



Department of Energy
Washington, DC 20585

APR 8 1993

Mr. Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20585

Dear Mr. Bernero:

Thank you for your letter of August 19, 1992, requesting information on the Department of Energy's (DOE) Pacific Northwest Laboratory (PNL) testing facilities and the Hanford 200 Area low-level waste burial ground, which are the subject of Mr. F. Robert Cook's pending 10 C.F.R. 2.206 petition. Mr. Cook is asserting these facilities are licensable by the Nuclear Regulatory Commission (the Commission) under sec. 202(3) of the Energy Reorganization Act of 1974 because of the presence on the premises of spent fuel and fuel materials from licensed reactors for storage. Mr. Cook also asserts these facilities are not exempt from licensing under the provisions of sec. 202(4) of that Act. I appreciate the opportunity to respond to these assertions.

The PNL is a multiple-facility laboratory complex on the Hanford Site used by DOE in analytical and research and development (R&D) testing on radioactive materials. Light Water Reactor fuels are maintained primarily in hot cells B and D of Building 324, although lesser amounts are located in Buildings 325 and 327. Of the 600 cubic meter overall volume of the B and D cell facilities, the estimated volume of spent fuel materials from NRC-licensed reactors is less than 6 cubic meters. The materials include specimens, cut rod segments, individual fuel rods, partial fuel assemblies, and intact fuel assemblies that are studied in work that supports the R&D activities and projects of the Materials Characterization Center, the West Valley Demonstration Project, the Hanford Waste Vitrification Project, the MK-42 Processing Project, and the Federal Republic of Germany heat sources. They are also used in studies of stored spent fuel behavior and canister fabrication.

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The testing materials, i.e., spent fuel and fuel materials from NRC-licensed reactors, are subjected to destructive examination; and the remnants, or amounts exceeding the test requirements, are retained temporarily in one of the hot cells or at the Hanford low-level waste burial ground pending disposal. The PNL and its hot-cell laboratory facilities specifically involved in this case were not intended for, nor have they been used for, the specific purpose of storage of high-level wastes or spent nuclear fuel, regardless of origin. Any inventories of such materials are on the premises strictly in association with the Department's testing activities.

The Hanford 200 Area Burial Ground is a single facility, consisting of a number of trenches intended for the disposal of DOE-owned low-level waste. The 1,700-acre active part of the facility holds approximately 400,000 cubic meters of low-level wastes, approximately 1,100 cubic meters of which is of NRC-licensed-reactor origin. As indicated above, the latter represents materials not used or consumed in the tests at the PNL facilities, which is held here temporarily, pending disposition. An overwhelming percentage of the materials at this site are low-level wastes resulting from DOE's nuclear-materials production operations or operations of the DOE reactors that are not subject to NRC licensing.

The information below is provided to the Commission in response to the questions in your letter:

The PNL hot-cell facilities entered into service as follows -

- 324 Laboratory - 1965
- 324 Laboratory/East - 1958
- 325 Laboratory Addition/West - 1963
- 327 Laboratory (4 cells) - 1953
- 327 Laboratory Addition (9 cells) - 1962

The now-inactive part of the Hanford burial facility began operations in 1944. The currently-active area entered into service in the 1950's.

Fuel element assemblies from NRC-licensed activities have been acquired by the Department and delivered to the PNL facilities at different times, as needed for examination of cladding, support

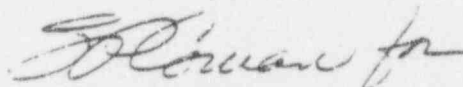
structures, internal fuel elements, and condition of fission product containment. Dates of receipts are as follows:

- H. B. Robinson 12/08/83
- Shippingport 02/10/84
- Vallecitos 06/11/85
- Calvert Cliffs 10/25/85
- Point Beach No. 1 11/18/85-12/15/85
- Cooper Station 02/10/86

In summary, the PNL hot cells are components of a DOE research and development facility. The Hanford 200 area low-level waste burial ground is a disposal facility for DOE-owned low-level radioactive wastes. The receipt and storage of high-level radioactive wastes is not the primary use of either of these facilities. There is, therefore, no basis for their inclusion within the Commission's expanded licensing authority under sec. 202(3) and (4) of the Energy Reorganization Act.

If further clarification on the above response is required, James Keenan of my staff can be contacted at (301) 903-7121.

Sincerely,



Jill E. Lytle
Deputy Assistant Secretary
for Waste Management
Environmental Restoration
and Waste Management

Charles J. Haughney

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NRC licensee-generated spent fuels are stored at various trenches among other spent fuels and TRU wastes awaiting proper disposition.

Based on my site visit of the Hanford 200 Area and discussions with DOE staff, it is my belief that DOE's need for the Hanford 200 Area Burial Ground arises out of defense-related programmatic requirements, in particular the disposal of DOE-owned low-level waste. The primary purpose of this 200 Area is not the receipt and storage of NRC licensee-generated wastes.

ORIGINAL SIGNED BY

Edward Y. Shum
Irradiated Fuel Section
Storage and Transport Systems Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

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2552 Harris Avenue
Richland, Washington
July 25, 1991

Robert M. Bernero, Director
Office of Nuclear Material
Safety and Safeguards
U.S.N.R.C.
Washington, DC 20555

SUBJECT: REQUIREMENT TO LICENSE OR OTHERWISE REGULATE FACILITIES AND THE HANDLING OF HIGH-LEVEL RADIOACTIVE WASTES (SPENT FUEL) AT HANFORD, RESPONSE TO NRC LETTER OF JULY 17, 1991, REQUEST FOR ACTION UNDER 10 CFR 2.206--

Dear Mr. Bernero:

This is in response to the subject letter.

Your letter indicated that "A license application submittal, by the DOE, for the storage of spent fuel obtained for research and development activities, is not appropriate." This appears to be an unfounded interpretation of the law, i.e., Paragraph (4) of Sec. 202 of the Energy Reorganization Act (ERA), if it is intended to apply to the commercial spent fuel in storage at the DOE Hanford facility hot cells operated by the Battelle Pacific Laboratory.

(Table C.4 from DOE/RW-0006.Rev.6, "Integrated Data Base for 1990: U. S. Spent Fuel and Radioactive Waste Inventories, Projections and Characteristics" of October 1990 (attached) identifies fuel in storage in a facility at Hanford, generated by a licensed facility.)

The fact that the spent fuel in question was "obtained for research and development activities" is not pertinent to determining licensing requirements for receipt or storage facilities for wastes referred to in Paragraph (3) of Sec. 202 of the ERA.

The Paragraph (4), Sec. 202 ERA specification of facilities subject to NRC regulation only applies to Administration generated wastes and, then, only to facilities which are not used for, or are part of, research and development activities. This would exempt the WIPP facility and other R&D facilities being used to validate designs of facilities for long-term storage or disposal of high-level radioactive waste. The exemption in Paragraph (4) does not apply to non-Administration generated wastes. It should be noted that much of the spent commercial fuel in the hot cells at Hanford was not used in past research and development activities in any case, but was incidental, extra spent fuel received by Battelle for the Administration.

Burial trenches in the 200 Area at Hanford are not facilities considered to be used for research and development activities, but are actual burial grounds or long-term storage facilities. As indicated in Table C.5 of the Integrated Data Base referred to above (attached), commercial spent fuel is in storage in these trenches

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Enclosure 1

along with Administration generated wastes. For example, fuel from INEL and the FFTF at Hanford are in these burial grounds and are stored there for the long-term, i.e., long with respect to the time it took to manufacture and burn the fuel. (This definition of long-term is consistent with the definition of long-term storage intended by the authors of the ERA and was in use by the AEC at the time the ERA was passed.)

One of the issues associated with the Administration's storage of spent fuel in hot cells over long periods of time is that this is an unsafe practice and inconsistent with normal requirements for an NRC licensed fuel storage facility, for example, the requirements in 10 CFR 72. The storage of spent fuel in the ground is likewise subject to question from an environmental point of view with respect to the requirements in 10 CFR 60 for a deep repository.

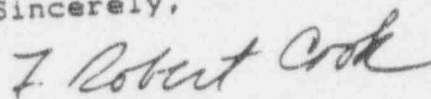
In closing your letter to me you indicated that DOE should be able to explain its rationale for not having submitted a license application for the storage of spent fuel from NRC licensed reactors. I have asked the DOE why they have not submitted a license application and have received no rational answer. It was for this reason that I inquired of you regarding evidence that licensing is or is not required. NRC's endorsement of any DOE reason, assuming they decide regulation is not required, is warranted in any case. It is for this reason as well as those reasons identified above that I am requesting action under 10 CFR 2.206.

REQUEST FOR ACTION

Please take this letter as a request for action under 10 CFR 2.206 to the Director of the Office of Nuclear Materials, Safety and Safeguards to exercise his authority to require a license application from the Department of Energy with respect to high-level radioactive wastes in sites at Hanford identified in attachments to this letter and to expedite regulation in accordance with provisions of 10 CFR 30, 10 CFR 72 or other applicable chapters of 10 CFR.

Thank you for your attention to this matter.

Sincerely,



F. Robert Cook

Attachments as noted--Tables C.4 and C.5 from DOE/RW-0006.REV.6,
OCTOBER 1990.

Integrated Data Base for 1989: Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics

November 1989



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Prepared by:

Oak Ridge National Laboratory
under Contract No.
DE-AC05-84OR21400

Prepared for:

U.S. Department of Energy
Assistant Secretary for
Nuclear Energy
Assistant Secretary for
Defense Programs
Office of Civilian Radioactive
Waste Management

Washington, D.C. 20585

Table C.4. Miscellaneous, highly radioactive materials stored at Battelle Pacific Northwest Laboratory, as of December 31, 1988^a

Source of material	Composition ^b	Description	Estimated burnup (MWd/MTUHM)	U content, kg		Total Pu content (kg)	Total Th content (kg)
				Total	²³⁵ U		
Calvert Cliffs	UO ₂ , Zr-clad	0.440-in. diam × 147 in. (stored as 175 intact rods, 1 cut rod) (stored as 154 intact rods, 1 cut rod)	30,000	370.5	2.6	5.3	
			45,000	293.2	1.7	7.7	
Cooper	UO ₂ , Zr-clad	96 rods ^c	26,000	365.3	2.5	3.1	
Point Beach-1	UO ₂ , Zr-clad	Stored as three intact fuel assemblies, miscellaneous cut samples	32,000	1,163.6	10.3	10.6	6.7
H. B. Robinson	UO ₂ , Zr-clad	Stored as 19 cut fuel rod sections ^d	30,000	30.2	2.2	0.2	
Shippingport				3.9	0.1	0.1	
VBR ^d	UO ₂ , Zr-clad	Twelve 3-ft fuel rod segments	20,000-30,000	11.1	0.1	0.7	
PML Lot Numbers:							
	ATM-5	Glass mix		0.1	e	<0.1	
	ATM-6	Glass mix		0.1	e	<0.1	
Miscellaneous scrap and fuel	Cut pieces, scrap	Stored in hot cells		68.5	2.0	1.5	
Miscellaneous fuel	Cut pieces	Stored in hot cell	Unknown	5.4	0.1	0.1	
Total				2,311.9	21.6	29.3	6.7

^aSee ref. 4.

^bZr-clad = Zircaloy-clad.

^cSee cell.

^dVallecitos boiling-water reactor.

^eNegligible.

Table C.5. Miscellaneous, highly radioactive materials stored at the Hanford [REDACTED] burial grounds, as of December 31, 1986^a

Source of material	Composition	Description ^b	U content, kg		Total Pu content (kg)
			Total	²³⁵ U	
EBR II (Experimental Breeder Reactor) From INEL	UO ₂ /PuO ₂ , SS-clad	Stored in four 30-in.-diam × 59.5-in. shielded carbon steel casks	45.53	7.64	3.60
From INEL and FFTF (Fast Flux Test Facility) at Hanford	UO ₂ /PuO ₂ , SS-clad	Stored in five 30-in.-diam × 59.5-in. shielded carbon steel casks	34.65	7.55	9.81
Fast Critical Facility and SEFOR (Southwest Experimental Fast Oxide Reactor) from GE, Vallejos, CA	UO ₂ /PuO ₂	Stored in twenty-two 75.5-in. × 65.5-in. × 65.5-in. concrete casks	40.49	4.88	4.70
K reactor	Unknown	12 americium target elements stored in one 30-in.-diam × 69-in. Zircaloy container	0.024 ^c	0.024	.074
LWR from GETR, Monticello Reactor, Quad Cities 1 Reactor, and Millstone Reactor	UO ₂ pellets	Stored in six 30-in.-diam × 59.5-in. shielded carbon steel casks	63.28	1.29	0.59
TRIGA (Training Reactor, Isotopes, General Atomic) from Oregon State University	Zr-U hydride (8 wt % U), Al-clad	3.6-cm diam × 72 cm fuel assemblies stored/buried in thirteen 55-gal concrete-filled drums, six to seven assemblies per drum	17.2	3.26	0.013
Total			201.17	24.84	18.79

^aSee ref. 5.

^bNo information regarding the burnup of this fuel is available.

^cEnrichment of uranium not provided.



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

SEP 03 1991

(10 C.F.R. 2.206)

Mr. F. Robert Cook
2552 Harris Avenue
Richland, Washington 99352

Dear Mr. Cook:

This letter is to acknowledge receipt of your Petition dated July 25, 1991, in which you request the Director of the Office of Nuclear Material Safety and Safeguards to exercise his authority to require submittal of a license application from the Department of Energy (DOE) with respect to certain high-level radioactive waste (spent fuel) from NRC licensed reactors in sites at Hanford. The Petition states that the DOE practices with respect to these high-level radioactive materials are inconsistent with 10 CFR Parts 60 and 72.

You assert as basis for this request that (1) Section 202(3) of the Energy Reorganization Act of 1974 (ERA) requires such license application and (2) the exemption of Section 202(4) of the ERA does not apply since the designated spent fuel wastes in storage at Hanford are "Non-Administration generated wastes" (the Energy Research and Development Administration referenced in Section 202 of the ERA is now the DOE) and the burial trenches in the "200 Area" at Hanford are not facilities considered to be used for "research and development activities."

Your Petition has been referred to the staff for action pursuant to 10 C.F.R. § 2.206 of the Commission's regulations. As provided by section 2.206, appropriate action will be taken on your request within a reasonable time. I have enclosed for your information a copy of the notice that is being filed with the Office of the Federal Register for publication.

Sincerely,

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated

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Enclosure 2

SEP 0 1991

(10 C.F.R. 2.206)

Mr. F. Robert Cook
2552 Harris Avenue
Richland, Washington 99352

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Sincerely,

(Signed) Robert M. Bernero

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated
[FS/COOK 2.206]

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Department of Energy
Washington, DC 20585

MAY 07 1992

Mr. Robert F. Cook
2552 Harris Avenue
Richland, Washington 99352

Dear Mr. Cook:

I have been asked to respond for the Department of Energy (DOE) to your letter dated May 28, 1991, to Mr. Robert Bernero of the Nuclear Regulatory Commission (NRC). Your letter expressed concern that the DOE is storing spent fuel originating from licensed reactors at its Hanford Site without having submitted a license application for NRC's approval under section 202(3) of the Energy Reorganization Act of 1974.

As Mr. Bernero's letter dated July 17, 1991, to you points out, DOE facilities are generally exempt under section 110 of the Atomic Energy Act of 1954 from NRC licensing. However, section 202 of the Energy Reorganization Act of 1974 creates certain delineated exceptions to the general rule. Under sections 202(3) and 202(4), the NRC is authorized to license and regulate certain DOE facilities that receive and store high-level radioactive waste. DOE facilities covered by these sections are (1) facilities used primarily for the receipt and storage of high-level radioactive waste resulting from activities licensed under the Atomic Energy Act and (2) facilities authorized for the express purpose of subsequent long-term storage of DOE-generated high-level radioactive waste other than those facilities used for, or as a part of, research and development activities.

While NRC licensing of certain DOE high-level radioactive waste storage facilities is anticipated in the future, current DOE storage facilities are not covered by sections 202(3) or 202(4) and are therefore not licensed by NRC. The legislative history of section 202 is helpful on this point:

[Sections 202(3) & 202(4)] provide [NRC] the authority and responsibility for licensing and related regulation of retrievable surface storage facilities and other facilities for high-level radioactive wastes which are or may be authorized by the Congress to be built by [DOE] or with [DOE] financial assistance for long term (tens to hundreds of years) storage of such radioactive wastes generated by the [DOE] or to which present high-level radioactive wastes may be transferred by the [DOE] in the future. It is not the intent of the committee to

require licensing of such storage facilities which are already in existence or storage facilities which are necessary for the short-term storage of radioactive materials incidental to DOE's R. & D. activities.

(S. Rep. No. 93-980, 93rd Cong., 2d Sess. 59 (1974), U.S. Code Cong. & Admin. News 1974, pp. 5470, 5521.)

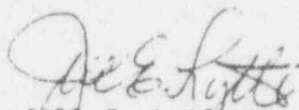
The spent fuel and fuel materials from NRC licensed reactors being stored at Hanford generally fall into two categories. The first category is spent fuel from university reactors that was loaned to them by DOE as part of a University Reactor Assistance Program for use in research and development activities. This fuel was owned by DOE and is being stored until a decision is made as to its final disposition.

The second category is spent fuel and fuel materials purchased by DOE or obtained under DOE contracts from commercial sources for DOE research and development. The research these materials supported included development work on geologic disposal of spent fuel, spent light water reactor fuel durability, high-burnup effects studies, and fast flux studies. No spent fuel or fuel material was obtained for storage only. These materials are now in storage because they are no longer needed and a decision on their disposal is pending.

Both categories of materials are presently in short-term storage either at Pacific Northwest Laboratory facilities or at the low-level burial grounds at Hanford. These facilities are not used primarily for the storage of high-level radioactive waste from licensed activities nor are they the kind of non-research and development related, long-term high-level radioactive waste storage facilities envisioned by sections 202(3) or 202(4). We share Mr. Bernero's view, expressed in his letter to you, that NRC has no authority to license these facilities.

We hope this information is helpful to you and responds adequately to your concerns.

Sincerely,



Jill E. Lytle
Deputy Assistant Secretary
for Waste Management
Environmental Restoration
and Waste Management