procedure for the storage and use of sealed sources in the reactor pool shall be in effect under the requirements of 6.8.1.
- (3) The radionuclide content of the reactor pool water shall be monitored monthly at an interval not to exceed six (6) weeks in order to detect a significant leak in the sources stored in the reactor pool. If the specific radionuclide content of the pool water for radionuclides from a sealed source stored in the reactor pool exceeds 10 times the 10 CFR 20 Appendix B, Table II, Column 2 value, steps shall be taken to isolate the source of the activity and to mitigate the problem.

Bases for 3.14(3)

Bases: Limiting the proximity with which sealed sources may be stored and used in the reactor pool minimizes the possibility of interaction between the sealed sources and an operating reactor thereby minimizing any conceivable direct effect of the sources on the operation of the reactor. Limiting the total activity of all stored sealed sources to 100,000 curies insures that the sealed sources do not significantly increase radiation hazard at the facility in the event of a loss of pool water accident.

All sealed sources, even those stored and used in the reactor pool, fall under the jurisdiction of the State of Washington rather than the Federal government since Washington is an agreement state. Having the Reactor Safeguards Committee review and approve the usage and storage of all sealed sources used and stored in the reactor pool provides appropriate oversight for such sources in relation to the reactor facility.

Experience has shown that monitoring the reactor pool water monthly will provide early detection of any potential sealed source leakage problems. The detection limits are many orders of magnitude below the level at which the activity from a leaking sealed source becomes a problem.