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SUPPLEMENT ANALYSIS

Regarding Remote-Handled Transuranic Waste Identified in the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement and the Advanced Mixed Waste Treatment Project Final Environmental Impact Statement

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CONTENTS

1. OVERVIEW 3

2. BACKGROUND 3

3. PROPOSED ACTIVITIES 4

4. PRESENT CONDITIONS 4

4.1 RH TRU Waste 4

4.2 Facilities 4

5. ANALYSIS AND DISCUSSION 5

5.1 Facility Modification Impacts 5

5.2 Air Emissions 6

5.3 Transportation 7

6. CONCLUSIONS 9

7. DETERMINATION 9

List of References

1 - DOE 1995 - *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement* (1995 EIS), DOE/EIS-0203-F, May 1995.

2 - DOE 1999 - *Advanced Mixed Waste Treatment Project Final Environmental Impact Statement* (AMWTP EIS), DOE/EIS-0290, March 1999.

3 - DOE 2002 - *Idaho High-Level Waste and Facilities Disposition Final Environmental Impact Statement,* (Idaho HLW & FD EIS), DOE/EIS-0287, September 2002.

4 - CWI 2006a – EDF-6588 "Estimated Dose Totals for RH-TRU Waste Handling Activities at CPP-659," Rev. 0, C. J. Greene, 2006.

5 - CWI 2006b - EDF-6389 "Air Permitting Applicability Determination—Venting at RWMC and INTEC, Exemption from Permitting Under IDAPA 58.01.200," Rev. 0, H. R. Orr, 2006.

6 - DOE 2005 - *Supplement Analysis of the INL Portion of the April 1995 Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement,* DOE/ID-0203-F-SA-02, June 2005.

7 - DOE 1997 - *Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement*, DOE/EIS-0026-S-2, September 1997.

List of Figures

Figure 1 - Diagram showing the transport route between the RWMC and the INTEC (Adams Blvd., West Portland Ave., Lincoln Blvd) 8

List of Tables

Table 1 - New construction versus building modifications impacts. 5

Table 2 - Radiological air emissions. 6

Table 3 - Criteria air pollutant. 7

Table 4 - Representative Toxic Air Pollutants. 7

1. OVERVIEW

The potential environmental impacts associated with the management of remote-handled transuranic waste (RH-TRU) have been the subject of numerous National Environmental Policy Act (NEPA) documents over the past decade. RH-TRU is defined as packaged TRU waste with an external surface dose rate greater than 200 mrem/h. At the U.S. Department of Energy, Idaho Operations Office (DOE-ID), two Environmental Impact Statements (EISs) have analyzed RH-TRU management approaches. Although decisions were already made regarding RH-TRU management, these decisions have yet to be implemented. Now the Environmental Management program at DOE-ID is preparing for RH-TRU management activities, and descriptions of these activities are not identical to the proposed management actions described in the previous two EISs. DOE has prepared this supplement analysis (SA) to determine whether there are "substantial changes in the proposed action that are relevant to environmental concerns" or significant new circumstances or information within the meaning of the Council of Environmental Quality and DOE NEPA Regulations (Title 40 Code of Federal Regulations [CFR] Part 1502.9 (c) and 10 CFR 1021.314) that would require additional NEPA analyses.

The conclusion of this SA is that the differences are not significant enough to warrant additional NEPA analysis.

2. BACKGROUND

In 1995, DOE issued the *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement* (1995 EIS). Within the 1995 EIS, DOE analyzed the impacts of managing RH-TRU at the Radioactive Waste Management Complex (RWMC). The two specific projects in this EIS that analyzed management of RH-TRU were the Waste Characterization Facility (WCF) project and the Private Sector Alpha-Contaminated Mixed Low-Level Waste Treatment project.

The WCF was designed to open containers of TRU, reclassify low-level waste, and mixed low-level waste; obtain and examine samples; and repackage the characterized waste in an environment designed to contain TRU radiation. In the Record of Decision (ROD) for the 1995 EIS, DOE decided to build the WCF. In fact, that facility was designed but never built.

Instead, in 1997 DOE embarked on a new initiative known as "privatization." This strategy envisioned the private sector undertaking more of DOE's waste management activities, especially for wastes such as RH-TRU. Because the privatization approach involved changes in the way RH-TRU would be managed, including the procurement of a separate contractor to manage this waste, DOE concluded that further NEPA analyses and documentation was required to determine if these proposed privatization activities regarding TRU waste would have significant environmental impacts not analyzed in the 1995 EIS. Because the proposed activity was a private sector initiative, DOE employed its NEPA process at 10 CFR 1021.216 to examine the potential environmental impacts proposed by the private sector contractor. The contractor was awarded a contingent contract to construct what was then named the Advanced Mixed Waste Treatment Facility, contingent upon further NEPA analysis of the potential environmental impacts of constructing and operating this facility to manage RH-TRU, as well as other wastes managed as transuranic waste.

In 1999, DOE completed this EIS, entitled the *Advanced Mixed Waste Treatment Project Final Environmental Impact Statement* (AMWTP EIS). The AMWTP EIS addressed the construction and operation of a facility to treat and prepare TRU waste, including RH-TRU. DOE then decided to construct and operate the AMWTP facility. Litigation ensued (involving issues not directly pertinent to this SA), which ultimately resulted in settlement between DOE and local environmental groups. The result of the

settlement was that the AMWTP continued forward and the treatment building was constructed in a more scaled-down fashion. Although not specifically intended by the settlement, one result of this more simplistic building was that RH-TRU could not be managed at the AMWTP facility because the additional protective measures needed to protect workers handling RH-TRU were not part of the final building design and construction. As a result, the RH-TRU has remained in storage at the RWMC.

3. PROPOSED ACTIVITIES

DOE proposes to move the RH-TRU from the RWMC to the Idaho Nuclear Technology and Engineering Center (INTEC). At the INL Site, the RWMC is located in the southwest, whereas INTEC is located near the center, approximately seven miles apart. One question addressed in this SA is whether this change in location is likely to have significant environmental impacts requiring additional NEPA analysis.

DOE also proposes to modify existing facilities at INTEC and operate these facilities to prepare the RH-TRU for shipment off the INL Site. CPP-659, the New Waste Calcining Facility, would be used for waste treatment and shipping activities. CPP-659 could also be used for characterization and drum venting actions. CPP-1659, CPP-653, and/or CPP-1634 could also be used for characterization activities, such as head-space gas sampling (HSGS) and venting activities. CPP-1617 would be used to store the RH-TRU drums that contain mixed waste.

Facility modifications at INTEC would involve activities that are essentially the same as those activities originally analyzed in both the 1995 EIS and the AMWTP EIS. These include: upgrading utilities and infrastructure, if necessary; repairing or replacing the decon cell and shield-wall windows and additional shielding; and installing equipment for monitoring, assay and sample collection, waste treatment, drum loading/unloading equipment.

Facility operation would involve characterization, treatment, repackaging, and transporting the RH-TRU to WIPP for final disposition. Characterization includes HSGS, real-time radiography (RTR), and gamma assay. Treatment could include sizing, segregating, adding liquid absorbent, removal of prohibited items, and filter processing. Additional actions would be drum venting, repackaging, and payload pre-assembly actions for transportation.

4. PRESENT CONDITIONS

4.1 RH TRU Waste

The RH-TRU waste is presently stored at the Intermediate-Level Transuranic Storage Facility (ILTSF) and Transuranic Storage Area located at the RWMC. Section 1.2 of the AMWTP EIS (Volume 1) analyzed the potential environmental impacts of managing approximately 135 m^3 of RH-TRU waste at the AMWTP. Additional characterization data and background information is provided on the RH-TRU waste stream in Appendix E of the AMWTP EIS (E-5.3, Inventory of Radioactive and Hazardous Materials). In Appendix F (Table F-9) the RH-TRU waste stream is further categorized.

4.2 Facilities

The primary facility at INTEC that would be used for RH-TRU management, the CPP-659 Decontamination Facility, was originally designed for performing radiological decontamination of equipment from the calciner process, which was co-located in CPP-659. Facilities were provided in the Decontamination Facility for both shielded and contact-handled decontamination. These facilities have also been, and continue to be used for treatment of hazardous debris. These ongoing activities, as well as proposed RH-TRU activities were analyzed in the 1995 EIS, including processing legacy hazardous

debris at the CPP-659 (including radioactive mixed waste) and treating spent high-efficiency particulate air (HEPA) filters that were removed from the calciner.

The current activities are performed pursuant to a Resource Conservation and Recovery Act (RCRA) Part B final permit. Storage of hazardous debris in various CPP-659 areas is also allowed under this permit. A Class 3 RCRA Permit Modification Request (PMR) has been prepared and submitted to DEQ for approval. The PMR encompasses several changes so that RH-TRU mixed waste can be treated and stored in these facilities. The major changes to the permit are to allow for additional container storage of mixed waste in the Crane Maintenance Area in CPP-659 and to allow additional waste treatment methods consisting of sizing, compaction, repackaging, and absorbent addition in CPP-659 and -1659.

5. ANALYSIS AND DISCUSSION

Many of the proposed activities and their impacts remain the same regardless of where the activity occurs. Therefore, DOE determined that the important environmental aspects to be reviewed in this SA and the aspects affected by the proposed change include transportation impacts, construction impacts, and air emissions. The WCF analysis in the 1995 EIS will be used for comparison of the facility modifications. The Steam Reforming Option in the *Idaho High-Level Waste and Facilities Disposition Final Environmental Impact Statement* (Idaho HLW & FD EIS) was used to compare the impacts of air emissions at INTEC. The analysis of the air emissions from the proposed activities at RWMC is included in the AMWTP EIS. The 1995 EIS will be used to assess the impacts of the additional transportation of the waste from the RWMC to the INTEC.

Regardless of where the proposed action is performed within the INL Site, several controls would be implemented to ensure worker and public protection. Examples of safety, transportation, and radiological controls include Safety Analysis Report documents, transportation plans, and 10 CFR 835, "Occupational Radiation Protection." Therefore, worker and public protection impacts would be the same at any INL Site location and will not be analyzed in this document.

5.1 Facility Modification Impacts

Table 1 shows the comparison of the typical impacts of constructing the WCF at the RWMC verses modifying existing facilities at the INTEC.

Table 1 - New construction versus building modifications impacts.

Description/Function	Waste Characterization Facility – 1995 EIS[a]	INTEC Building Modifications
Soil Disturbance	2.1 acres	¼ acre
Industrial Waste	1,200 m^3	10 m^3
Radioactive Waste	none	1 m^3
Construction Duration	2 yr	6 mo
Cost	$38 M	$10 M
Number of Workers	80	12
Worker Radiological Exposure	None	0.935 rem total worker population
Operating Duration	25 yr	5 yr

a. 1995 EIS (Volume 2, Part A) Project Data Sheet (page C-2-9-3)

Except for the generation of a very small amount of radioactive waste and minimal radiological dose to the workers, all general construction impacts from modifying the INTEC facilities are well below the construction impacts analyzed in the 1995 EIS. Exposure of workers to radiological contamination would occur during the proposed modifications at the INTEC. The proposed action includes installing a new crane in the Decontamination Cell within CPP-659. Currently, it is unknown if the crane would require replacement. If it is determined that a new crane would be needed to support the waste management actions, several Decontamination Cell entries would be required. The cell would be decontaminated, and any sources of radiation exposure would be removed to the extent practicable before any personnel entries. The estimated radiation dose for personnel performing this activity is 0.935 rem (CWI 2006). The project anticipates the effort would require approximately 12 workers of various disciplines. No other modifications at CPP-659 for this project are expected to result in measurable radiation dose to personnel.

5.2 Air Emissions

The air emissions from processing the RH-TRU if conducted at RWMC were addressed in the AMWTP EIS. An analysis, EDF-6389, "Drum Processing at Radioactive Waste Management Complex and Idaho Nuclear Technology and Engineering Center," has been prepared for the proposed action. In addition to drum venting, air emissions would be generated from HSGS, treatment activities, and sample collection. The drum venting activity would have the greatest air impact and, therefore, it was used as a representative case to address all the activities that generate air emissions (the most conservative limits were applied to all drum emissions).

The analysis in EDF-6389 is based on estimated waste concentrations of nonradioactive pollutants in each waste stream in the findings detailed in "Waste Description Information for Transuranic-Contaminated Wastes Stored at the INEL," (CWI 2006b). Radionuclide emissions are based on data from HEPA filters in service during the venting of 14,759 55-gallon drums from May 1996 through January 2002 (CWI 2006b). The volume of drums was similar to what is addressed in the proposed action.

The maximally exposed individual for RH-TRU operations conducted at the RWMC was determined to be an individual residing at the southern boundary of the INL Site (a distance of approximately 5,700 m). The effective dose equivalent to this maximally exposed individual over five years would be 0.01518 mrem (CWI 2006b). Since INTEC is approximately 7 miles farther from the INL Site boundary than RWMC, the dose to the maximally exposed individual would be less if the activities occurred at INTEC than RWMC.

Below, Tables 2, 3, and 4 provide radiological, criteria, and toxic air pollutant information for comparison to the Steam Reforming Option of the Idaho HLW & FD EIS.

Table 2 - Radiological air emissions.

Radionuclides	Idaho HLW & FD EIS Steam Reforming Option (Ci/yr)	RH TRU Waste Stream Processing – EDF-6389 (Ci/yr)
Americium-241	--	3.36E-10
Cesium-137	2.5E-03	1.39E-12
Cobalt-60	1.3E-07	1.39E-11
Plutonium-239	1.1E-07	2.63E-09
Strontium-90	5.9E-03	3.35E-09

Table 3 - Criteria air pollutant.

Criteria Air Pollutant	Idaho HLW & FD EIS Steam Reforming Option (tons/yr)	RH TRU Waste Stream Processing – EDF-6389 (tons/yr)
Carbon Monoxide	2.3	0.0E+00[a]
Oxides of Nitrogen	5.1	0.0E+00[a]
Particulate Matter	4.7E-01	0.0E+00[a]
Sulfur Dioxide	8.7	0.0E+00[a]
Volatile Organic Compounds	2.8E-01	2.5E-04
Lead	3.1E-04	0.0E+00[a]

a. Reference Section 6 of EDF-6389.

Table 4 - Representative Toxic Air Pollutants.

Pollutant	Idaho HLW & FD EIS Steam Reforming Option (tons/yr)	RH TRU Waste Stream Processing – EDF-6389 (tons/yr)
Benzene		5.928E-07
Carbon Tetrachloride		2.91E-06
Methylene Chloride		4.16E-08
Trichloroethylene		5.928E-07
Beryllium		0.0E+00
Total Toxic Air Pollutants	2.9E-01[a]	4.14E-06

a. Data from Table 5.2-8, *Idaho High-Level Waste and Facilities Disposition Final Environmental Impact Statement*, September 2002. Data was not provided for each pollutant.

The emissions generated from performing the RH-TRU project at the INTEC in modified existing facilities are minor and would not add appreciably to air emissions already occurring at INTEC.

5.3 Transportation

Currently, the RH-TRU waste is in storage at the RWMC. Therefore, performing the RH-TRU project at the INTEC would require transporting the waste via trucks from the RWMC to the INTEC. The additional transportation required to implement the proposed action is depicted in Figure 1. The additional transportation would be the distance from Highway 20/26 to the INTEC and from the INTEC to Highway 20/26. The distance from the RWMC to Highway 20/26 while transporting the waste to the INTEC would be the same as if the waste was processed at the RWMC and shipped to WIPP. Therefore, no additional transportation is required to get the waste to WIPP. Also, once the waste was processed at the INTEC, the only additional transportation mileage would be from the INTEC to Highway 20/26. From that junction, the transportation mileage to WIPP would be the same if it were processed at the RWMC.

DOE estimates that approximately 100 shipments would be required to move the waste from the RWMC to the INTEC and approximately 100 shipments from the INTEC to WIPP. The total additional mileage is estimated to be 750 miles. The total additional transportation and amount of shipments required for the proposed action is very small and bounded when compared with the analysis in the Section 5.11 of the 1995 EIS and Section 6.3.10 of the related 2005 SA (DOE 2005). The 1995 EIS projected 17,145 radioactive shipments from 1995 to 2005. The actual shipments for a nine-year period shown in the 2005 SA were 2,087. The information in the 2005 SA of the 1995 EIS shows that the total number of

radiological shipments INL Site has completed is eight times less than that projected in the 1995 EIS. The additional 200 on-Site shipments of the RH-TRU waste are well within the original estimates used in the 1995 EIS.

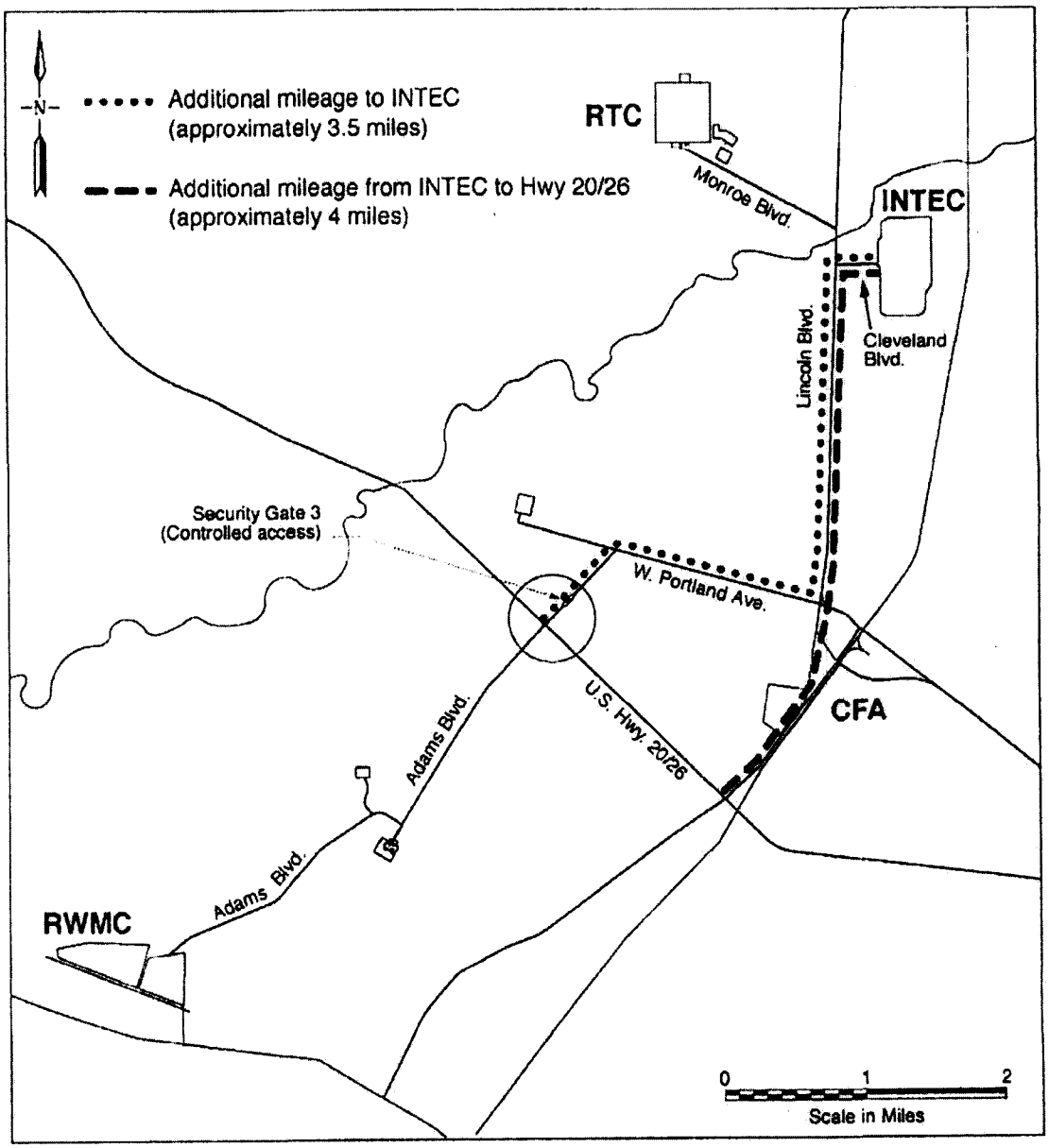

Figure 1 - Diagram showing the transport route between the RWMC and the INTEC (Adams Blvd., West Portland Ave., Lincoln Blvd).

The impacts from RH-TRU waste shipments from the INL Site to WIPP have been analyzed in the WIPP Environmental Impact Statement. The latest supplement, the "Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement" (Volume 1), provides an update for previously analyzed transportation impacts (Section 5.1.8). According to Table 5-4, "Number of Truck Shipments to WIPP for the Proposed Action," 3,136 shipments were analyzed from the INL Site to WIPP (DOE 1997). Currently, no RH-TRU has been shipped to WIPP from the INL Site.

6. CONCLUSIONS

DOE's review of the proposed RH-TRU Project shows that the estimated impacts of performing the project at the INTEC in existing modified facilities do not differ significantly from impacts analyzed in the Final 1995 EIS and its related 2005 SA and the AMWTP EIS.

7. DETERMINATION

DOE performed this SA on the *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement* and the *Advanced Mixed Waste Treatment Project Final Environmental Impact Statement* in accordance with 40 CFR 1502.9 (c) and 10 CFR 1021.314, on activities related to the proposed RH-TRU Project. Based on this analysis, DOE's proposed activities for RH-TRU are not expected to have environmental impacts significantly different from those previously analyzed. Therefore, DOE has determined that a supplemental EIS is not required.

Approved

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