Environmental Defense Institute
and
Keep Yellowstone Nuclear Free

Comments On

DOE's Amendment to Waste Management PEIS Record of Decision

and

Additional Comments on
DOE Notice of Intent to Conduct an EIS on Greater-than-Class C Low-level Waste

July 2, 2008

Summary

The joint 5/14/08 letter to Department of Energy (DOE) Secretary Bodman by five organizations lead by Natural Resources Defense Council correctly challenges the Amendment to DOE's Waste Management Programmatic Environmental Impact Statement (PEIS) Record of Decision (ROD) and accompanying Supplement Analysis 3/7/08 and 2/08 respectively.

Specifically, this Bodman letter questions DOE's "proposed action of shipping up to 9,019 cubic meters of contact-handled (CH) and remote-handled (RH) [to radioactive for human contact] transuranic (TRU) waste to the Idaho National Laboratory (INL) and to the Waste Isolation Pilot Plant (WIPP)." DOE offers no evidence that this waste shipped to INL meets WIPP Waste Acceptance Criteria and therefore will become stranded at INL with no path forward for disposal. [1] This joint letter to Secretary Bodman continues; "Thus, if those waste streams are included in the proposed action, they would be 'stranded' at INL, in violation of the Idaho Settlement Agreement. That possibility for those waste streams is not analyzed in the ROD or [Supplement Analysis] SA." [2] See Attachment A below.

The Environmental Defense Institute (EDI) and Keep Yellowstone Nuclear Free (KYNF) fully endorse this joint letter to Secretary Bodman and all the issues articulated therein.

[1] In addition, DOE proposes to include DOE low-level waste (LLW) and transuranic (TRU) waste having characteristics "like" Greater-than-Class-C (GTCC) LLW and which may not have an identified path to disposal (hereafter referred to as GTCC-**like** waste) in the scope of this EIS. DOE's GTCC-like waste is owned or generated by DOE. The use of the term ''GTCC-like'' does not have the intent or effect of creating a new classification of radioactive waste.

[2] See Attachment A Below for the full text of the joint Bodman letter. Also for more information contact Don Hancock at Southwest Research and Information Center; 505-262-2371; sricdon@earthlink.net

Additional comments on DOE's Greater-than-Class-C waste EIS are included here and must be considered because DOE will not release its draft EIS for several more months. Additionally, the above referenced Bodman letter does not include all of INL stranded waste issues resulting from the Nuclear Navy Propulsion Program that has no disposal path forward. Given the documented evidence of radioactive and hazardous waste migration into the INL underlying Snake River Plain Aquifer, and DOE current near-surface dumping and proposed additional waste dumping in deeper "soil vaults" at the INL Radioactive Waste Management Complex must stop. This waste must be returned to generator within six months of receipt as stipulated in Idaho/DOE Settlement Agreement where it can be put in generators robust above ground safe/monitored storage until a licensed disposal site is established outside of Idaho. The GTCC draft EIS must discuss alternatives for the current/future Navy waste and other Spent Nuclear Fuel dumped at INL because there is no current NEPA analysis for what to do with this waste.

Other Stranded Waste at INL

Below EDI offers another category of "stranded" or "orphaned" [3] waste resulting from Spent Nuclear Fuel (SNF) shipped to INL for processing that generates non-TRU RH waste that cannot be sent to WIPP or any other disposal site. [4] DOE designated INL as the central collection site for all SNF (foreign and domestic) with stainless steel/zirconium cladding. Ongoing processing at INL Idaho Nuclear Technology Center (INTEC) of this imported SNF for reprocessing/ storage/ disposal also generates significant amounts of remote handled highly radioactive waste that falls in the category of Greater-than-Class C (GTCC) low-level waste. [5]

DOE created a new category of waste called GTCC-"**Like**" waste that contains TRU waste [6] and/or mixed radioactive and hazardous waste regulated under the Resources Conservation Recovery Act (RCRA) that also fails to meet WIPP Acceptance Criteria (WIPP/WAC). DOE estimates the combined stored and near-term projected GTCC and GTCC-like waste volume at 5,600 cubic meters containing 140 million curies [7] of radioactivity. [8]

The US Navy Nuclear Propulsion Program continues to send spent nuclear fuel (SNF) from various sites to the Idaho National Laboratory/ Naval Reactor Facility as part of its regular decommissioning or refueling program of its nuclear fleet. Possessing of this SNF for reprocessing/storage/disposal generates significant amounts of highly remote handled radioactive waste that falls in the category of GTCC low-level waste. According to Nuclear Regulatory Commission regulations, GTCC waste is prohibited from shallow landfill dumps and must be

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[3] Don Hancock, "What Will Happen to 'Orphan' Nuclear Waste," *Voices from the Earth*, Fall 2007, Vo.8, No. 3.

[4] See Federal Register Vol. 72, No. 140 7/23/07; "GTCC LLW is defined by the Nuclear Regulatory Commission (NRC) in 10 CFR 72.3 as ''low-level radioactive waste that exceeds the concentration limits of radionuclides established for Class C waste in [10 CFR 61.55].'' GTCC LLW is generated by NRC or Agreement State-licensed activities (hereafter referred to as NRC-licensed activities).

[5] DOE also designated its Savannah River Site as the collection site for all foreign/domestic aluminum-clad SNF due to existing reprocessing infrastructure for this category of SNF and INL existing infrastructure can reprocess SST/ZR clad fuels.

[6] Transuranic waste is radioactive waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for: (1) High-level waste; (2) waste that the Secretary of Energy has determined, with the concurrence of the Administrator of EPA, does not need the degree of isolation required by the 40 CFR Part 191 disposal regulations; or (3) waste that the NRC has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61.

[7] A curie of radioactivity is a huge amount within the context of EPA regulations limiting public exposure in units of pico-curies or one trillionth of one curie.

[8] Federal Register, Vol.72, No.140/ Monday, 7/23/07, page 40137.

interred in a deep geologic repository. [9] Given that there is no final disposal site for this waste and DOE finally issued a Notice of Intent (7/18/07) to prepare an Environmental Impact Statement (EIS) for the disposal of GTCC waste. [10]

This is a violation of the State of Idaho's Settlement Agreement with DOE despite Susan Berke, coordinator for Idaho Department of Environmental Quality (IDEQ) INL Oversight Program statement; **"**Paragraph E.2.a of the Idaho Settlement Agreement and similar terms of the Site Treatment Plan require that treatable waste shipped into the State of Idaho shall be treated within six months of its receipt and shall be shipped outside of Idaho within six months of any treatment. Incoming waste is subject to these terms whether it is shipped to WIPP, another storage or disposal facility, or is returned to the shipping facility. " [11]

IDEQ refuses to admit that ongoing waste imports to Idaho/INL results in "orphan waste" that has no permitted/regulatory compliant path forward for disposal especially the non-compliant INL Radioactive Waste Management Complex/ Subsurface Disposal Area (RWMC/SDA).

Background

U.S. Federal District Court Judge Ryan issued his summary judgment September 21, 1992 which contained minor changes to the then Idaho Governor Andrus, DOE, and Navy agreement. One change included giving the State full veto rights over any additional shipments beyond the 19 shipments stipulated. The Navy appealed Judge Ryan's final Order Modifying Order of June 28, 1993 decision in the Ninth Circuit Court of Appeals on September 24.The concessions that DOE and the Navy had agreed to be required by law were overturned by the US Court of Appeals which remanded back to Judge Ryan. Economic threats from the single largest employer in the state of Idaho have clearly influenced the Governor's decision to allow the 19 additional Navy waste shipments. According to Judge Ryan, the immediate threat to Idaho's environmental security far outweighs the unsubstantiated military security issues presented by the Navy. Idaho's then Republican Governor Batt announced that the State will allow the Navy to send 18 additional spent fuel shipments to INL (now INL).

Navy Spent Reactor Fuel Operations

The US Nuclear Navy sends all its spent reactor fuel to INL for inspection and processing. As of 1992, the Nuclear Navy has 126 vessels active and 63 in retirement. The 126 active vessels contain 147 reactors. The 63 retired vessels contain 65 reactors. The Navy has produced, over its history, a total of 600 reactor cores for its 189 commissioned vessel fleet. Within the next eight years, the Navy will retire an additional 85 submarines. Counting refueling and retired reactors, INL has received a total of 259 core assemblies. In eight years (2000) that number will jump to 359 core assemblies. [Greenpeace©]

The Naval Reactor Facility's (NRF) Expended Core Facility at INL receives the whole reactor fuel assembly module. This facility is being expanded to include a Dry Cell for cutting reactor cores to accommodate the increased volume from refueling and decommissioning. The fuel rods are not easily removed from the rest of the assembly as are most conventional reactor cores. The steel structural core assemblies are designed to withstand combat shocks and maintain fuel rod configuration within the core during combat scenarios.

According to Thereon Bradley, Manager of the NRF, the Expended Core Facility cuts (or in some cases unbolts) the metal ends from the spent fuel elements in order to inspect fuel and cladding integrity and evaluate how the fuel survived service in the reactor. [Bradley'] Other core structural components are also cut off the spent fuel assembly. "All naval fuel modules have non-fuel bearing metal structures above and below the fuel region to facilitate coolant flow and maintain proper spacing within the reactor. These upper and lower non-fuel bearing structures must be removed to permit inspection of the modules.

[9] Title 10 Code of Federal Regulations (CFR) Subsections 72.3 and 61.55
[10] http://www.gtcceos.anl.gov
[11] Susan Burke 6/4/08 email to Chuck Broscious

Removal reduces the storage space ultimately required for the fuel by approximately 50%." [DEIS(b) @ B-10] The core assembly components containing the uranium fuel sections are then sent intact to the Idaho Chemical Processing Plant (ICPP) now called INTEC for storage. The remaining reactor fuel element parts and structural components are sent to the INL Radioactive Waste Manage-Management Complex (RWMC) for shallow burial as "low-level" Class A or B waste. Until the mid 1970's this waste was dumped in the center of pits and trenches while less radioactive waste was dumped around it to provide additional shielding. Current practice is to use individual holes or "soil vaults" at the RWMC.

On some select core assemblies, the Navy does a destructive examination in the water pool by cutting up the fuel elements as a more detailed evaluation of the uranium fuel and its cladding. In the past this process of cutting away the structural components was routine when the fuel was being reprocessed at the INTEC and the structural parts had to be separated from the uranium fuel components prior to reprocessing, as was the practice prior to 1990. The INTEC and other spent fuel facilities also routinely cut off metal parts of fuel rods on non-Navy fuel that was slated for reprocessing or storage, and sent these metal components to the RWMC for shallow land burial as "low-level waste." The Navy now acknowledges that "some of the structural material exceeds the 10 CFR 61 Class C concentration limits and is being stored in the water pools. Under the Low-Level Radioactive Waste Policy Amendments Act of 1985 (P.L. 99-240), DOE is responsible for ensuring safe disposal of all Greater than Class C waste in a facility licensed by the Nuclear Regulatory Commission." [DEIS(b) @ B-10]

This is a very recent policy shift by the Navy to even consider this waste Greater than Class C. Still, the Navy continues to ship this waste to the RWMC violating its own policy and DOE continues to receive and bury the waste in shallow holes. Extremely limited storage capacity in addition to DOE's inability to account for this waste in storage further challenges the Navy assertions that Greater than Class C waste is going anywhere but to the burial ground. As recently as 7/12/94 this writer observed a heavily shielded transport canister routinely used by the Navy at the RWMC beside a crane ready to unload.

Since this reactor core waste going to the burial grounds contains long-lived radioactive isotopes due to many years of exposure in the reactor core, it should be properly classified and treated according to Nuclear Regulatory Commission (NRC) disposal standards; ie. Greater than Class C waste category. NRC disposal criteria require that “waste that will not decay to levels which present an acceptable hazard to an intruder within 100 years is designated as Greater-than- Class C waste (GTCCW)." [10 CFR 61.7] GTCCW waste, must, for this reason, be disposed at a greater depth than other classes, or, if that is not possible, under an intruder barrier with an effective life of 500 years. "At the end of the 500 year period," according to NRC regulations, "remaining radioactivity will be at a level that does not pose an unacceptable hazard to an intruder or public health and safety." [Ibid.] The adequacy of the NRC regulations is discussed more fully in the NRC Regulation section in this paper. There is considerable debate over NRC's non-enforcement that allows class-C and greater than class-C waste to be dumped in shallow land burial at INL.

DOE data shows that individual NRF waste shipments to the RWMC containing greater than 81,000 curies are common. [12] It also should be noted that this waste is currently dumped in shallow unlined holes (called "soil vaults") that would not qualify as a municipal garbage landfill, much less a RCRA Subtitle C hazardous waste disposal site, or a NRC GTCC radioactive waste repository. At the RWMC/SDA there are >20 rows of near-surface soil vaults with over 1,200 waste holes each containing several drums. More recently, this remote handled highly radioactive greater than Class C waste is dumped in near-surface Pit 20 in about 600 concrete lined vaults each containing at least two drums.

Another category of Navy waste is irradiated test specimens. "The irradiated materials program evaluates small specimens of materials for use in naval reactor systems. The specimens are loaded in sample holders, and the holders are placed in test assemblies at NRF/ECF. The assemblies are irradiated at [Advanced Test Reactor] ATR, and returned to ECF for disassembly." "After completion of the final examination, specimens are shipped to ICPP now called INTEC for storage or to the INL Radioactive

[12] DOE/ID, Radioactive Waste Management Information System (RWMIS) verification process that was released by initiation of Freedom of Information Act by EDI publicized the data. See EDI Citizens Guide to INL.

Waste Management Complex for disposal." [DEIS(b) @ B-12] Over 4,450 specimen shipments to and from the ECF have occurred as of 1989. [Ibid. @ A-9]

Releasable Radionuclides from Navy Test Specimens

Fission and Corrosion Products		Fission and Corrosion Products	
Nuclide	**Activity (curies)**	**Nuclide**	**Activity (curies)**
Iodine-131	1,300	Eu-156	37.5
Tritium	351	Lu-177	15.9
Iodine-132	310	Eu-152	14.1
Eu-156	37.5	Zr-95	10.7
Eu-152	14.1	Zn-65	10.7
Zr-95	10.9	Co-60	7.68
Zn-65	9.8	Ce-141	6.6
Co-60	7.68	Eu-154	6.15
Eu-154	6.15	Cs-136	4.69
Sc-46	3.25	Sc-46	3.25
Cs-137	1.78	Iodine-131	2.37
Ru-106	0.336		
Nb-95	0.264		
Pr-144	0.219		
Ce-144	0.219		[INL ER/WM DEIS @A-68]

The ECF was built in 1957. It has four separate unlined concrete water pools that contain 3 million gallons of water. The ECF does not meet current spent nuclear fuel (SNF) storage or seismic code requirements. NRF workers claim that 16,000 gallons per day are leaking from the pools. In an attempt to slow these leaks, NRF tried injecting grout around the perimeter of the pools. The grouting caused increased hydrostatic pressure that forced some horizontal leakage into the perimeter access corridor around the pools which then must be pumped out. ECF also a lacks leak detection system. All other fuel storage and processing facilities at the INL with similar characteristics have been designated unsafe and scheduled for closure. Therefore, the Navy's claim “that operation of the INL-ECF does not result in discharges of radioactive liquids" is inaccurate. [DEIS(b) @ 5.2-12] Because "three separate milling machines in the water pools are used to separate spent fuel components into smaller sections for examination in the shielded cells" [DEIS(b) @ B-13] suggests that significant contaminates are released to the water in the pools. These processes make the uncontrolled leaks uniquely significant.

The Navy fails to provide seismic analysis documenting that the super structure of the ECF can sustain design basis earthquake and accident scenarios during transfer of fuel using the ECF bridge crane. Water Pits 1, 2, and 3 were only constructed to "Zone 2 earthquake requirements which were judged to be appropriate under the USGS's classification of the area at the time [1957] of their construction." Subsequent USGS requirements for INL raised that standard to zone 3.

"The [NRF] Expended Core Facility $44 million Dry Cell Project has a dry shielded fuel handling, disassembly, examination and shipping facility, a decontamination shop, and a shielded repair shop. The Dry Cell contains a semi-automated production line to receive and prepare fuel for shipment to the INTEC for chemical dissolution and recovery of unused uranium. The decontamination and repair

shop will be integrally connected to the Dry Cell, and to existing water pits, to allow routine servicing of equipment without removing equipment from a shielded environment. A 10,000 foot extension to the existing facility will be used to house necessary control, receiving, storage and training spaces.

"Core examinations and preparations for shipping and dissolution are currently performed in water pits. This method is labor intensive, has notable technical disadvantages, and involves a significant burden of deliberately redundant administrative and physical controls for nuclear safety. The receipt of expended nuclear cores is expected to have increased by 1992. This surge will be compounded because many of these cores will be larger and heavier than those that are currently processed in the water pits. Existing facilities and systems cannot be economically upgraded and automated to meet the projected workload increases. The Dry Cell Project is essential to continued timely handling of expended cores in support of scheduled Naval nuclear-powered vessel refueling and inactivation's." [DOE Fy93] Because of severe deterioration of the concrete, leaks in the pool walls, and the gate seal leaks, the ECF pools cannot be isolated.

Navy Waste Characterization

Publicly available summary DOE data recorded between 1952 and 1981 cites the Navy's NRF as dumping 3,195,000 Ci. at the RWMC, making the Navy the second largest curie contributor to INL's dump. [ID-10054-81@15] Yet, DOE's restricted access Radioactive Waste Management Information System Solid Waste Master (RWMIS) Database (gained by EDI FOIA request) attributes 187,050,351 curies to Navy's NRF dumping at the RWMC between 1960 and 1981. [RWMIS, P61SH090] Between 1960 and 1989 the Navy dumped 188,140,668 curies at the RWMC. [ibid] This figure makes the Navy the largest curie contributor to INL's dump. DOE recently revised these figures claiming a mistake in data entry more fully described below. DOE now claims that there was an entry error in their database that went undetected for 24 years.

DOE/ID responded to Environmental Defense Institute (EDI) Freedom of Information Act (FOIA) request with a copy of INL contractor EG&G's Radioactive Waste Management Information System (RWMIS) verification process that was initiated because EDI publicized the data. According to the RWMIS 1/4/88 and 10/24/89 computer runs, there were four waste shipments on 9/15/69 from the Naval Reactors Facility (NRF) to the Radioactive Waste Management Complex (RWMC). The RWMIS lists the times of the four shipments at 820, 830, 840, and 850. The 820 NRF shipments are listed as "metal scrap".

The Navy's reactor core wastes that have been buried at the RWMC must be exhumed at considerable expense and hazard to workers. The core assemblies are extremely radioactive and require remote handling. Individual NRF shipments to the RWMC of 81,000 curies attest to this hazard. Furthermore, the cores are not packaged in any radiation containment unit. NRF officials only acknowledge that the waste is shipped in a canister from the NRF, and the shipping canister is returned to the facility.

Until the mid 1970's the Navy dumped fuel element parts and specimens into the RWMC pits and trenches. Since then, the Navy continues to dump reactor core assemblies at the RWMC in "soil vaults", which are defined as shallow (2 to 6 feet diameter) holes in the ground where the waste is dropped in and covered with 3 feet of soil. As of 1979, there are 1,150 "soil vaults" in 20 separate rows. Currently the RWMC is undergoing environmental restoration under the CERCLA Superfund cleanup process. Remediation projects have begun, starting with Pit 9. Even the most pedestrian of observers can see how ludicrous cleanup activities are when dumping continues in the immediate vicinity creating new Superfund cleanup actions. The Environmental Protection Agency is responsible in that the agency has been unwilling to promulgate radioactive exposure and waste disposal standards - mainly due to inter-agency disputes among DOE, NRC, and EPA. Previous attempts (1987) by EPA to establish standards were struck down by the courts as not protective of human health. It is outrageous that simultaneously the INL burial grounds are undergoing Superfund cleanup of radioactive wastes that are contaminating the aquifer below, and in the immediate vicinity, the Navy continues to bury highly radioactive waste that will be the object of future cleanup activities.

The unique nature of the Navy spent fuel assemblies and the Naval Reactor Facility's processing/ inspection operations is secret. The highly enriched Navy waste poses a significantly greater environmental threat than other conventional low-enriched reactor fuel that goes directly into storage cooling ponds. Additionally, the Navy waste going to the RWMC must be classified as Transuranic waste and/or GTCC waste by virtue of the fact that it contains reactor core assembly sections contaminated with long-lived radionuclides. The extremely high curie content of these waste shipments attests to this fact. Institute for Energy and Environmental Research's book *High-Level Dollars, Low-Level Sense* challenges the NRC radioactive waste disposal standards that states in part:

"In examining the NRC regulations, one is thus led to believe that the class limits [Class A, B, C, and greater than C] were derived from the requirements imposed by these hazard definitions and time frames. However, even according to NRC's own definitions of what is 'hazardous' and what is 'acceptable' the time frames of 100 years [Class A] and 500 years [Class C] are logically incompatible with the class limit definitions, raising serious questions about their environmental and public health adequacy." ... "For example, much of the '100 year' waste (Classes A & B), for example, will not decay to NRC-defined 'acceptable' levels in 100 years. Consider nickel-63. Buried at Class B concentrations levels of just under 70 curies per cubic meter, waste containing nickel-63 would still have concentrations of about 35 curies per cubic meter after the institutional control period of 100 years had elapsed. According to NRC regulations, at this point the waste should have decayed to the point where it 'will present an acceptable hazard to an intruder.' Yet, at 35 curies per cubic meter, the waste, if retrieved from the disposal site and re-buried, would still be classified as Class B waste since it has concentrations levels which are 10 times higher than the Class A limits. As a matter of fact, this waste would take a total of well over 400 years to decay just to the Class A upper limits (at which point the NRC regulations would still define it as hazardous for another 100 years if it were being buried for the first time)." [IEER© @ 74&75]

"This analysis makes an even stronger case against the NRC regulations when applied to the Class C limits, which pertain to 'long-lived radionuclides'. Class C waste contaminated with technetium-99, however, buried at concentrations of just under the Class C limit of 3 curies per cubic meter, will be hazardous according to NRC definitions for far longer than 500 years. It will take such waste over the three half-lives - some 640,000 years - just to decay to the upper boundary of Class A levels. The illogical nature of the above regulatory approach is made even more explicit in the NRC's discussion of the 'long-lived' radionuclides in the waste. According to the NRC, in managing low-level waste, 'consideration must be given to the concentration of long-lived radionuclides ... whose potential hazard will persist long after such precautions as institutional controls, improved waste form, and deeper disposal have ceased to be effective. These precautions delay the time when long-lived radionuclides could cause exposures'".[IEER(c)]

"In essence, there is an admission that the hazard due to long-lived radionuclides 'will persist long after' the controls imposed by the regulations fade away. This is an extraordinary admission of the regulations fundamental inadequacy right in the text of the regulation. The only thing the NRC regulations will apparently do with respect to the long-lived components of low-level waste, is push the hazard into the future, since NRC-mandated controls will, at most, only 'delay the time when long-lived radionuclides could cause exposure'. In the case of many long-lived radionuclides, they will continue to be present in almost exactly the same concentrations when institutional controls have lapsed as when they were first buried." [IEER(c)] [www.ieer.org]

The Nuclear Regulatory Commission (NRC) requires in classifying a specific waste shipment that the part of that volume that contains 90% of the radioactivity be separated and used to determine the concentration and thereby the waste classification. The Navy and DOE continue to use the entire volume of the shipment to calculate the average concentration. The result is that the radioactive concentration appears low because of dilution. The NRC's Staff Technical Position specifically prohibits this practice of factoring in other material as a means of dropping the average concentration. The Navy is also using total volume averaging to avoid NRC regulations in burial of reactor shells at the DOE Hanford site. An EG&G groundwater sampling report found radioactive contaminates at the 600 foot level under the INL burial grounds. (See RWMC section IV [D]).

Summary of Nuclear Navy Waste (1960-1993)
Dumped at INL's RWMC Burial Ground

Year Dumped		Curie Content of Waste *
1960		1,364
1961		6,717
1962#		20,900
1963		34,933
1964 Navy Knolls Lab. Reactor	Core + Loop Comp.	6,400
1964		24,050
1965		517,571
1966		787,300
1967		801,100
1968#		198,600
1969#		644,000
1970		3,572,048
1971		54,669
1972		10,577
1973		9,411
1974		5,782
1975		4,911
1976		73,348
1977		144,758
1978		34,962
1979		109,171
1980		39,206
1981		19,219
1982		8,401
1983		39,035
1983 NRF S1G Reactor Vessel		5,579
1984		372,614
1985		141,748
1986		35,928
1987		29,664
1988		6,722
1989 #		126,400
1990 #		74,120
1991 #		102,600
1992 #		49,300
1993 #		27,560
Total 1960 through First Quarter 1993		**8,140,668**

Source for above table:
[Radioactive Waste Management Information System Master Database, P61SH090, 10/24/89]; [#][Senate Armed Services Committee, Subcommittee on Nuclear Deterrence, Arms Control and Defense Intelligence, Hearing on: shipment of Spent Nuclear Fuel, 28 July 1993, Questions and Answers for the Record, @ 25]

* Curie content of shipments less than 1 curie were not added to the above summary table, therefore, the totals are understated. Also **not included** are Navy contractors, General Dynamics' (Electric Boat Div. and General Atomics Div.) seven shipments of "irradiated fuel" to the RWMC; and General Electric's eleven shipments of "irradiated fuel" and ten reactor "core + loop" assemblies; and Office of Isotopes Specialists' one shipment of "irradiated fuel" to RWMC. DOE and Navy officials publicly deny that spent fuel was dumped at the INL burial ground (RWMC) in direct contradiction to their own data base entries. (See Spent Nuclear Fuel Dumped in Burial Ground that shows 90.282 metric tons of irradiated fuel dumped in RWMC)

Navy Waste Characterization
Partial listing of isotopes found in Navy waste dumped at INL

Isotope	Symbol	Half-Life in days	Half-Life in Years
Americium-241	Am-241	1.7 E+5	465.7
Antimony-125	Sb-125	877	2.4
Barium-133	Ba-133	12	
Cerium-144	Ce-144	290	
Cobalt-58	Co-58	72	
Cobalt-60	Co-60	1,900	5.2
Chromium-51	Cr-51	27	
Cesium-134	Cs-134	840	2.06
Cesium-137	Cs-137	1.10 E+9	30.17
Europium-154	Eu-154	5,800	15.89
Hafnium-181	Hf-181	46	
Iron-55	Fe-55	110	
Iron-59	Fe-59	45	
Iridium-192	Ir-192	74	
Lead-210	Pb-210	7,100	19.4
Manganese-54	Mn-54	300	
Neptunium-237	Np-237	8.0 E+8	2,191,780
Nickel-59	Ni-59	2.9 E+7	79,452
Nickel-63	Ni-63	2.9 E+4	79.4
Niobium-95	Nb-95	35	
Potassium-40	K-40	.50	
Plutonium-238	Pu-238	3.3 E+4	87.7
Plutonium-239	Pu-239	8.9 E+6	24,131
Plutonium-240	Pu-240	2.4 E+6	6,575
Plutonium-241	Pu-241	4.8 E+3	14.35
Plutonium-242	Pu-242	1.4 E+8	383,561
Promethium-147	Pm-147	920	2.5
Radium-226	Ra-226	5.9 E+5	1,616
Ruthenium-106	Ru-106	365	
Silver-110M	Ag-110M	270	
Sodium-22	Na-22	950	2.6
Strontium-89	Sr-89	50	

Strontium-90	Sr-90	10,512	28.8
Technetium-99	Tc-99	7.7 E+7	210,958
Thorium-232	Th-232	5.1 E+12	13,972,600,000
Tin-119	Sn-119	112	
Uranium-233	U-233	5.9 E+7	161,643
Uranium-234	U-234	9.1 E+7	249,315
Uranium-235	U-235	2.6 E+11	712,328,767
Uranium-236	U-236	8.7 E+9	23,835,616
Uranium-238	U-238	1.6 E+12	4,383,561,644
Zirconium-95	Zr-95	63	

Source: USDOE, Radioactive Waste Management Information System Master Solid Database, 10/24/89

The above table shows clearly how Navy waste dumped in the burial grounds contains Transuranic elements. One of the reasons for this is the lack of precision in cutting off the structural parts of the fuel element in preparation for reprocessing or storage. Destructive tests of fuel assemblies additionally add to the fissile content of the waste stream. In recent DOE documents characterizing the waste streams going to the RWMC they acknowledge presence of, "Irradiated fuel element end boxes that were cut off of the fuel plates in the hot cells. The end boxes may contain some fuel, but generally only activation products". [EGG-WM-10903 @ 2-30] Independent characterization of this waste must be made before more is dumped at the RWMC.

The Environmental Protection Agency (EPA) found that INL violates the Resource Conservation and Recovery Act and "That the presence and/or release and potential release of hazardous waste from USDOE's facility may present a substantial hazard to human health and/or the environment ..." [EPA (a), 9/15/87] Substantive corrective action has yet to occur because EPA does not have the authority to shut down any INL facility.

See Environmental Defense Institute's Citizens Guide to INL (pages 52 to 60) that offers additional reference citations available at http://environmental-defense-institute.org

Also see: Carol Borgstrom, Director, Office of NEPA Policy and Compliance (GC–20), U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585–0119. *Telephone:* 202–586–4600, or leave a message at 1–800–472–2756. *Fax:* 202–586–7031. This NOI will be available on the internet at *http://www.eh.doe.gov/nepa*. Additional information on the GTCC LLW EIS can be found at *http://www.gtcceis.anl.gov*.

Respectfully Submitted,

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Attachment A

NATURAL RESOURCES DEFENSE COUNCIL
SNAKE RIVER ALLIANCE
SOUTHWEST RESEARCH AND INFORMATION CENTER
TRI-VALLEY CARES
HEART OF AMERICA NORTHWEST

May 14, 2008

Secretary Samuel Bodman
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

RE: Amendment to Waste Management PEIS ROD, 73 FR 12041-12403 (March 7, 2008) and accompanying Supplement Analysis DOE/EIS-200-SA03 (February 2008)

Dear Secretary Bodman:

We write to you as organizations involved for decades in Department of Energy (DOE) nuclear waste issues, including regular participation in DOE actions under the National Environmental Policy Act (NEPA). Our organizations and members are directly affected by the proposed action of shipping up to 9,019 cubic meters of contact-handled (CH) and remote-handled (RH) transuranic (TRU) waste to the Idaho National Laboratory (INL) and to the Waste Isolation Pilot Plant (WIPP).

We ask that you withdraw the Record of Decision (ROD) on the Waste Management Programmatic Environmental Impact Statement (WMPEIS) of March 7, 2008. Before DOE undertakes the proposed action, it must conduct additional NEPA analysis because that ROD is not "adequately supported by an existing EIS." 10 CFR § 1021.315(e).

In addition, the information in the Supplement Analysis DOE/EIS-200-SA03 (SA) is so at variance with other DOE documentation that it is not credible and casts doubt on the credibility of other DOE documents regarding TRU waste.

1. DOE has not rigorously evaluated all reasonable alternatives.
The twin functions of the Environmental Impact Statement (EIS) are to "require that agencies take a 'hard look' at environmental consequences, and provide for broad dissemination of relevant environmental information." See *Robertson v. Methow Valley*, 490 US 332, 350 (1989). The discussion of alternatives is the legally required heart of any EIS. 40 CFR § 1502.14. The legally adequate EIS must "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." 40 CFR § 1502.14(a).

In the SA, DOE states that the Proposed Action is: "to ship RH- and CH-TRU waste from sites that do not have the capability to process this waste, and CH-TRU from the Hanford site that requires special facilities for volume reduction, to INL for treatment and characterization." SA at 2. The SA discusses no alternatives, not even the no action alternative, to shipping those wastes to INL. The alternative of using the Central Characterization Project (CCP) to characterize waste at one or more of the 14 sites included in the ROD is a reasonable alternative that is not mentioned in the SA. As of May 12, 2008, the CCP has characterized and certified 49,110 drums of waste for WIPP, and 101,383 containers have been disposed at WIPP. WTS FY08 Key Performance Data. Many of the drums certified by CCP have been at sites included in the current ROD. The CCP was created more than five years ago precisely to meet the need outlined in the current SA – to characterize wastes at "small quantity" generator sites so that those sites do not need to build expensive new facilities and to avoid the risks of transporting wastes to other sites before it can be shipped to WIPP for disposal. Using the CCP would reduce both the number of waste shipments and the distances that waste would be shipped, thereby reducing the costs and environmental impacts. Use of CCP is clearly a reasonable alternative that is not mentioned or analyzed in the WM PEIS or the SA. Thus, that alternative must be included in any adequate NEPA analysis before a ROD can be issued and the proposed action taken.

2. DOE is proposing sites that are not included in either the WM PEIS or the WIPP SEIS-II ship waste to the Idaho National Laboratory (INL) and WIPP.
The ROD and SA mention 14 sites that would ship TRU wastes to the Advanced Mixed Waste Treatment Facility (AMWTF) at INL. Seven of those sites – Babcock and Wilcox (BW in Virginia), Bettis Atomic Power Laboratory (in Pennsylvania), General Electric Vallecitos Nuclear Center (GE-VNC in California), Knolls Atomic Power Laboratory (KAPL in New York), Knolls-Nuclear Fuel Services (K-NFS in Tennessee), NRD, LLC (in New York), and Separations Process Research Unit (SPRU in New York) -- are not sites included in the WM PEIS as having TRU waste, nor are they (except Bettis) included in the WIPP SEIS-II

(DOE/EIS-0026-S-2). Thus, the WM PEIS does not analyze the reasonable alternatives nor does it analyze the environmental impacts of TRU waste characterization or transportation from those sites. A federal agency may not ignore such clearly obvious NEPA obligations, and appropriate NEPA analysis must be done before a ROD can be issued and the proposed action can be taken.

3. DOE is misusing the alternatives and analyses done in the WM PEIS and WIPP SEIS-II.
The ROD and SA claim that the new proposed action is "similar" to alternatives considered and has "smaller impacts" to alternatives that it previously considered – specifically "Alternative 3" in the WM PEIS and "Alternative 2B" in the SEIS-II. However, the WM PEIS "Regionalized Alternative 3" was to consolidate "waste for treatment at four sites (Hanford, INEL, ORR, and SRS)"; Contact-handled (CH) TRU waste would be treated at Hanford, INEL, and SRS; RH TRU would be treated at Hanford and ORR. WM PEIS at S-63. Under the Regionalized Alternatives, "DOE assumed that the waste would be shipped to the closest site for treatment." WM PEIS at S-66. By contrast, in the ROD and SA, there would be characterization and treatment done at only one site (INL) and potential treatment sites that are closer to some of the generator sites would not be used. This action is not similar to "Regionalized Alternative 3." The "Regionalized Alternative 3" did not include shipping any RH waste to INL, so it is not at all similar to the proposed action of making 188 shipments of RH waste to INL in the ROD.

The WM PEIS did consider a "Centralized Alternative" in which one site (WIPP) would treat all CH TRU and Hanford and ORR would treat RH TRU. That "Centralized Alternative" is not the same as using INL, as is now proposed in the ROD. Thus, all of WM PEIS alternatives were different than the current proposed action and, consequently, the WM PEIS impact analysis also did not cover the site-specific and transportation impacts of the current proposed action.

The SEIS-II "Action Alternative 2B" was for 105,000 cubic meters more CH waste than is allowed at WIPP and 32,000 cubic meters more RH waste than is allowed at WIPP under the WIPP Land Withdrawal Act. Those are significant amounts of waste, and thus, that Alternative has not been selected by DOE for WIPP and is not legally allowed. Under "Alternative 2B," only two (Nevada Test Site and Sandia) of the 14 sites in the current ROD would ship CH waste to be treated at INL; two (Lawrence Berkeley and Livermore) of the 14 sites in the current ROD would ship CH waste to Hanford for treatment, and three (Argonne, Bettis, and Paducah) of the 14 sites in the current ROD would ship CH waste to be treated at the Savannah River Site. CH waste at five sites (BW, GE-VNC, K-NFS, NRD, and SPR) in the current ROD is not included at all in that, or any other, alternative in the SEIS-II. Thus, "Alternative 2B" is not at all "similar" to having all the CH and RH waste treated at INL, which is the proposed action in the ROD. Consequently, no alternative in the SEIS-II analyzed the site-specific or transportation impacts of the proposed action in the ROD.

4. The transportation analysis in the ROD and SA is inadequate and different than either the WM PEIS or SEIS-II.
Because several sites included in the ROD were not included in the WM PEIS and the transportation impacts of shipping from sites in the East to INL were not considered in the WM PEIS, there has been no NEPA analysis of the transportation impacts of shipping waste from those sites to INL. Additionally, some (unspecified as of this date by the agency) amount of the waste included in the ROD would be shipped to INL in the TRUPACT-III, a shipping container

for large size waste that has not been certified by NRC (as the ROD and SA acknowledge). Use of that shipping container was not included in either the WM PEIS or SEIS-II, so those documents did not include any NEPA analysis of using that shipping container. Thus, additional transportation analysis is required before a ROD can be issued and the proposed action can be taken.

5. The WM PEIS analysis was found insufficient in a somewhat similar circumstance.
In *WA, Columbia Riverkeeper, Heart of America Northwest, et al v. Spencer Abraham, Secretary of Energy et al,* CT-03-5044-AAM (E.D. WA, 2003), the court enjoined DOE from using Hanford as a consolidated processing site for TRU waste absent full consideration of the environmental impacts in a site-specific EIS. That court was fully aware of the WM PEIS, and the amount of waste and the number of sites involved in that case were much less than in the proposed action in the ROD, yet the court determined the WM PEIS analysis was not adequate.

6. The projected waste volumes included in the proposed action vary greatly from other WIPP documents.
The SA includes Table 1, showing the 14 sites and amounts by site, totaling 8,764 cubic meters of CH waste and 255 cubic meters of RH waste included in the ROD. At about the same time, DOE released to the Environmental Protection Agency (EPA) and the public the *Annual Transuranic Waste Inventory Report-2007,* DOE/TRU-2008-3379 ("Report"). That Report is a major document for EPA's recertification of WIPP. Further, the Carlsbad Field Office (CBFO) "management will use TRU waste inventory information to plan waste retrieval, treatment, repackaging, characterization, shipment, and disposal for both stored and projected wastes." Executive Summary at 4. Therefore, CBFO, EPA, and the public expect that Report to be accurate.

However, the waste volume data in that Report varies dramatically from the SA Table 1. For example, the Report says that the total "Anticipated Volume" of CH waste from Bettis is 19 cubic meters; SA Table 1 shows 70 cubic meters of CH waste from Bettis, almost four times more than in the Report. The Report says that the "Anticipated Volume" from Livermore is 380 cubic meters; SA Table 1 shows 1,125 cubic meters from Livermore, almost four times more than in the Report.

Those widely disparate volume numbers raise significant questions about the accuracy and credibility of the SA and the Inventory, since one or the other or both are not accurate. DOE must explain to the EPA and the public which is accurate, and it must prepare its NEPA analysis based on the most accurate information. Further, DOE should withdraw the SA and ROD until it can demonstrate to the public and Congress that the data providing the basis for its actions is technically accurate.

7. Several sites are not included in the WIPP Report and may not be able to send waste to WIPP, resulting in waste from those sites remaining at INL, in violation of the Idaho Settlement Agreement.
The ROD states that waste from BW and NRD will be shipped to INL "only if that waste meets waste acceptance criteria for treatment at INL and is determined to be defense waste as required by the WIPP Land Withdrawal Act for waste to be eligible for disposal at WIPP." 73 FR 12401,

c. 2. The Report does not include BW or NRD waste. The Report also does not include CH waste from GE-VNC, Paducah, and SPRU in the "WIPP-bound" Inventory, though each of those sites is included in the ROD and SA. Thus, it is not clear that those five sites have WIPP-acceptable waste, which also raises concerns about whether waste from those sites shipped to INL would be "stranded" there, in violation of the Idaho Settlement Agreement. That possibility for the three additional sites is not analyzed in the ROD or SA. In addition, the Report includes some "Potential" waste streams from seven sites -- Bettis, Lawrence Berkeley, Livermore, Paducah, Hanford, SPRU, GE-VNC -- that are not currently allowed at WIPP and are not being included in the Recertification application to EPA. Thus, if those waste streams are included in the proposed action, they would be "stranded" at INL, in violation of the Idaho Settlement Agreement. That possibility for those waste streams is not analyzed in the ROD or SA.

The March 7, 2008, ROD must be withdrawn because it is not "adequately supported by an existing EIS." For DOE to proceed with the proposed action, which is not included in the WM PEIS, much more NEPA analysis is required. We urge you to immediately withdraw the March 7, 2008, ROD and the SA. We ask for your response by May 30, 2008.

If you would like to further discuss this matter, please contact both Don Hancock of the Southwest Research and Information Center and Geoffrey Fettus of the Natural Resources Defense Council.

Thank you for your careful attention to this matter.

Sincerely,

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