18.

IOWA STATE UNIVERSITY

Department of Nuclear Engineering
261 Sweeney Hall
Ames, Iowa 50011

Telephone 515-294-5840

October 21, 1985

Robert F. Burnett, Director
Division of Safeguards
Office of Nuclear Material and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Burnett:

Iowa State University acknowledges receipt, on Oct. 3, 1985, of the "Order to Show Cause" dated September 27, 1985 and signed by John C. Hoyle, Acting Secretary of the U.S. Nuclear Regulatory Commission. This order was directed to, and received by, Professor Richard A. Hendrickson, Reactor Manager. The order concerns removal of surplus highly enriched fuel from our research reactor, docket #50-116. Our research reactor is operated under Facility Operating License No. R-59.

While it is the intent of the University to comply expeditiously with the spirit of this order, we respectfully request an indefinite stay of its execution for reasons stated below. This request is made according to item III (3) of the order.

1. Before proceeding with the return of the material to the Department of Energy, it will be necessary to determine what actions with regard to the shipment will be performed by the Department of Energy and on what schedule.

2. There are also certain matters regarding NRC policy and regulations that must also be clarified:

(a) We propose to return 780g of material, as discussed in the memorandum annexed to this request. Is the argument of this memorandum, and consequent amount of material to be returned, acceptable to the Commission?

(b) Since the order has been issued out of concern for the security of this material, are there any unusual security provisions on the shipments that we must conform to? Previous shipments of this same type of material were made by common carrier, and that is the procedure we would follow unless otherwise instructed. We note, however, that the material might be considered less secure during such shipment than it is now.

A-15

We propose to get these questions answered as expeditiously as possible, but the schedule for doing so is not completely under our control. In particular, we have been in touch with Keith Brown of EG&G Idaho, who is acting for the DOE on this matter. He informs us that he must process a request for shipment through DOE, which might be subject to bureaucratic delay, and get authorization from NRC for the shipment schedule, which is presently indeterminate. This is why we are requesting an indefinite extension. As soon as a proper shipping operation can be scheduled, it is our intention to notify the Commission of this schedule and proceed with its execution forthwith.

If it is not the Commissions policy to extend indefinitely, we request a 90 day extension under the assumption that this can all be worked out within a seven-month period. If it hasn't been, we would then have to ask for another extension.

Sincerely,

D. J. Zaffarano
Vice President for Research
Iowa State University

B. I. Spinrad
Professor and Chair
Department of Nuclear Engineering

DJZ/BIS:db

cc: Secretary of the Commission
John Dosa, Special Projects Branch

Margaret A. Bicketl 10-23-85

DATE: October 14, 1985

TO: Bernard I. Spinrad, Chairman
Nuclear Engineering

FROM: Richard A. Hendrickson
Reactor Manager

SUBJECT: Plan to Comply with NRC Order To Show Cause

The Order To Show Cause, dated September 27, 1985, sets a limit on the quantity of unirradiated HEU fuel that we can possess on-site at our facility. The quantity allowed is equivalent to that needed to replace one failed element for each different element in the core. As shown in Table A-1, the fuel at our facility consists of fuel assemblies and spare fuel plates. The fuel loading needed for normal operations is shown in Table A-2. Assuming that "element" means "fuel assembly", we could retain enough unirradiated fuel to replace one "standard" (fully-loaded) fuel assembly and the "modified" (N3H-AM) fuel assembly. The modified fuel assembly accomodates the experimental apparatus used in Dr. Danofsky's NSF project, and it replaces a standard fuel assembly when data are being collected for the research project.

We should propose to use and store on-site the HEU fuel listed below:

Item	g U-235	Irradiated?	Comments
1.	2984	Yes	Used for full power operation.
2.	240	Yes[a]	Used for experiments up to 10% full power.
3.	240	No[b]	Replacement for #2, if needed.
4.	265	No[b]	Replacement for standard assembly.

[a]The radiation level of item #2 is too high to allow manual disassembly, and hot cell facilities are not available. To meet the requirements of ALARA, we must have unirradiated fuel to replace N3H-AM, if needed.

[b]One of these could be a fuel plate (SPARE-10) which was irradiated several years ago. Its radiation level is too low to be a hazard.

If the Commission agrees with this proposal, we will need to ship unirradiated fuel plates with a total mass of about 778 g U-235 to a secure facility.

Attachment

ATTACHMENT #1

Table A-1. Current Distribution of Fuel Plates

Name	Location	No.	Description	Element Mass (g)	Isotope Mass (g)	Irradiated?
N1H-A	UTR-10:S1	11	Fuel Element Plates	245.4	229.1	Y
N2H-B	UTR-10:S2	12	Fuel Element Plates	265.1	247.3	Y
N2H-A	UTR-10:N3	12	Fuel Element Plates	280.1	261.5	Y
N4H-A	UTR-10:N4	12	Fuel Element Plates	280.3	261.7	Y
N5H-A	UTR-10:N5	12	Fuel Element Plates	280.1	261.6	Y
N6H-A	UTR-10:N1	11	Fuel Element Plates	256.5	239.5	Y
S1H-B	UTR-10:N6	9	Fuel Element Plates	210.4	196.4	Y
S2H-A	UTR-10:N2	12	Fuel Element Plates	280.1	261.5	Y
S3H-A	UTR-10:S3	12	Fuel Element Plates	280.5	261.9	Y
S4H-A	UTR-10:S4	12	Fuel Element Plates	280.2	261.6	Y
S5H-A	UTR-10:S5	12	Fuel Element Plates	280.1	261.5	Y
S6H-B	UTR-10:S6	11	Fuel Element Plates	257.0	240.0	Y
N3H-AM	Pit 13	11	Fuel Element Plates	257.1	240.0	Y
SPARE-1	Pit 14	9	Spare Fuel Plates	187.4	174.7	
SPARE-3	Pit 14	11	Spare Fuel Plates	248.4	222.8	
SPARE-5	Pit 15	4	Spare Fuel Plates	95.2	88.7	
SPARE-6	Pit 15	12	Spare Fuel Plates	284.3	265.1	
SPARE-7	Pit 15	3	Spare Fuel Plates	71.5	66.7	
SPARE-10	Pit 15	1	Spare Fuel Plates	23.1	21.6	Y
SPARE-8	Pit 16	8	Spare Fuel Plates	188.2	175.5	
SPARE-9	Pit 16	12	Spare Fuel Plates	287.4	268.0	
TOTALS		209		4838.4	4506.7	

Table A-2. Current Fuel Loading in the Reactor Core

Name	Location	No.	Description	Element Mass (g)	Isotope Mass (g)
N1H-A	UTR-10:S1	11	Fuel Element Plates	245.4	229.1
N2H-B	UTR-10:S2	12	Fuel Element Plates	265.1	247.3
N2H-A	UTR-10:N3	12	Fuel Element Plates	280.1	261.5
N4H-A	UTR-10:N4	12	Fuel Element Plates	280.3	261.7
N5H-A	UTR-10:N5	12	Fuel Element Plates	280.1	261.6
N6H-A	UTR-10:N1	11	Fuel Element Plates	256.5	239.5
S1H-B	UTR-10:N6	9	Fuel Element Plates	210.4	196.4
S2H-A	UTR-10:N2	12	Fuel Element Plates	280.1	261.5
S3H-A	UTR-10:S3	12	Fuel Element Plates	280.5	261.9
S4H-A	UTR-10:S4	12	Fuel Element Plates	280.2	261.6
S5H-A	UTR-10:S5	12	Fuel Element Plates	280.1	261.5
S6H-B	UTR-10:S6	11	Fuel Element Plates	257.0	240.0
TOTALS		138		3195.8	2983.6

Certification #P 645 196 977

19

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

RHODE ISLAND ATOMIC ENERGY COMMISSION
Nuclear Science Center
South Ferry Road
Narragansett, R.I. 02882-1197

October 22, 1985

Secretary of the Commission
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Sir:

The National Organization of Test, Research and Training Reactors (TRTR) membership will be affected by the show cause order issued by the Commission on September 27, 1985 concerning removal of excess high enriched uranium fuel from non-power reactor facilities.

TRTR agrees with the Commission on the advisability for removing all excess HEU fuel from non-power reactors to secure facilities away from the reactor site. Further, TRTR believes that since removal of this excess fuel has already been substantially accomplished by the non-power reactor community, there is time available to insure that the wording of the order is clear.

TRTR is concerned that the paragraph labeled (2) on page 111 of the order is ambiguous in two respects and restrictive in one area as follows:

1. TRTR believes that "amount of fuel depleted" should be changed to "the amount of fuel or the number of fuel elements depleted" since depleted fuel may usually only be replaced in increments of whole fuel elements containing more than the depleted fuel.

2. TRTR believes that "normal operation" should be changed to "equivalent full power operation." The suggested wording will minimize the possibility of problems during inspection when a facility with an HEU inventory sufficient for full power operation, has been operating at reduced power or not at all because of operational problems.

~~8511060055~~

A-16

3. TRTR believes that the 90 day period, while appropriate for many facilities, may be inappropriate at others and may actually lead to an increase in the safeguards threat. For example, a facility with an operating cycle slightly longer than 90 days may require, to meet the 90 day condition, twice the number of fuel shipments normally made thus increasing the safeguards exposure during shipments. TRTR believes that this is a good cause for some relaxation of the 90 day requirement, and, that a balance should be made between the time period and and number of shipments.

TRTR also believes that in addition to the element(s) for replacement of one failed element, facilities should be allowed an unirradiate element for special purposes such as flux plotting.

Thank you for your consideration.

Very truly yours,

A. Francis DiMeglio

A. Francis DiMeglio
Chairman, TRTR

AFD:cd

cc: Executive Legal Director, NRC

10.

WASHINGTON STATE UNIVERSITY

PULLMAN, WASHINGTON 99164-1300

NUCLEAR RADIATION CENTER

October 22, 1985

CERTIFIED MAIL, RETURN
RECEIPT REQUESTED

Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

In response to your "Order to Show Cause" relating to unirradiated highly enriched uranium fuel (HEU), the Washington State University reactor facility (license R-76) is in compliance with the provisions of that order and thus we do not contest the order as it relates to clean cold unirradiated HEU fuel. In other words, the facility does not presently have on-site more than one clean cold unirradiated HEU fuel bundle of each type used in the reactor core.

Sincerely,

W. E. Wilson

W.E. Wilson
Associate Director

WEW:mb
cc: Executive Legal Director of NRC

~~8511050024~~

A-17

NILS J. DIAZ, DIRECTOR
W.G. VERNETSON, REACTOR MANAGER
NUCLEAR REACTOR BUILDING
GAINESVILLE, FLORIDA 32611
PHONE (904) 392-1429 TELEX 56330

NUCLEAR FACILITIES DIVISION

UNIVERSITY OF FLORIDA

October 23, 1985

Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: University of Florida Training Reactor
Facility License: R-56
Docket No. 50-83

Dear Sir:

In response to the Order to Show Cause dated September 27, 1985, we respectfully request that authority be granted to possess unirradiated high enriched uranium fuel on site in a quantity greater than that necessary to replace one failed fuel element (bundle). Specifically, we are requesting that we be allowed to possess two full unirradiated replacement bundles of high enriched fuel plus two plates as supported by the following facts.

1. Our current core loading consists of 21 irradiated fuel elements (bundles) and is currently unloaded (to allow repair work to proceed in the core area). Within the next month, we will be visually inspecting all elements to determine whether to replace one or more bundles or at least some plates in the 11-plate fuel bundles. Since the fuel inspection scheduled for late November may indicate some bundles needing replacement, we would like to reserve the option of using all of our unirradiated fuel if the need is demonstrated. Since we will know a definite result from full fuel inspection by late November, this should present no real delay in meeting the 120 day limit delineated in the Order. Prior to shutdown in early September, we were getting close to needing to add unirradiated fuel to our core with preliminary calculations indicating that we could add a full 11 plate fuel bundle and maintain tech spec limits on shutdown margin and excess reactivity.

2. Until the fuel is able to be reloaded following completion of repair work (estimated to be early to mid December), we cannot be certain of being able to load a 22nd fuel bundle in the UFTR core but we would like to reserve this option while being allowed to keep another unirradiated fuel element to count as the one replacement element allowed under Section III, Paragraph (1) of the Order to Show Cause.

3. Certain laboratory experiments in non-destructive assay of fuel materials may utilize one or two plates of high enriched uranium under the control of our license. Therefore, we require 2 plates for experimental purposes.

4. The Department of Energy has indicated that significant delays may be encountered in efforts to ship unirradiated fuel to a Department of Energy Secure facility within 120 days as directed in Paragraph (1) of Section III of the Order to Show Cause.

As allowed in Section IV of the Order to Show Cause, we are asking that the items numbered (1) through (4) above be considered in relaxing the Order to allow the University of Florida Training Reactor R-56 license to possess two full unirradiated fuel elements (bundles) plus two plates until repair work and fuel reload tests can demonstrate whether or not one or both of the full unirradiated bundles are needed. This demonstration is expected to be complete before December 31, 1985. After this demonstration, we are asking that the R-56 licensee be allowed to possess one (1) full unirradiated element (bundle) plus two plates as explained above.

We would further request a relaxation of the 120 day time limit for shipping unneeded unirradiated fuel since we may not be able to meet this deadline and assure sufficient fuel for our reactor. This arrangement is considered preferable compared to shipping fuel to a Secure facility and then possibly back to the University of Florida within a month of the transfer.

Thank you for your consideration of this response.

Sincerely,

William G. Vernetson

William G. Vernetson
Acting Director of
Nuclear Facilities

WGV/ps

cc: A. Alsobrook
W. Chen
M.J. Ohanian
G.S. Roessler

Oct. 23, 1985

NUCLEAR REACTOR LABORATORY
AN INTERDEPARTMENTAL CENTER OF
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

O.K. HARLING
Director

138 Albany Street Cambridge, Mass 02139
(617) 253-4202

L. CLARK, JR.
Director of Reactor Operations

October 25, 1985

Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Show Cause Order of September 27, 1985, Docket No. 50/20

Dear Sir:

As provided in 10 CFR 2.202(d), the Massachusetts Institute of Technology consents to the entry of an order in substantially the form proposed in the Commission's Order to Show Cause dated September 27, 1985 and addressed to the Institute as holder of Facility Operating License No. R-37 and to other non-power reactors licensed by NRC and using high enrichment uranium (HEU) fuel.

It has been MIT's policy for some time to maintain a minimum inventory of unirradiated fuel. That inventory is currently in compliance with the Order, and it will remain so. However, our inventory of spent (irradiated) fuel, although highly self-protecting, is larger than necessary because of the protracted delays in the licensing of the Department of Energy HM-1A shipping cask. Problems causing further delays in the availability of this cask should be resolved at the earliest possible date.

MIT's consent is contingent upon interpretation of the Order as follows:

1) In determining the number of replacement elements that may be maintained in inventory, it is our interpretation that "the amount of fuel depleted in a 90-day period" may be rounded upward to the next whole number of elements.

2) Even with the above assumption, some refuelings will become complicated, and a request for relaxation of the requirements may be necessary. It is our further interpretation that paragraph II(3) provides for the filing of such requests after the Order becomes effective and not necessarily beforehand.

~~8511060145~~

A-19

A final and very important point is that HEU inventories at non-power reactors subject to the Order will be so small and dispersed that the Commission's proposed requirement of July 6, 1984 (49 FR 27769) for conversion of HEU fuel to low enrichment fuel becomes entirely unnecessary and should be withdrawn.

Sincerely,

Lincoln Clark, Jr.
Director of Reactor Operations

LC/crh

cc: J. Bernard
O. Harling
D. Lanning
W. Milne

LA 85-86

Westinghouse Electric Corporation | Water Reactor Divisions

Box 355
Pittsburgh Pennsylvania 15230

October 30, 1985

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Division of Licensing
Washington, D. C. 20555

Attention: John C. Hoyle,
Acting Secretary of the Commission

Gentlemen:

Subject: Order to Show Cause, License Number R-119 (Docket 50-87)

This letter is written in answer to the Order to Show Cause issued to Westinghouse Electric Corporation, holder of Facility Operating License No. R-119 (Docket No. 50-87). This license authorizes the operation of the Westinghouse Nuclear Training Reactor at Zion, IL.

Westinghouse Electric Corporation consents to the entry of the order. We believe, however, that the WNTR Facility license is in compliance with the order and requires no license change. In September, 1981, Westinghouse voluntarily reduced inventory of licensed material held at the NTR Facility to below the 10 CFR 73.2 formula quantity for strategic special nuclear materials. Fuel reduction was accomplished by shipping 16 elements to E. I. DePont de Nemours Company, Savannah River Plant, Aiken, SC. Per Amendment No. 6 to the R-119 license issued January 1982 and per the current R-119 license renewed as Amendment 8, until January 28, 2002, the WNTR inventory of HEU fuel is less than 4.95 kg. The high enriched urnaium (HEU) fuel included in this inventory comprises 24 standard NTR fuel elements and one non-standard fuel element. Each standard fuel element is used and needed for current operations. The non-standard fuel element is used for certain training procedures and serves as the only replacement element stored in the Facility.

If you have any questions, please contact me at the above address or by telephone on (412) 256-6054.

Very truly yours,

A. J. Nardi, Manager
NES License Administration

AJN/pe

~~8511110241~~

A-20