Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

JUN 14 2004

Mr. E. William Brach, Director
U.S. Nuclear Regulatory Commission
Spent Fuel Project Office – Office of Nuclear Material Safety & Safeguards
Washington, DC 20555

Subject: 2004 Waste Isolation Pilot Plant Biennial Environmental Compliance Report

Dear Mr. Brach:

Section 9(a)(2) of the Waste Isolation Pilot Plant (WIPP) Land Withdrawal Act (LWA) requires the Department of Energy (DOE) to submit documentation of WIPP's compliance with all applicable Federal laws pertaining to public health and the environment to the Environmental Protection Agency (EPA) and the State of New Mexico every two years. In turn, the LWA requires EPA (or the State, as appropriate) to determine whether DOE is in compliance with the laws described above with respect to WIPP. Since EPA and the State of New Mexico are not in a position to make compliance determinations for laws they don't administer, I request your assistance to enable DOE to provide EPA with objective evidence of WIPP's compliance with the laws administered by your agency.

Enclosed is a copy of the portion of the Waste Isolation Pilot Plant Biennial Environmental Compliance Report (BECR) pertaining to laws your agency administers. The BECR is being submitted to EPA and the State of New Mexico as documentation of WIPP's compliance with applicable laws, including laws administered by your office, during the two-year period beginning April 1, 2002 and ending March 31, 2004. Also enclosed is an example reply letter.

Please provide me with your reply by October 30, 2004. Please also send Mr. Nick Stone of EPA region 6 a copy of your reply at the following address:

Mr. Nick Stone
6PD-O
USEPA REGION 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

If you need additional information, please contact Harold Johnson of my staff at (505) 234-7349.

Sincerely,

R. Paul Detwiler
Acting Manager

Enclosures

NM5524

CBFO:OEC:HJ:JGW:04-0383:UFC:2020

14.0 ATOMIC ENERGY ACT AND THE U.S. NUCLEAR REGULATORY COMMISSION

14.1 Summary of the Law

As discussed in Chapter 13.0 herein, the AEA of 1954 as amended 42 U.S.C. §§2011 et seq.) gives the NRC its authority to develop policies, issue orders, and promulgate regulations that address environmental, safety, and health protection aspects of radioactive waste and nuclear materials in the civilian sector. Regulations promulgated by the NRC under the AEA appear in 10 CFR Chapter I and establish standards for the management of nuclear material and the protection of the public against radiation. Additional NRC requirements apply to the licensing, packaging, preparation, and transportation of radioactive materials.

14.2 Status of Compliance With the Regulatory Requirements

As intended by the AEA, the DOE is generally exempted from the regulatory authority of the NRC. The only portion of the NRC's implementing regulations that applies to WIPP is 10 CFR Part 71, "Packaging and Transportation of Radioactive Material." These regulations pertain to the NRC's consideration for approval of packagings applications, such as the TRUPACT-II (C of C No. 9218, Rev. 16, issued July 3, 2003) and the HalfPACT (C of C No. 9279, Rev. 1, issued August 16, 2002), which are designed to transport CH TRU wastes from the generator sites to WIPP. The packagings for transporting RH-TRU waste to WIPP are the RH-TRU 72-B Cask (C of C No. 9212, Rev. 2, issued December 27, 2002) and the CNS 10-160B Cask (C of C No. 9204, Rev. 8, issued October 15, 2002). As indicated in Subsection 13.2.10, WIPP is a user of the CNS 10-160B cask, but is not the holder of its C of C. However, the NRC did reissue the C of C for the CNS 10-160B cask during this reporting period. For purposes of this chapter, the term "packagings" implies the TRUPACT-II, the HalfPACT, the RH-TRU 72-B Cask, and the CNS 10-160B Cask.

14.2.1 General License, 10 CFR §71.12

A general license is not required for WIPP. Each type of packaging to be used to transport either CH- or RH-TRU waste is required to have a C of C from the NRC.

14.2.2 Contents of Application and Package Description/Evaluation, 10 CFR §§71.31 Through 71.39

The required contents of an application are described. The application must include a package description/evaluation and description of the packaging and proposed contents as described in 10 CFR §71.33 and must demonstrate that the package meets the appropriate NRC standards. In addition, the QA program for the design, fabrication, assembly, testing, maintenance, repair, modification, and use of the package must be described, along

with established codes and standards. Any additional information requested by the NRC must be provided.

The applications for the packagings describe the design, specifications, and safety evaluation in accordance with the NRC's requirements. The NRC's reissuance of the current C of Cs confirms that the packagings are in compliance with all applicable requirements of 10 CFR §§71.31 through 71.39.

14.2.3 Demonstration of Compliance, 10 CFR §71.41

The tests specified in 10 CFR §§71.71 and 71.73 must be performed on the package to demonstrate compliance under normal conditions and hypothetical accident conditions, respectively.

The applications describe the analysis and testing to demonstrate compliance with both normal and hypothetical accident conditions of transport. The NRC's reissuance of the C of Cs confirms that the packagings continue to meet the applicable requirements of 10 CFR §71.41.

14.2.4 Standards for All Packages, 10 CFR §§71.43 and 71.45

Standards for all packages must be met. These include general standards such as size, seals and fastening devices, materials and construction of the package, valves, temperature, and prohibition of continuous venting during transport as well as lifting and tie-down standards.

The applications describe the packaging features, including tie-downs. The NRC's reissuance of the C of Cs confirms that the packagings continue to meet the applicable requirements of 10 CFR §§71.43 and 71.45.

14.2.5 External Radiation Standards for All Packages, 10 CFR §71.47

A package must be designed and prepared for shipment so that the radiation level at any external surface of the package does not exceed 200 mrem per hour and the transport index does not exceed 10.

The applications discuss the fact that the packagings and contents are limited to less than 200 mrem per hour at the surface of the packagings. The NRC's reissuance of the C of Cs confirms that the packagings continue to meet the applicable requirements of 10 CFR §71.47.

14.2.6 Additional Requirements for Type B Packages, 10 CFR §71.51

Type B packages must be designed, constructed, and prepared for shipment so as to prevent loss or dispersal of radioactive material, significant increase in external radiation levels, or substantial reduction in the effectiveness of the packaging during normal transport. In addition, release of krypton-85 may not exceed 10,000 curies in one week, release of other radioactive material may not exceed a total amount A_2 in one week, and no external radiation dose rate may exceed 1 rem per hour at 1 meter from the external surface of the package during hypothetical accident conditions. Compliance with these requirements must not be predicated upon the use of filters or of a mechanical cooling system.

The applications discuss containment design and an acceptance criterion (a leak rate of less than 1×10^{-7} standard cubic centimeters per second). The NRC's reissuance of the C of Cs confirms that the packagings continue to meet the applicable requirements of 10 CFR §71.51.

14.2.7 Requirements for All Fissile Material Packages, 10 CFR §§71.55 Through 71.59

All packages used to ship fissile material must be designed and constructed in accordance with 10 CFR §§71.41 through 71.51. In addition, each package must be designed and constructed and its contents so limited that the contents will remain subcritical during normal and accident transportation conditions and that the packaging will remain effective during normal transportation conditions. Specific standards for fissile material packages are described in 10 CFR §71.59.

The applications discuss criticality; the contents are controlled to limit the amount of fissile material that may be shipped. Fissile classes have been replaced with a Criticality Transport Index. The NRC's reissuance of the C of Cs confirms that the packagings continue to meet the applicable requirements of 10 CFR §§71.55 through 71.59.

This section does not apply to the CNS 10-160B Cask (C of C No. 9204). The authorized contents of the CNS 10-160B Cask are limited to the quantities specified in the C of C. The quantities must meet the U.S. Department of Transportation's (DOT) and the NRC's limits for "Fissile Excepted," and be less than 20 curies plutonium.

14.2.8 Special Requirements for Plutonium Shipments, 10 CFR §71.63

Plutonium in excess of 20 curies per package must be shipped as a solid and must be packaged in a separate inner container

placed within outer packaging that meets the requirements of 10 CFR §§71.41 through 71.77. In addition, the restrictions limiting plutonium under normal and accident conditions must be met.

The applications for the TRUPACT-II, the HalfPACT, and the RH-TRU 72-B Cask describe the double containment feature of the packagings. The CNS 10-160B Cask is limited and controlled in accordance with the C of C to less than 20 curies of plutonium.

14.2.9 Tests Under Normal Conditions of Transport, 10 CFR §71.71

The behavior of each package design under tests and conditions simulating normal transportation conditions must be evaluated. The tests include thermal insolation for both heated and cold conditions, increased and reduced external pressure, vibration, water spray, free drop, corner drop, compressive loading, and penetration.

The applications describe the analyses and/or tests performed to demonstrate compliance with the normal conditions of transport. The NRC's reissuance of the C of Cs confirms that the packagings continue to meet the applicable requirements of 10 CFR §71.71.

14.2.10 Tests Under Hypothetical Accident Conditions, 10 CFR §71.73

Evaluation of a package for hypothetical accident conditions is based upon the sequential application of tests in the order specified to determine their cumulative effect on a package or array of packages. Tests include free drop, crush, puncture, thermal, and immersion as specified in 10 CFR §71.73.

The applications describe the analyses and/or tests performed to demonstrate compliance with the hypothetical accident conditions of transport. The NRC's reissuance of the C of Cs confirms that the packagings continue to meet the applicable requirements of 10 CFR §71.73.

14.2.11 Assumptions Regarding Unknown Properties, 10 CFR §71.83

When the isotopic abundance, mass, concentration, degree of irradiation, degree of moderation, or other relevant property of fissile material in a package is not known, the fissile material will be packaged as if the unknown properties have credible values that will cause the maximum neutron multiplication.

The applications limit the amount of fissile material that may be shipped in the packagings (see Subsection 14.2.7). The NRC's reissuance of the C of Cs confirms that the packagings continue to meet the applicable requirements of 10 CFR §71.83.

14.2.12 Special Opening Instructions, 10 CFR §71.89

Any special opening instructions must be sent or otherwise made available to the consignee prior to delivery of a package.

The operating and maintenance instructions manual provides instructions for preparation, use, operation, inspection, and maintenance of the packagings. MOC personnel are also responsible for training personnel at the generator sites in these methods and performing assessments and audits to ensure that WIPP-generated methods are being applied correctly at the generator sites.

14.2.13 Reports Regarding Decreased Effectiveness or Defects With Safety Significance, 10 CFR §71.95

Within 30 days, the licensee will report the following to the NRC: (1) any instance in which there was significant reduction in the effectiveness of any authorized packaging during use; (2) details of any defects with safety significance in packaging after first use and the means used to prevent recurrence; and (3) instances in which the conditions of approval in the C of C were not observed in making a shipment.

The packaging maintenance program is defined and detailed in MOC procedures that address such topics as control of material, spare parts, and nonconformance reports. Maintenance records are maintained by the packaging maintenance engineers. No conditions causing decreased effectiveness have occurred to date. An audit of the packaging maintenance program, conducted in March 2000 by the MOC, determined that all the programmatic requirements for maintaining the packagings were being met adequately.

During this reporting period, two notifications were made to the NRC in accordance with the requirements of 10 CFR §71.95. One notification (Caviness to Rahimi, July 16, 2003) concerned the absence of 0.3-inch hole in the payload drum rigid liners in an intrasite shipment from Rocky Flats Environmental Technology Site to the Argonne National Laboratory-West. The second notification (Caviness to Rahimi, September 30, 2003) concerned a calculation error for the helium leak tests on shipments from Los Alamos National Laboratories to WIPP. No harm to human health or the environment was caused by these occurrences. Corrective measures have been taken to prevent recurrence of these issues.

14.2.14 Advance Notification of Shipment of Nuclear Waste, 10 CFR §71.97

Advance written notification of a shipment of nuclear waste will be provided to the governor of any state to be traversed by the shipment. Notification must be provided at least seven days or four days before the beginning of the seven-day period during which departure of the shipment is expected if notification is by

mail or by messenger, respectively. The information required by 10 CFR §71.97(d) will be provided. It should be noted that a revised list of governors' designees was published in the Federal Register on June 30, 1995 (60 FR 34306). The annually updated list will be published in the Federal Register every year around June 30.

As identified in Section 14.2, this section does not apply to WIPP. However, in cooperation and agreement with the states' organizations (e.g., Western Governors Association), the DOE has agreed to provide written notification of the first five shipments in a corridor fourteen days in advance. Further, the DOE will provide the states with an annual notification, including six-month updates, of the shipments planned for the coming year. The states receive the eight-week rolling schedule on a weekly basis. The eight-week rolling schedule provides the detail of the annual plan. State officials designated for receipt information (or their designee) are provided access to TRANSCOM (the DOE's Transportation Tracking and Communication System). Through TRANSCOM, the states can view the eight-week rolling schedule, detailed shipment information (shipment's operational status, the location of the shipment, messages associated with the shipment) and shipment-specific emergency response and contact information.

14.2.15 NRC Quality Assurance Requirements, 10 CFR §§71.101 Through 71.137

Subpart H of 10 CFR Part 71 (§§71.101 through 71.137) established the NRC QA requirements for packagings. The QA requirements pertain to design, purchase, fabrication, handling, shipping, storage, cleaning, assembly, inspections, testing, operation, maintenance, repair, and modification of components of packaging that are important for safety. The requirements address the licensee's QA organization (§71.103); QA program (§71.105); package design control (§71.107); procurement document control (§71.109); instructions, procedures, and drawings (§71.111); document control (§71.113); control of purchased material, equipment, and services (§71.115); identification and control of material, parts and components (§71.117); control of special processes (§71.119); internal inspections (§71.121); test control (§71.123); control of measuring and test equipment (§71.125); handling, storage, and shipping control (§71.127); inspection test and operating status (§71.129); nonconforming materials, parts, or components (§71.131); corrective action (§71.133); QA records (§71.135); and audits (§71.137).

The WIPP Quality Assurance Program Plan for Type "B" Packaging (WP 08-PT.03) has addressed the 18 criteria specified within Annex 2 of the NRC's Regulatory Guide 7.10, promulgated by the Office of Nuclear Regulatory Research. The title of this document is

Establishing Quality Assurance Programs for Packaging Used in the Transport of Radioactive Material. The NRC has inspected the MOC's QA program and found that it meets the requirements of 10 CFR Part 71, Subpart H.

14.3 Status of Compliance With the Certificate of Compliance

The NRC has issued C of Cs to the DOE for the packagings as registered user. All packagings are designed, fabricated, assembled, tested, procured, used, maintained, and repaired in accordance with the C of Cs.

14.3.1 Allowable Decay Heat, C of C, Page 3, 5(b)(2)

Decay heat per payload must not exceed the values given in the TRAMPAC of the TRUPACT-II SAR the HalfPACT SAR, and the RH-TRU 72-B cask SAR.

The decay heat within each payload container plus the measurement error shall be less than or equal to the decay heat limit specified in the packagings SARs. The total decay heat from all containers in a TRUPACT-II shall be less than 40 watts. The total decay heat from all containers in a HalfPACT shall be less than 30 watts. The total decay heat from the containers in a RH-TRU 72-B cask shall be in accordance with Section 5.2 of the SAR.

The C of C identified the TRUPACT-II, the HalfPACT, and the RH-TRU 72-B cask as a fissile material packaging. Therefore, the requirements specified in 10 CFR §71.59 must be met. See Subsection 14.2.7 regarding the CNS 10-160B cask.

The available methods for determining and controlling the physical form of the wastes are visual examination, radiography, acceptable knowledge, and sampling. The chemical properties of the waste are determined by the allowable chemical constituents within a given waste type and are restricted so that all of the payload containers are safe for handling and transport. Chemical compatibility within and between the waste and the packaging ensures that no chemical process will occur that might pose a threat to the safe transport of the payload in the packagings. The configuration of the payload container and content is controlled as described in the packagings specific to TRAMPACs. The TRAMPACs also describe specifications for filter vents and preshipping venting and aspiration requirements.

The isotopic inventory for each payload container and the fissile content are discussed in Section 3 of the TRUPACT-II and HalfPACT TRAMPACs, and Appendix 1.3.7 of the RH-TRU 72-B cask SAR. Decay heat is discussed in Section 5 of the TRUPACT-II and HalfPACT TRAMPACs, and Appendix 1.3.7 of the RH-TRU 72-B cask SAR.

The TRAMPACs and SARs discuss the payload shipping categories. The primary difference among the categories is their potential for gas generation and internal bagging configuration. For waste with an adequate margin of safety, an analytical

prediction suffices. Wastes without such a margin of safety require testing as described in the TRAMPACs and SARs.

15.0 HAZARDOUS MATERIALS TRANSPORTATION ACT

15.1 Summary of the Law

The Hazardous Materials Transportation Act (HMTA) (49 U.S.C. §§5101 et seq.), as amended, is the major transportation-related statute that affects the DOE. The objective of the HMTA is "to improve the regulatory and enforcement authority of the Secretary of Transportation to protect the nation adequately against risks to life and property which are inherent in the transportation of hazardous materials in commerce." The HMTA provides for safe intra- and interstate transportation of hazardous materials (including nuclear materials).

The Federal Hazardous Materials Transportation Law (Pub. L. 103-429) was reauthorized on October 31, 1994. This public law, which amends the HMTA, required the DOT to set standards for designating routes for the transportation of hazardous materials that are required to be placarded, establish regulations on training standards for all hazardous materials transportation workers, issue safety permits to motor carriers for certain hazardous materials, and perform a railroad transportation safety study for certain highly radioactive materials. The DOT is also required to participate in international forums dealing with recommendations or legislation relating to mandatory standards and requirements pertaining to the transportation of hazardous materials, and to consult with interested agencies to facilitate consistency in international law with respect to hazardous materials transportation. In addition, the Hazardous Materials Transportation Uniform Safety Act (Pub. L. 101-615) requires registration and an annual registration fee for shippers and carriers of certain hazardous materials such as radioactive materials and establishes planning and training grants to the states for developing, improving, and implementing emergency plans.

Title 49 CFR Part 171, "General Information, Regulations, and Definitions," sets forth the DOT requirements that are applicable to the transportation of hazardous materials and the packaging used in the transportation of those materials.

Title 49 CFR Part 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communications Requirements and Emergency Response Information and Training Requirements," lists and classifies the materials the DOT has designated as hazardous for the purpose of transportation and describes the communications regulations that apply when those materials are shipped.

In 49 CFR Part 173, "Shippers - General Requirements for Shipments and Packagings," the DOT defines hazardous material classes for the purpose of transportation; establishes requirements in preparing materials for shipment; sets forth inspection, testing, and retesting responsibilities concerning containers built, repaired, or conditioned for use in the transportation of hazardous materials; sets forth requirements for transporting radioactive materials; classifies materials having more than one hazard;

EXAMPLE REPLY

R. Paul Detwiler, Acting Manager
U.S. Department of Energy,
Carlsbad Field Office
P.O. Box 3090
Carlsbad, NM 88221

Dear Mr. Detwiler:

This replies to your letter seeking assistance in providing EPA with evidence that WIPP was in compliance with the laws administered by this agency during the time period from April 1, 2002 through March 31, 2004, as required by the WIPP Land Withdrawal Act.

We have reviewed the pertinent parts of the Biennial Environmental Compliance Report you submitted to us, and our records. Based on that review, I verify that we have no information that indicates that WIPP was not in compliance with the laws administered by this agency during the pertinent time period.

Sincerely;

Authorized Signature

cc: Nick Stone, EPA Region 6