



Department of Energy
Washington, DC 20585

OCT 06 2008

Director, Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington D.C. 20555-001
ATTN: Document Control Desk

Dear Director:

The Department of Energy (DOE) requests a DOT Special Permit to extend the use of the DOT Specification Packaging 6M for use by the NNSA Office of Global Threat Reduction's Off-Site Source Recovery Project (OSRP) at Los Alamos National Laboratory (LANL) request. The justification for this request, which meets the requirements of the Department of Transportation (DOT) *Information on Requests for DOT Special Permits for Extending Use of Expiring Transportation Packages*, is attached. A similar application to the NRC, which meets the Nuclear Regulatory Commission (NRC) *Regulatory Issue Summary 2008-18; Information on Requests for Extending Use of Expiring Transportation Packages*, is being sent under a separate letter. A copy of container inspection report is also attached. A copy of this NRC application is attached. Electronic copies of this letter and the enclosure has been sent to Rick Boyle and James Williams who will be conducting the technical review of this application.

If you have any questions, please contact Dr. James Shuler at 301-903-5513.

James M. Shuler
Manager, Packaging Certification Program
Office of Packaging and Transportation
Office of Environmental Management

Enclosure

L1M5524





N3: International Threat Reduction
Off-Site Source Recovery Project (OSRP)
PO Box 1663, Mail Stop: J552
Los Alamos, New Mexico 87545

ATTN: Document Control Desk
Director, Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-001

As announced August 14, 2008, in U.S. Nuclear Regulatory Commission (NRC) Regulatory Issue Summary No. 2008-18, users of existing radioactive material packagings constructed to U.S. Department of Transportation (DOT) Specification 6M may request authorization for limited continued use of such packagings after the October 1, 2008 regulatory expiration date.

The Off-Site Source Recovery Project (OSRP) at Los Alamos National Laboratory (LANL), as part of the National Nuclear Security Administration's (NNSA) Global Threat Reduction Initiative (GTRI), recovers and manages excess and unwanted radioactive sealed sources that present a risk to public health and safety. OSRP has recovered such sources from medical, educational, agricultural, research, industrial, and government facilities across the U.S. Since 1999, OSRP has been able to recover over 18,000 sources from more than 700 sites in 50 states, the D.C. area, Puerto Rico, as well as a number of foreign countries. This represents recovery of over 448,000 Curies of radioactive material in about ten years.

The problem of excess and unwanted radioactive material widely distributed around the world is recognized as a global threat, and the U.S. is not immune¹. Unused radioactive sources across the country are the residual product of beneficial use of radioactive material in industry, medicine, and scientific research. These unwanted sources could be incorporated into a radiological dispersal device; or may simply present a health and safety threat to the public and the environment if left unattended.

There are several root causes to the legacy radioactive source problem which are not addressed in this discussion. However, one notable obstacle to uninterrupted continuation of OSRP recovery efforts that jeopardizes expeditious, efficient, and cost effective elimination of the threat posed by unwanted radioactive sources is the phase-out of commonly used DOT Spec 6M Type B shipping containers.

Without suitable equivalent packaging, it will be difficult or impossible to compliantly move disused radioactive sources from a place of high vulnerability to safe and secure locations in a timely manner. Any difficulty in shipping at-risk sources may result in the sources remaining unrecovered, with potential adverse effects to public health or the environment.

Therefore, to address OSRP's continuing need for these containers, the specific information requested in NRC Regulatory Issue Summary No. 2008-18 for this authorization is provided below:

1. Package Information: DOT Specification 6M packagings (with inner 2R component) in both 30-gal and 55-gal sizes for shipment of sealed sources for threat reduction purposes.

¹Refer to Health Physics Society Discussion Paper titled, "Actions Needed to Better Secure Vulnerable Radioactive Sources: A Contemporary Report" available online at - http://hps.org/documents/SafeguardActionNeededVulnerableSources_Public.pdf.

2. Identification of Shipments:

- a. Number of shipments: Several shipments of individual packages may be necessary after the October 1 expiration date depending on the number of disused sources identified by OSRP. OSRP expects up to three 6M shipments per month until a suitable Type B replacement package is available for use with OSRP content.

The number of individual sources (or source activities) transported in OSRP 6M packages cannot be easily determined; and the number of future 6M shipments cannot be determined in advance. However, the table below provides a historical summary of past OSRP shipments using 6M packages.

Calendar Year	Number of 6M Recovery Shipments
2007	13
2006	51
2005	23
2004	48
2003	41
2002	30
2001	17
2000	6
1999	9
Total	246

Table 1: No. of OSRP Shipments Using 6M Packages²

OSRP has used 6M drums for domestic ground transport of sealed sources during threat reduction activities for ten years (and the containers have been in use by other entities for several decades). During the time of OSRP use, the applicant has not been notified and is otherwise not aware of any integrity incidents or shipping accidents resulting in loss or dispersal of contents for the packaging in question.

Under domestic and global threat reduction initiatives, OSRP has a national security mission through DOE/NNSA to recover and transport excess and unwanted sealed sources to secure sites. With a number of domestic recoveries necessary after the October 1 deadline, this special permit becomes very important in maintaining efficient OSRP threat reduction activities.

- b. Number of packages per shipment: Usually one package per shipment from an Agreement State or NRC licensee to a State or NRC licensed subcontractor facility. Occasionally, it may be necessary to transport more than one 6M container on a single conveyance for threat reduction purposes. The actual number of 6M packages per shipment depends on the number of unwanted sources recovered from a particular location.
- c. Packaging serial numbers: The request includes serial numbers for all active and usable 6M packagings in OSRP's inventory of containers which successfully pass container inspections prior to use and shipment. A copy of the container inspection record is attached.

² Data based on previous OSRP database query.

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- d. Package contents: Sealed sources³ containing isotopes recovered as directed by the NNSA Office of Global Threat Reduction. Primary isotopes (in quantities which may be greater than the corresponding A_2 value) for consideration include, but are not limited to the following: ²³⁹Pu, ²³⁸Pu, ²⁴⁰Pu, ²⁴¹Pu, ²⁴²Pu, ²⁴¹Am, ²⁴⁴Cm, ²⁵²Cf, ¹³⁷Cs, ²²⁶Ra, ⁹⁰Sr, ⁶⁰Co, and ¹⁹²Ir. Packaging limits for sealed sources in 6M containers are dependent on external dose rate thresholds, which will be less than 200 mR/hr at contact and 10 mR/hr at 1 meter (unless arrangements for exclusive use shipment are made).
 - e. End use of the radioactive material: Recovery by OSRP involves shipment for temporary, secure interim storage until consolidation and repackaging for disposal is arranged.
 - f. Shipment origin and destination: Shipment origin will vary depending on the location of the unwanted/disused sealed source(s). Generally speaking, the shipment origin will be a State and/or NRC licensed facility. The destination for all OSRP recovered sources shipped in 6M packages will be a State and/or NRC licensed facility under OSRP subcontract for temporary interim storage and consolidation.
 - g. Mode: Mode of transport will be by highway only.
 - h. General timeframe: Since OSRP is dependent on other entities to develop, certify, manufacture, and distribute packagings for replacement of our current 6M containers; it may be months before we will be able to integrate use of new (6M replacement) containers into OSRP operations. To be conservative, this period of extended use is requested to allow transportation for two years, beginning on October 1, 2008.
 - i. Date last shipment will be completed: Unknown – OSRP shipments of 6M containers occur frequently, but not on a regular schedule. The last need for an OSRP shipment using a 6M container will likely occur prior to the end of the two-year period requested herein if certified Type B replacement containers are available which meet OSRP source recovery needs.
3. Reasons for Requesting Extended Use:
- a. OSRP is not aware of any current comparable, off-the-shelf certified alternatives for domestic general-use Type B fissile material packagings, like the 6M container, that can be used to transport the wide variety of OSRP sealed source content recovered for threat reduction purposes.
 - b. Some sealed sources, which do not meet the current regulatory definition of special form, must be transported as normal form; and when activities exceed the A_2 value, they must be transported in a Type B package. In cases like this, not all recovered sealed sources can be economically reconfigured into special form capsules to allow transport in accordance with the regulations. The normal form sources for use in a 6M under this request nonetheless are 'sealed sources' (i.e., encased in a capsule designed to prevent leakage or escape of the radioactive material) not loose, dispersible radioactive material.
 - c. The transport schedule cannot be adjusted to be conducted in accordance with the regulations because although shipments occur frequently, they oftentimes become necessary upon short notice to prevent possible abandonment. In addition, new unwanted sources are registered with OSRP daily; therefore, the need to perform source recoveries for threat reduction purposes using 6M packagings will not stop on October 1, 2008. Recovery operations for

³ Sealed source means the radioactive material is encased in a capsule designed to prevent leakage or escape of the radioactive material and/or the radioactive material is closely bonded (e.g., electroplated) to another solid material.

threat reduction purposes cannot be postponed indefinitely while replacement packagings are evaluated without compromising OSRP's national security mission.

- d. OSRP is in the process of working with Savannah River National Laboratory (SRNL) to acquire suitable Type B replacement packages that meet the current package performance requirements. So far, OSRP has provided \$50,000.00 to SRNL for evaluation of common OSRP sealed source content in packagings which will be certified by DOE's Packaging Certification Program. Current efforts are being made to accelerate the inclusion of OSRP sealed source content in the SRNL packages; however, delays have necessitated this request for continued use of 6M containers for source recovery operations after October 1, 2008.
 - e. The adverse impact of halting OSRP source recovery shipments for threat reduction purposes using DOT Spec 6M containers on Oct. 1, 2008, includes having to leave larger, non-special form radioactive sources at potentially unsecure or questionable locations. The expiration of 6M packagings does not simply hinder efforts of OSRP to remove unwanted and potentially at-risk radioactive sealed sources. The inability to ship these sources also affects the licensees/owners who may be required to implement expensive increased controls and continue operation of their radiation safety program if the sources are not removed by OSRP. If sources are not removed by OSRP, they may simply be abandoned and left vulnerable to unauthorized use which may place the public or the environment at potential risk.
4. Safety Justification for Continued Use and Proposed Compensatory Measures.

Since the expiring 6M packagings may not include safety enhancements present in newer designs, the justification for safe continuation of use includes the following:

- a. All OSRP shipments using 6M packages will contain radioactive sealed sources, not loose, diffuse, or readily dispersible material. In fact, most sealed sources recovered by OSRP are double-encapsulated sources which at one point met the definition of special form radioactive material.

While criteria for meeting the definition of "special form" has changed over the years, the current drop and thermal tests are identical to those for Type B packages of 10 CFR 71. As packaged under this request, the radioactive material is under three layers of confinement: (1) the solid radioactive material is inside a capsule, (2) the sealed capsule is inside a 2R component, and (3) the closed 2R component is inside the 6M drum.

- b. A document titled, "Review of the Safety Features of 6M Packagings for DOE Programs" (Sandia Report SAND88-3005, TIC-0879, UC-71, December 1988) is available on the RAMPAC website. This report includes discussions and details of structural, thermal, containment, shielding, and criticality aspects related to safe use and transport of 6M packagings.
- c. Pre-use inspections and determinations will be conducted by OSRP staff to ensure that the specific 6M packaging and inner 2R component are in unimpaired physical condition prior to use and transport. A copy of the container inspection record used by OSRP is attached.

In addition, the latest swipe test results conducted by the source owner are reviewed prior to the OSRP on-site visit. During the OSRP visit, the unwanted sealed sources are swiped again and evaluated to verify the integrity of the sealed source prior to packaging.
- d. Transport by exclusive use will be conducted when required by 49 CFR, although OSRP shipments in 6M packages do not usually require exclusive use transport.

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- e. Transport during time of low road usage will be considered, if deemed appropriate by the regulatory authority. However, under most circumstances, OSRP shipments in 6M packages will not require transport during times of low road usage.
- f. Accompaniment of shipment by personnel equipped to affect a recovery in an emergency situation or in case of a transportation accident will be considered, if deemed appropriate by the regulatory authority. However, under most circumstances, OSRP shipments in 6M packages will not require such accompaniments.

5. As noted in Item 3.d, a plan to acquire replacement packages is underway. OSRP is in the process of working with Savannah River National Laboratory (SRNL) to acquire suitable Type B replacement packages that meet the current package performance requirements. So far, OSRP has provided \$50,000.00 to SRNL for evaluation of common OSRP sealed source content in SRNL packagings which will be certified by DOE's Packaging Certification Program.

The two most promising replacements for the 6M container developed by SRNL are very similar to each other and are known as the Model 9977 and 9978. However, the current safety evaluation and/or certification for both containers do not specifically allow typical OSRP sealed source content. OSRP is working with SRNL to evaluate the changes necessary to the allowable content for the 9977 and 9978 containers to ensure that these packages will be suitable for OSRP use as soon as possible.

At this time, these two SRNL-designed containers are the only known options for OSRP use as a viable 6M replacement (although other commercial alternatives for specific uses continue to be investigated).

The 9977 and 9978 have the advantage over the old 6M containers in that they will hold a DOE package Certificate of Conformance covering the proposed OSRP sealed source content; and if desired, OSRP could obtain an IAEA Certificate of Competent Authority to use these Type B packages for international recovery shipments.

Current plans are to establish one or both of these DOE packages as viable options for future OSRP source recovery operations. In the meantime, continued use of 6M containers is requested for two years, beginning on October 1, 2008.



Department of Energy

Washington, DC 20585

OCT 06 2008

Associate Administrator of Hazardous Material Safety
Pipeline and Hazardous Materials Safety Administration
U.S. Department of Transportation,
1200 New Jersey Ave. SE
Washington D.C. 20590
ATTN: Special Permits, PHH-31

Dear Associate Administrator:

The Department of Energy (DOE) requests a DOT Special Permit to extend the use of the DOT Specification Packaging 6M for use by the NNSA Office of Global Threat Reduction's Off-Site Source Recovery Project (OSRP) at Los Alamos National Laboratory (LANL) request. The justification for this request, which meets the requirements of the Department of Transportation (DOT) *Information on Requests for DOT Special Permits for Extending Use of Expiring Transportation Packages*, is attached. A similar application to the NRC, which meets the Nuclear Regulatory Commission (NRC) *Regulatory Issue Summary 2008-18; Information on Requests for Extending Use of Expiring Transportation Packages*, is being sent under a separate letter. A copy of container inspection report is also attached. A copy of this NRC application is attached. Electronic copies of this letter and the enclosure has been sent to Rick Boyle and James Williams who will be conducting the technical review of this application.

If you have any questions, please contact Dr. James Shuler at 301-903-5513.

A handwritten signature in black ink that reads "James M. Shuler".

James M. Shuler
Manager, Packaging Certification Program
Office of Packaging and Transportation
Office of Environmental Management

Enclosure



**Required Information for Requesting a DOT Special Permit (49 CFR 107.105)
49 CFR Subpart B – Special Permits**

ATTN: Special Permits, PHH-31
Associate Administrator for Hazardous Material Safety
Pipeline and Hazardous Materials Safety Administration
U.S. Department of Transportation
1200 New Jersey Ave., S.E.
Washington, D.C. 20590

Name of applicant: U.S. Department of Energy
(NNSA Office of Global Threat Reduction's Off-Site Source
Recovery Project at Los Alamos National Laboratory)

Mailing address: PO Box 1663, MS: J552
Los Alamos, NM 87545

Shipping address: Bikini Atoll Rd., SM 30 (MS: J552)
Los Alamos, NM 87545

Agent of applicant: Justin M. Griffin, P.E.
Off-Site Source Recovery Project (OSRP)
Los Alamos National Laboratory (LANL)

Phone: 505-606-0362
Fax: 505-665-7913
Email: jgriffin@lanl.gov

Notes: This is not an application for "manufacturing special permit."
Confidential treatment is not requested.

As announced August 14, 2008, in U.S. Nuclear Regulatory Commission (NRC) Regulatory Issue Summary No. 2008-18, users of existing radioactive material packagings constructed to U.S. Department of Transportation (DOT) Specification 6M may request authorization for limited continued use of such packagings after the October 1, 2008 regulatory expiration date.

Citation of specific regulation from which relief is sought: Regarding transport of radioactive sealed sources for threat reduction purposes, a special permit is requested to allow continued use of Dept. of Transportation (DOT) Specification 6M packages beyond the October 1, 2008, expiration date mentioned in both 49 CFR 173.416(c) and 49 CFR 173.417(c), copied below:

§173.416 Authorized Type B packages.

(c) Continued use of an existing Type B packaging constructed to DOT Specification 6M, 20WC, or 21WC is authorized until October 1, 2008 if it conforms in all aspects to the requirements of this subchapter in effect on October 1, 2003.

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§173.417 Authorized fissile materials packages.

(c) Continued use of an existing fissile material packaging constructed to DOT Specification 6L, 6M, or 1A2, is authorized until October 1, 2008 if it conforms in all respects to the requirements of this subchapter in effect on October 1, 2003.

Relief from the above expiration date is only requested until certified Type B replacement packagings are identified and obtained for OSRP source recovery operations.

Proposed mode of transportation: Highway only

Detailed description of the proposed special permit (e.g., alternative packaging, test, procedure, or activity) including, as appropriate, written descriptions, drawings, flow charts, plans and other supporting documents:

NNSA Office of Global Threat Reduction's Off-Site Source Recovery Project (OSRP) at Los Alamos National Laboratory (LANL) requests a special permit to allow continued use of Dept. of Transportation (DOT) Specification 6M packages beyond the October 1, 2008, expiration date mentioned in both 49 CFR 173.416(c) and 49 CFR 173.417(c) to transport sealed sources¹ for threat reduction purposes. The 6M packages under this request will not be used to transport unsealed radioactive material.

Several shipments of individual packages may be necessary after the October 1 expiration date depending on the number of disused sources identified by OSRP. OSRP expects up to three 6M shipments per month until a suitable Type B replacement package is available for use with OSRP content.

OSRP usually ships one package per shipment from an Agreement State or NRC licensee to a State or NRC licensed subcontractor facility. Occasionally, it may be necessary to transport more than one 6M container on a single conveyance for threat reduction purposes. The actual number of 6M packages per shipment depends on the number of unwanted sources recovered from a particular location.

This request applies to the use of all active and usable 6M packagings in OSRP's inventory of containers which successfully pass container inspections prior to use and shipment. A copy of the container inspection record is attached.

Proposed duration or schedule of events: Since OSRP is dependent on other entities to develop, certify, manufacture, and distribute packagings for replacement of our current 6M containers, it may be months before OSRP will be able to integrate use of new (6M replacement) containers into OSRP operations. To be conservative, the period of extended use is requested to allow continued transportation of 6M containers for two years, beginning on October 1, 2008.

OSRP shipments of 6M containers occur frequently, but not on a regular schedule. The last need for an OSRP shipment using a 6M container will likely occur prior to the end of the two-year period requested herein if certified Type B replacement containers are available which meet OSRP source recovery needs.

A plan to acquire replacement packaging is underway. OSRP is in the process of working with Savannah River National Laboratory (SRNL) to acquire suitable Type B replacement packagings that meet the current package performance requirements. So far, OSRP has provided \$50,000.00 to SRNL for evaluation of common OSRP sealed source content in SRNL packagings which will be certified by DOE's Packaging Certification Program.

¹ Sealed source means the radioactive material is encased in a capsule designed to prevent leakage or escape of the radioactive material and/or the radioactive material is closely bonded (e.g., electroplated) to another solid material.

The two most promising replacements for the 6M container developed by SRNL are very similar to each other and are known as the Model 9977 and 9978. However, the current safety evaluation and/or certification for both containers do not specifically allow typical OSRP sealed source content. OSRP is working with SRNL to evaluate the changes necessary to the allowable content for the 9977 and 9978 containers to ensure that these packages will be suitable for OSRP use as soon as possible.

At this time, these two SRNL-designed containers are the only known options for OSRP use as a viable 6M replacement (although other commercial alternatives for specific uses continue to be investigated). The 9977 and 9978 have the advantage over 6M containers in that they will hold a DOE package Certificate of Conformance covering the proposed OSRP sealed source content; and if desired, OSRP could obtain an IAEA Certificate of Competent Authority to use these Type B packages for international recovery shipments.

Current plans are to establish one or both of these DOE packages as viable options for future OSRP source recovery operations. In the meantime, continued use of 6M containers is requested for two years, beginning on October 1, 2008.

Statement of applicant's basis for seeking relief from compliance with the specified regulations and, if the special permit is requested for a fixed period, a description of how compliance will be achieved at the end of that period:

We are not aware of any current comparable, off-the-shelf certified alternatives for domestic general-use Type B fissile material packagings, like 30-gal or 55-gal 6M containers, that can be used to transport the wide variety of OSRP sealed source content recovered for threat reduction purposes.

Some sealed sources, which do not meet the current regulatory definition of special form, must be transported as normal form; and when activities exceed the A_2 value, they must be transported in a Type B package. In cases like this, not all recovered sealed sources can be economically reconfigured into special form capsules to allow transport in accordance with the regulations. The normal form sources for use in a 6M under this request nonetheless are 'sealed sources' (i.e., encased in a capsule designed to prevent leakage or escape of the radioactive material) not loose, dispersible radioactive material.

The transport schedule cannot be adjusted to be conducted in accordance with the regulations because although shipments occur frequently, they oftentimes become necessary upon short notice to prevent possible abandonment. In addition, new unwanted sources are registered with OSRP daily; therefore, the need to perform source recoveries for threat reduction purposes using 6M packagings will not stop on October 1, 2008. Recovery operations for threat reduction purposes cannot be postponed indefinitely while replacement packagings are evaluated without compromising OSRP's national security mission.

As previously stated, OSRP is in the process of working with SRNL to acquire suitable Type B replacement packages that meet the current package performance requirements. Current efforts are being made to accelerate the inclusion of OSRP sealed source content to the 9977 and 9978 SRNL packages; however, delays have necessitated this request for continued use of 6M containers for source recovery operations.

The adverse impact of halting OSRP source recovery shipments for threat reduction purposes using DOT Spec 6M containers on Oct. 1, 2008, includes having to leave larger, non-special form radioactive sources at potentially unsecure or questionable locations. The expiration of 6M packagings does not simply hinder efforts of OSRP to remove unwanted and potentially at-risk radioactive sealed sources. The inability to ship these sources also affects the licensees/owners who may be required to implement expensive increased controls and continue operation of their radiation safety program if the sources are not removed

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by OSRP. If sources are not removed by OSRP, they may simply be abandoned and left vulnerable to unauthorized use which may place the public or the environment at potential risk.

Identify and describe the hazardous materials planned for transportation under the special permit:

Materials planned for transportation would include sealed sources containing isotopes recovered as directed by the NNSA Office of Global Threat Reduction. Primary isotopes (in quantities which may be greater than the corresponding A_2 value) for consideration include, but are not limited to the following isotopes: ^{239}Pu , ^{238}Pu , ^{240}Pu , ^{241}Pu , ^{242}Pu , ^{241}Am , ^{244}Cm , ^{252}Cf , ^{137}Cs , ^{226}Ra , ^{90}Sr , ^{60}Co , and ^{192}Ir . Packaging limits for sealed sources in 6M containers are dependent on external dose rate thresholds which will be less than 200 mR/hr at contact and 10 mR/hr at 1 meter (unless arrangements for exclusive use shipment are made).

The description, hazard class, and UN numbers for routine OSRP shipments of 6M packages are provided in the table below:

Identification Number	Proper Shipping Name/ Hazardous Materials Description	Hazard Class/ Division	Packing Group
UN3328	RQ, Radioactive Material, Type B(U) Package, Fissile	7	N/A
UN2916	RQ, Radioactive Material, Type B(U) Package	7	N/A

Provide a description of each package, and include a specification or special permit number, as applicable, to be used in conjunction with the requested special permit:

During OSRP recovery operations, sealed sources are packaged and transported in DOT Specification 6M packagings (with inner 2R component) in both 30-gal and 55-gal sizes. Authorization for limited continued use of such packagings after the October 1, 2008 regulatory expiration date will enable OSRP to continue source recovery operations for threat reduction purposes.

Recovery by OSRP includes shipment for temporary, secure interim storage until consolidation and repackaging for disposal is arranged. Shipment origin will vary depending on the location of the unwanted/disused sealed source(s). Generally speaking, the shipment origin will be a State and/or NRC licensed facility. The destination for all OSRP recovered sources shipped in 6M packages will be a State and/or NRC licensed facility under OSRP subcontract for temporary interim storage and consolidation.

Provide documentation of quality assurance controls, package design, manufacture, performance test criteria, in-service performance, and service-life limitation:

Pre-use inspections and determinations will be conducted by OSRP staff to ensure that the specific 6M packaging and inner 2R component are in unimpaired physical condition prior to use and transport. A copy of the container inspection record used by OSRP is attached.

A document titled, "Review of the Safety Features of 6M Packagings for DOE Programs" (Sandia Report SAND88-3005, TIC-0879, UC-71, December 1988) is available on the RAMPAC website. This report includes discussions and details of structural, thermal, containment, shielding, and criticality aspects related to safe use and transport of 6M packagings.

Demonstrate that a special permit achieves a level of safety at least equal to that required by regulation, or if a required safety level does not exist, is consistent with the public interest:

Since the expiring 6M packagings may not include safety enhancements present in newer designs, the justification for safe continuation of use include the following.

All OSRP shipments using 6M packages will contain radioactive sealed sources, not diffuse or readily dispersible material. In fact, most sealed sources recovered by OSRP are double-encapsulated sources which at one point met the definition of special form radioactive material.

While criteria for meeting the definition of "special form" has changed over the years, the current drop and thermal tests are identical to those for Type B packages of 10 CFR 71. As packaged under this request, the radioactive material is under three layers of confinement: (1) the solid radioactive material is inside a stainless steel capsule, (2) the sealed capsule is inside a 2R component, and (3) the closed 2R component is inside the 6M drum.

Pre-use inspections and determinations will be conducted by OSRP staff as previously stated. In addition to this visual examination of the packaging, the latest swipe test results conducted by the source owner are reviewed prior to any OSRP on-site visit. During the OSRP visit, the unwanted sealed sources are swiped again and evaluated to verify the integrity of the sealed source prior to packaging.

Transport by exclusive use will be conducted when required by 49 CFR, although OSRP shipments in 6M packages do not usually require exclusive use transport.

Transport during time of low road usage will be considered, if deemed appropriate by the regulatory authority. However, under most circumstances, OSRP shipments in 6M packages will not require transport during times of low road usage.

Accompaniment of shipment by personnel equipped to affect a recovery in an emergency situation or in case of a transportation accident will be considered, if deemed appropriate by the regulatory authority. However, under most circumstances, OSRP shipments in 6M packages will not require such accompaniments.

The public interest is served through approval of this special permit request since it will permit removal of radioactive sealed sources with higher activity (greater than the corresponding A_1 or A_2 value) from less secure locations to more secure locations; and also to move the unwanted sealed sources one step closer to final disposition.

At a minimum, provide the following:

Information describing all relevant shipping and incident experience of which the applicant is aware that relates to the application:

The Off-Site Source Recovery Project (OSRP) at Los Alamos National Laboratory (LANL), as part of the National Nuclear Security Administration's (NNSA) Global Threat Reduction Initiative (GTRI), recovers and manages excess and unwanted radioactive sealed sources that present a risk to public health and safety. OSRP has recovered such sources from medical, educational, agricultural, research, industrial, and government facilities across the U.S.

Since 1999, OSRP has been able to recover over 18,000 sources from more than 700 sites in 50 states, the D.C. area, Puerto Rico, as well as a number of foreign countries. This represents recovery of over 448,000 Curies of radioactive material in about ten years.

For the past ten years, OSRP has used DOT Spec 6M containers for a multitude of disused source recovery operations involving Type B quantities of radioactive sealed sources. OSRP currently has a fleet of 6M-type shipping containers, which are maintained and shipped in-and-out of an OSRP subcontractor facility.

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The number of individual sources (or source activities) transported in OSRP 6M packages cannot be easily determined; and the number of future 6M shipments cannot be determined in advance. However, the table below provides a historical summary of past OSRP shipments using 6M packages.

Calendar Year	Number of 6M Recovery Shipments
2007	13
2006	51
2005	23
2004	48
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Table 1: No. of OSRP Shipments Using 6M Packages²

OSRP has used 6M drums for domestic ground transport of sealed sources during threat reduction activities for ten years (and the containers have been in use by other entities for several decades). During the time of OSRP use, the applicant has not been notified and is otherwise not aware of any integrity incidents or shipping accidents resulting in loss or dispersal of contents for the packaging in question.

Under domestic and global threat reduction initiatives, OSRP has a national security mission through DOE/NNSA to recover and transport excess and unwanted sealed sources to secure sites. With a number of domestic recoveries necessary after the October 1 deadline, this special permit becomes very important in maintaining efficient OSRP threat reduction activities.

A statement identifying any increased risk to safety or property that may result if the special permit is granted and a description of the measures to be taken to address that risk:

The problem of excess and unwanted radioactive material widely distributed around the world is recognized as a global threat, and the U.S. is not immune³. Unused radioactive sources across the country are the residual product of beneficial use of radioactive material in industry, medicine, and scientific research. These unwanted sources could be incorporated into a radiological dispersal device, or may simply present a health and safety threat to the public and the environment if left unattended.

There are several root causes to the legacy radioactive source problem which are not addressed in this discussion. However, one notable obstacle to uninterrupted continuation of OSRP recovery efforts that jeopardizes expeditious, efficient, and cost effective elimination of the threat posed by unwanted radioactive sources is the phase-out of commonly used DOT Spec 6M Type B shipping containers.

These efforts include domestic recovery of sealed sources (containing activities greater than the A₂ quantity) that no longer meet the regulatory definition of special form and thus can only be transported in a Type B package. Without suitable equivalent packaging, it will be difficult or impossible to compliantly move disused radioactive sources from a place of high vulnerability to safe and secure locations in a timely

² Data based on previous OSRP database query.

³ Refer to Health Physics Society Discussion Paper titled, "Actions Needed to Better Secure Vulnerable Radioactive Sources: A Contemporary Report" available online at - http://hps.org/documents/SafeguardActionNeededVulnerableSources_Public.pdf.

manner. Any difficulty in shipping at-risk sources may result in the sources remaining unrecovered, with potential adverse effects to public health or the environment.

Therefore, it is reasonable to assume there is more potential risk to safety or property if the special permit is not granted, than if this request for extended use of the 6M is approved for a temporary period.

There will be no reduction in safety and no increase in risk if 6M packagings are authorized for continued (but limited) use after the prescribed date. The 6M packagings will be just as reliable after the October 1, 2008 deadline as they were prior to this date due to continued implementation of inspection and pre-packaging swipe test criteria described herein.

Substantiation with applicable analyses, data, or test results, that the proposed alternative will achieve a level of safety that is at least equal to that required by the regulation from which the special permit is sought:

As previously stated, inspections will be conducted by OSRP staff prior to use and transport to ensure that the individual 6M packaging and inner 2R component are in unimpaired physical condition. Additionally, since OSRP use of 6M packaging includes only sealed sources, the margin of safety is greater than if transport of unsealed radioactive material were necessary.

For additional discussions and details of structural, thermal, containment, shielding, and criticality aspects related to safe use and transport of 6M packagings please review the document titled, "Review of the Safety Features of 6M Packagings for DOE Programs" (Sandia Report SAND88-3005, TIC-0879, UC-71, December 1988) is available on the RAMPAC website.

Accordingly, since this packaging is used to transport sealed sources (not loose or readily dispersible radioactive material) it appears there is no increased risk. When used in this manner the 6M package can achieve a level of safety equivalent to that required by DOT regulations in effect on September 30, 2008.

Container Inspection Record – DOT 6M Type B Containers

Page One of Two

Container Type: <input type="checkbox"/> 30-gal <input type="checkbox"/> 55-gallon	Serial Number:
Part One – External Inspection: <input type="checkbox"/> Receipt of Container <input type="checkbox"/> Prior to Use of Container	
Inspect items of interest and annotate acceptability by marking pass or fail block. Describe deficiencies in the "Comments" section. Any condition observed which appears to affect physical integrity of container meets criteria for failure. If uncertain about conditions observed, contact OSRP Shipping Coordinator at 505-665-8300. If container fails inspection, mark container to prevent use and notify Shipping Coordinator.	
Item of Interest	Status
Dents – leading to container failure Record size, location and shape. Observe concavity of dent – sharp, angular dents (creasing or gouging) are of more concern than rounded large area dents (large dents less than one inch nominal depth) Dents around welds, container sealing surfaces and on closure rings should be evaluated more carefully	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Rust – leading to surface failures Rust on painted surfaces should be minimal. Surface rust may be expected on ring around bottom of drum Evaluate localized spots as indications of pitting	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Closure ring, bolt, and nut Look for dents or other deformation preventing drum closure Check bolt threads for obvious signs of damage Verify presence and integrity of closure and lock nuts	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Paint - No large exposed areas of metal	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Rolling hoops (chimes) - Check for dents, exposed surfaces, and rust	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Comments	
Inspector's Name:	Signature:
Date:	

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Container Inspection Record – DOT 6M Type B Containers

Page Two of Two

Serial No:

Part Two – Internal Inspection Prior to Use Evaluate additional criteria below Describe deficiencies noted in "Comments" section. Document completed inspection by signing and dating form as indicated. If uncertain about conditions observed, contact LANL OSRP Shipping Coordinator at 505-665-8300. If container fails inspection, mark container to prevent use and notify Shipping Coordinator		
Item of Interest	Status	
Lid and Gasket Sealing surfaces of drum and lid are smooth and uniform Lid sits evenly on top of drum Gasket free of cracks or major deterioration Gasket adhered to lid rim	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
No visual damage or degradation of fiberboard dunnage	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
2R inner container cap screws open and closed without difficulty	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
<i>The following only apply if inserts supplied -</i>	(Insert)	<input type="checkbox"/> Yes <input type="checkbox"/> No
If poly insert, free of debris, cracks, or breaks		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
If can insert, cap of insert open and closes without difficulty and free of debris		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Comments		
Inspector's Name:	Signature:	Date:
_____	_____	_____