

Radiation Center



Corvallis, Oregon 97331 (503) 754-2341

April 12, 1982



Mr. James R. Miller, Chief  
Standardization & Special Projects Branch  
Division of Licensing  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

REFERENCE: Oregon State University TRIGA Reactor (OSTR),  
License No. R-106, Docket No. 50-243;  
Transfer of Standard TRIGA Fuel Elements to  
Westinghouse Hanford Company (WHC)--Hanford  
Engineering Development Laboratory (HEDL)

Dear Mr. Miller:

Oregon State University (OSU) is sending this letter to advise the Commission of our desire to transfer 92 TRIGA fuel elements to Westinghouse Hanford Company (WHC), a prime contractor of the U.S. Department of Energy (DOE), for use in a TRIGA reactor to be situated within their new Fuels and Materials Examination Facility (FMEF). The operation is currently targeted to take place between June 7 and June 18, 1982.

The fuel to be transferred consists of 89 irradiated stainless steel clad standard TRIGA fuel elements, 2 unirradiated stainless steel clad standard TRIGA fuel elements, and 1 unirradiated stainless steel clad standard-instrumented TRIGA fuel element. The average  $^{235}\text{U}$  enrichment for the irradiated fuel elements is now approximately 19.25%, and for the unirradiated fuel elements it is nominally 19.79%.

The TRIGA fuel to be transferred is currently the property of the DOE, except that OSU funded the fabrication cost for the 1 unirradiated instrumented element. The fuel was provided to OSU by the DOE for the initial fuel loading of the Oregon State University TRIGA Reactor (OSTR), which went critical in March of 1967. Between that date and July of 1976 the fuel (except for a few elements held in reserve) was used in the OSTR core for normal reactor operations. In July of 1976, the standard fuel was removed from the OSTR and replaced with new 70% enriched FLIP fuel. The irradiated standard fuel has been stored in the reactor tank since its removal, while the three new unirradiated fuel elements have been stored in a fuel storage pit in the TRIGA reactor room since their initial receipt.

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The WHC portion of the fuel transfer is being coordinated by their Hanford Engineering Development Laboratory (HEDL), which they operate for the DOE. We have been working very closely with the HEDL staff, and all major aspects of the transfer operation have been carefully outlined, reviewed, and agreed upon by OSU and HEDL personnel. An itemized explanation of the projected operation follows:

1. The fuel will be transferred from the OSTR to WHC facilities in Richland, Washington in four discrete groups. The first group will contain 28 fuel elements (1026 grams of  $^{235}\text{U}$ ); the second group will contain 35 fuel elements (1292 grams of  $^{235}\text{U}$ ); the third group will involve 28 fuel elements (1027 grams of  $^{235}\text{U}$ ); and the fourth group will consist of the 1 unirradiated instrumented fuel element (38 grams of  $^{235}\text{U}$ ).
2. Based on the number of fuel elements in the above groups, the 89 irradiated fuel elements will be removed one at a time from their present storage racks in the reactor tank and transferred to holding racks in the pool facility immediately adjacent to the reactor tank. (See Attachment 1.) This transfer will be performed using a specially designed single fuel element container and will be conducted exclusively by OSTR operations personnel. Both the single element container and the fuel handling procedures to be used have been reviewed and approved by the OSTR Reactor Operations Committee. Only the number of fuel elements to be sent to WHC in a single specific group will be placed in the pool facility at one time. The other irradiated fuel will remain in the reactor tank storage racks. Once the fuel elements in a particular group have been placed in the holding racks in the pool facility by OSTR personnel, custody of the fuel and full responsibility for the remainder of the transfer operation will be assumed by WHC-HEDL.
3. As dictated by the makeup of the specific fuel groups, the 3 unirradiated fuel elements will be removed from their storage location in an existing fuel storage pit by OSTR personnel. (See Attachment 1.) These elements will be immediately turned over to WHC-HEDL personnel for assumption of custody and transfer responsibility at the point where they are removed from the fuel storage pit (i.e., the first floor of the TRIGA reactor room).

4. The remaining aspects of the fuel transfer operation will be the responsibility of WHC-HEDL. These will include:
  - a. Acquisition of a suitable primary shipping container. In this respect, the container to be used will be the Battelle Columbus Laboratories BMI-1 shipping cask with supporting equipment. This container is currently certified for shipping irradiated reactor fuel, including irradiated standard TRIGA fuel elements, under USNRC Certificate of Compliance No. USA/5957/B( )F. WHC-HEDL is currently a registered user for the BMI-1 cask.
  - b. Acquisition of an appropriate U.S. Department of Transportation (DOT) Type-A shipping container for the single unirradiated instrumented fuel element.
  - c. Acquisition of a small fuel element shuttle cask for transferring fuel from the OSTR pool facility to the BMI-1 cask. The cask used for this purpose will also be reviewed and approved by the OSTR Reactor Operations Committee.
  - d. Acquisition of a suitable carrier to transport the BMI-1 cask between OSU and the WHC facilities in Richland, Washington. In this regard, the carrier will be Rockwell Hanford Operations using U.S. Government owned vehicles.
  - e. Necessary fuel handling for transfers between the OSTR pool facility and the BMI-1 cask, packaging and preparation of the BMI-1 cask for transport, and all other aspects associated with the actual transportation of the irradiated and unirradiated fuel will be conducted exclusively by WHC-HEDL.
5. A general protocol for the WHC-HEDL activities to be conducted within the OSTR facilities is as follows (see Attachment 1):
  - a. WHC-HEDL personnel will make underwater transfers of up to 3 fuel elements from the pool facility holding racks to the shuttle cask.
  - b. Using the OSTR overhead crane, WHC-HEDL personnel will move the cask from the pool to the central cavity of the BMI-1 cask, which will be located inside the TRIGA reactor room on a low-boy trailer.


- c. Fuel elements will then be removed from the shuttle cask and placed into the BMI-1 cask by WHC-HEDL personnel and the shuttle cask returned to the pool facility for another transfer sequence.
  - d. The two unirradiated standard TRIGA elements will also be shipped in the BMI-1 cask, while the single unirradiated instrumented element will be shipped in a DOT Type-A container provided by WHC-HEDL.
6. With respect to those phases of the operation to be performed by OSU personnel, and those parts to be performed by WHC-HEDL personnel within the OSTR facility, the following conditions will apply:
  - a. Activities will be conducted under the OSTR's existing NRC-approved facility license (R-106) and technical specifications, under the OSTR's NRC-approved programs for physical security, emergency response, radiation protection, and special nuclear materials control and accountability, and within the regulatory provisions in 10 CFR 50.59 and other applicable parts of Title 10.
  - b. The overall fuel handling operation at the OSTR, on a step-wise basis, will be reviewed and approved by the OSTR Reactor Operations Committee (ROC).
  - c. Fuel handling by OSTR personnel will be in accordance with fuel handling procedures reviewed and approved by the OSTR ROC and incorporated into the Oregon State TRIGA Reactor Operating Procedures (OSTROPS).
  - d. Fuel handling activities and procedures to be performed specifically by WHC-HEDL will also be reviewed and approved by the OSTR ROC.
7. Management and coordination of the fuel transfer for WHC-HEDL is being handled by Mr. John Petty. Individuals within the Richland office of the DOE who are overseeing the planned fuel transfer are Mr. Larry C. Williams, Project Manager for the Fuels and Materials Examination Facility, and Mr. James M. Peterson, Facilities and Site Services Division. Mr. Peterson is particularly involved in the transportation aspects and can be reached on 509-376-6731, while Mr. Williams can be reached on 509-376-4131. Mr. Don Godard of the Oregon Department of Energy has also been contacted by the DOE, and is aware of our desire to conduct the indicated fuel transfer. Coordination of the project at OSU is being handled by Dr. C. H. Wang and Professor A. G. Johnson, both of whom can be reached at 503-754-2341.

April 12, 1982

We hope the preceding description of our projected fuel shipment will provide a timely and satisfactory level of information regarding an event we are most anxious to complete within the time interval identified. Based on our analysis of the operation as it will be divided between OSU and WHC-HEDL, it appears to us that all aspects can be carried out under our existing facility license and technical specifications, under existing NRC regulations, and under OSU programs previously established to meet our license and other regulatory requirements, which have already been approved by the NRC. However, due to the nature of this operation we felt that your office must be provided with a full explanation in advance, and we additionally feel that your concurrence is essential.

We appreciate your review and consideration of this project, and will look forward to your reply. Please let us know if you need any additional information.

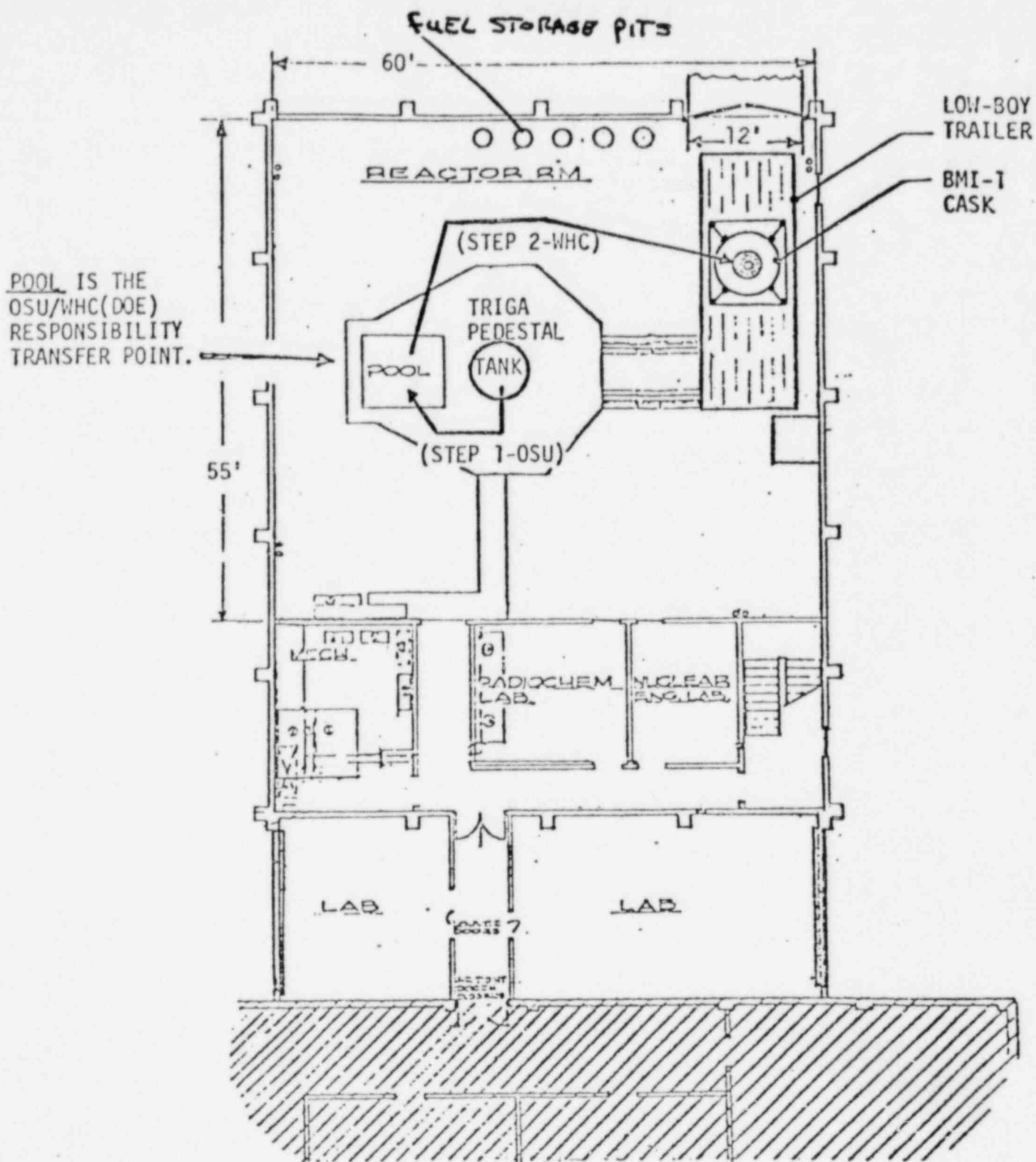
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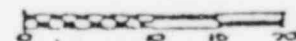
C. H. Wang  
Reactor Administrator  
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FIRST FLOOR PLAN



NUCLEAR REACTOR ADDITION FOR THE  
 RADIATION CENTER  
 OREGON STATE UNIVERSITY - CORVALLIS, OREGON