


DOT Return to Service versus

DOE Release Limits

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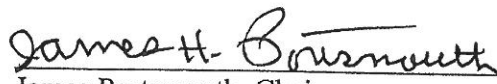
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1.0 Executive Summary

The Energy Facility Contractor Group (EFCOG) Packaging and Transportation (P&T) Subgroup of the Waste Management Working Group was asked by the Department of Energy (DOE) Headquarters (HQ) Office of Packaging and Transportation (EM-33) to review the appropriate requirements for the release of empty (unloaded) commercial carrier owned trailers which had previously transported radioactive waste to the Nevada National Security Site (NNSS) for subsequent disposal. The EFCOG P&T Subgroup “10 CFR 835 versus 49 CFR Limits” Team was formed to review this problem.

The Team found that upon delivery by a commercial motor carrier of Truckload (TL) quantities of Low-Level Radioactive Waste (LLW) to NNSS, the empty trailers were surveyed prior to release by NNSS RadCon personnel. Removable radioactive contamination levels were detected on some trailers that were low enough for return to service limits by the Department of Transportation (DOT) limits as promulgated by 49 CFR 173.443 Table 9 and 49 CFR 173.843(a) but were above the criteria specified in 10 CFR 835, Appendix D.

At one point in time, NNSS was holding in excess of thirteen (13) trailers from a commercial motor carrier for up to several months in order to perform decontamination services to get the contamination levels down to the DOE 10 CFR 835, Appendix D release levels so that the commercial motor carrier equipment could then be released. As a result, the motor carrier is currently negotiating with the DOE generator and its subcontractors to recover out-of-service costs that resulted from holding this privately-owned equipment for an extended period of time.

Another example of this problem was discovered during the Team’s evaluation. Brookhaven National Laboratory (BNL) recently decided that decontamination efforts to meet DOE 10 CFR 835 limits would be more expensive than allowing shipments of waste to leave the site under the return to service limits prescribed by DOT, thus diverting these shipments to EnergySolutions Clive instead of shipping them to NNSS for disposal.

As a result of this evaluation, the Team found that DOE release and DOT return to service requirements were not being interpreted or implemented at the DOE sites around the Complex in a consistent manner. A survey of DOE sites around the complex found that implementation of these requirements appeared inconsistent and the requirements themselves seemed to be inconsistent as well.

The application of the DOE release limits in 10 CFR 835 has increased costs to DOE waste generators in the form of required decontamination cost for the commercial carrier transport equipment, as well as the daily demurrage costs for the trailers. The motor carrier may be able to charge the DOE waste generating facility for “out-of-service” time due to the resulting delay in releasing the equipment back into commerce, as well as for business schedule impacts due to non-availability of equipment. Depending on the type of carrier equipment being held, demurrage costs alone can be very expensive until the equipment is released from the DOE site and available for interstate commerce loading.

Additionally, the delay in returning the motor carrier’s empty trailers in a timely manner can result in a loss of goodwill with the carrier, as the motor carrier is prevented from using their privately-owned equipment for other transport jobs. This results in increased cost for the carrier to replace the needed equipment that had been previously scheduled for other transport movements, either by leasing replacement equipment or in “opportunity costs” as they have to

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turn down other jobs since they do not have enough available equipment (e.g., trailers) to dedicate to other jobs.

As an illustration of the inconsistent application of the regulations, there is an exclusion to the DOE regulations in 10 CFR 835.1 (b) that allows the DOT regulations to be used in place of the DOE 10 CFR 835 limits if the radioactive material transportation is not being performed by the DOE or a DOE contractor. This provision also excludes certain types of radioactive material transportation from all of the provisions of 10 CFR 835 if the radioactive materials are being transported by a commercial motor vehicle (CMV) operated by a private or commercial motor carrier and not a DOE or DOE contractor operated vehicle. Some DOE sites are implementing this exclusion, and some are not. Consistent implementation of the exclusion across the DOE Complex, along with establishing appropriate radiological survey protocols and techniques, could prevent or at least minimize future impacts due to the differences between the regulatory free-release limits.

As part of the Team's evaluation, a concerted effort was made to review any other pertinent regulations or requirements concerning the transportation of radioactive wastes or materials. In doing this evaluation, the Team found other examples of the apparent inconsistency/conflict between DOE Orders/Requirements. During the review, it became apparent that an additional set of release limits from DOE Order 458.1, *Radiation Protection of the Public and the Environment*, should be considered. Also DOE O 460.2A, *Departmental Materials Transportation and Packaging Management*, contains "conflicting" release limits guidance.

The Team would like to provide the following overarching comments based on its evaluations conducted during this review. The Team found that DOE and DOT requirements were not being interpreted or implemented at the DOE sites around the Complex in a consistent manner. The Team believes that DOE-HQ EM-33, in concert with the Office of Health, Safety, and Security (HSS), Office of Nuclear Energy (NE), Office of Science (SC) and the National Nuclear Security Administration (NNSA) should consider the development and implementation of a consistent application of the appropriate regulations for the release of packages containing radioactive materials, as well as the subsequent release of commercial motor carrier equipment being transported by a commercial motor vehicle (CMV) operated by a private or commercial motor carrier and not a DOE or DOE contractor operated vehicle. Because it was apparent that the inconsistent application of the release criteria increased the costs of waste transportation activities, it may be appropriate to reevaluate the application of these regulations consistent with the principles of ALARA.

2.0 Background Information

Recent incidents involving the receipt of contaminated commercial carrier vehicles and reusable waste packages (e.g. intermodal containers [IMs]) have resulted in the retention of commercial motor carrier equipment (e.g. trailers) for the purpose of achieving the DOE contamination release levels specified in 10 CFR 835, Appendix D and/or DOE Order 458.1. Although §835.1(b)(7) excludes radioactive materials under the transportation regulations or DOE Orders, several contractors are applying the more conservative 10 CFR 835 criteria, rather than DOT criteria, to the return to service of non-DOE owned or DOE Contractor owned conveyances. Application of DOE O 458.1 is also occurring at some sites.

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The 10 CFR 835, *Occupational Radiation Protection - Surface Radioactivity Values*, criteria are inconsistent with, and more restrictive than, the DOT return to service criteria of 49 CFR 173.443, *Transportation – Shippers – General Requirements for Shipments and Packagings – Contamination Control*, (see Appendix A) resulting in increased retention of non-DOE owned transportation equipment at additional costs. The DOE and DOT criteria were developed to be protective of human health, the public, and the environment; however, they are not consistent with one another. This increased cost of operations and difficulty of interpretation would seem to occur due to inconsistent regulations and DOE Orders/Regulations being provided to DOE contractors and transporters of DOE radioactive packages using non-DOE owned conveyances.

DOE-HQ EM-33 asked the EFCOG P&T Subgroup to study this problem. The EFCOG P&T Subgroup subsequently formed a team of knowledgeable individuals to look into the issue and develop a report.

3.0 Description of the Problem

The lack of appropriate and consistent application of surface contamination limits for release of CMV conveyances (empty which last transported radioactive waste/material from DOE sites in commercial transportation) has been encountered in the past and continues to be an issue at some DOE site locations. However, it seems to have been more prevalent at NNSS and has caused delays with the release of commercially-owned motor carrier equipment, primarily trailers.

The impetus for the problem resides in the differences in the contamination release limits in two different regulatory criteria promulgated by two different Federal agencies. Additionally, there seems to be a difference of opinion on the interpretation by NNSS and other sites with regard to use of an “exclusion” (see 10 CFR 835.1(b)) from the provisions of 10 CFR 835 which applies to transportation of radioactive material not performed by DOE or a DOE contractor.

The two Federal agencies involved are the United States (US) DOT and the DOE. The DOT contamination return to service criteria for motor vehicles transporting DOT Class 7 (radioactive) materials under TL exclusive use conditions are in accordance with 49 CFR 177.843 (see Appendix A for full citation).

The DOE regulations which are disseminated in 10 CFR 835 and in DOE Order 458.1 are more conservative than the DOT regulations in 49 CFR. One purpose of the surface radioactivity levels in 10 CFR 835 is the release of items from contamination, high contamination, and airborne radioactivity areas to controlled areas while DOE O 458.1 establishes criteria for release of items to the public. The values provided in each are similar but more conservative than that of DOT requirements. It appears that this difference in the regulations significantly impacts offsite commercial transportation operations and should not be considered inconsequential or an inappreciable difference. For example, the 10 CFR 835, Appendix D limits for alpha contamination are approximately 100 times more conservative, and they are approximately 22 times more conservative for beta gamma than those in 49 CFR 173.443. DOT limits are designed to be protective of the transport worker and the public, and they are less restrictive than DOE limits. Additionally, DOT limits are based on International Atomic Energy Agency Regulations for Safe Transport of Radioactive Materials, as used internationally. DOE policy and requirements have been established through the formal directives process after considering the recommendations of national and international advisory bodies and the standards of other

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Federal agencies. DOE has determined that there is a benefit in providing the level of protection specified in its requirements.

This incongruity between the DOT and DOE limits has led to increased costs to DOE contractors in the form of required decontamination costs for the commercial carrier transport equipment - as well as the daily demurrage and detention costs for the retained trailers per the DOE rules tariff (DOE 190J) for transportation. The motor carrier can charge the DOE waste generating facility for the delay in releasing the equipment back into commerce, as well as for subsequent schedule impacts. Depending on the type of carrier equipment being held, this demurrage can amount to \$50.00 or more per day until the equipment is released from the DOE site and made available for interstate commerce loading. Additionally, the delay in returning the motor carrier's empty trailers in a timely manner has resulted in a loss of goodwill with the carrier, since the motor carrier is prevented from using their privately-owned equipment for other transport jobs. This may also result in increased costs for the carrier to replace the needed equipment that had been previously scheduled for other transport movements, by leasing replacement equipment or in "opportunity costs" which may result from the carrier turning down other jobs since they do not have enough available equipment (e.g., trailers) to dedicate to them.

There is, however, an exclusion to the DOE regulations in 10 CFR 835.1 (b) that allows the DOT regulation to be used in place of the DOE 10 CFR 835 limits if the radioactive material transportation is not being performed by DOE or a DOE Contractor. This provision excludes radioactive material transportation from all of the provisions of 10 CFR 835 if the radioactive materials are being transported by a commercial motor vehicle (CMV) operated by a private or commercial motor carrier and not a DOE or DOE contractor operated vehicle.

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The discrepancy between the contamination limits as predicated in 49 CFR and 10 CFR 835, Appendix D are shown below.

3.1 DOT Contamination Limits in 49 CFR 173.443

TABLE 9—NON-FIXED EXTERNAL RADIOACTIVE CONTAMINATION LIMITS FOR PACKAGES				NON-FIXED
Contaminant	Maximum permissible limits			10 CFR 835 Appendix D comparison
	Bq/cm ²	μCi/cm ²	dpm/cm ²	in dpm/cm ²
1. Beta and gamma emitters and low toxicity alpha emitters	4	10 ⁻⁴	220	10
2. All other alpha emitting radionuclides	0.4	10 ⁻⁵	22	0.2

See Appendix A for cited text of regulation

3.2 DOE Contamination Limits in 10 CFR 835

DOE 10 CFR 835, Appendix D

Radionuclide	Removable dpm/100-cm ²	Total – Fixed+Removable dpm/100-cm ²
U-nat, U-235, U-238, and associated decay products	1000	5000
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	20	500
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	200	1000
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90	1000	5000
Tritium and STCs 6	10000	

See Appendix B for cited text of regulations

The following input was provided by HS-22 on the applicability of DOE O 458.1. It should be noted that in the example discussed below, the piece of equipment had actually been operating in a contaminated area (CA) for soil remediation, and is not a piece of transportation equipment that has never entered a CA.

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“DOE Order 458.1, *Radiation Protection of the Public and the Environment*, has requirements that apply to the clearance and release of property which contains or may contain residual radioactivity. “*Clearance*” is defined as the removal of property that contains or may contain residual radioactive material from DOE radiological control under 10 CFR 835 and DOE O 458.1. Under DOE O 458.1 *Personal Property* is any property other than real property - which includes privately owned transportation equipment. The purpose of DOE O 458.1 is “To establish requirements to protect the public and the environment against undue risk from radiation associated with radiological activities conducted under the control of DOE pursuant to the Atomic Energy Act (AEA) of 1954, as amended.” Thus property leaving a DOE radiological control area needs to comply with the requirements for clearance in DOE O 458.1 whether it is DOE owned or not.¹ In any event, if contamination on the commercial trailers is from DOE activities, the contamination itself - the radionuclides - would be considered DOE property.

DOE is self-regulating for radiation risks. The AEA of 1954 makes DOE responsible for assuring radiation protection from its activities and associated risks; this responsibility cannot be delegated to states or other Federal agencies. Unlike NRC, DOE does not have a Memorandum of Understanding with DOT that defers to DOT on certain regulatory aspects, and DOE does not require persons not otherwise subject to DOT regulations to observe DOT limits for transport of radioactive material. Per HSS, there are no exceptions provided in DOE O 458.1 for transportation activities or transportation equipment. Thus, DOE Order 458.1 requirements for clearance of property from DOE sites apply to commercial transport vehicles.

DOE O 458.1 applies to personal property crossing the site fence, while 10 CFR 835 applies to property within the site fence, and DOT requirements apply to commercial vehicles during transport. Thus, the relevant question is not which set of requirements applies - they all apply - but it is when each of the requirements applies. The fact that DOE O 458.1 requirements, not 10 CFR 835 requirements, apply to the release of property from DOE sites could facilitate the release of certain property. While the preapproved criteria for release in DOE O 458.1 are similar to 10 CFR 835 requirements, DOE O 458.1 provides a process for deriving alternative limits based on a dose assessment.

As part of the Team’s evaluation, a concerted effort was made to review any other pertinent regulations or requirements concerning the transportation of radioactive wastes or materials. In doing this evaluation, the Team found another example of the apparent inconsistency/ conflict between DOE Orders/Requirements as shown below.

DOE O 460.2A, *Departmental Materials Transportation and Packaging Management*, provides the following directions.

¹ The following is an example of the application of O 458.1 to non-DOE property with residual radioactive material which had been transported off-site by truck: A subcontractor at Hanford leased a large excavator for remediation activities. The excavator was transported by truck to the lessor’s off-site maintenance shop. A subsequent survey by DOE of the maintenance shop identified fixed and removable contamination on components which had been removed from the excavator including lubricating grease, a coupler, shims and a pin; the trailer was found clean. Some components were decontaminated to O 458.1 release levels for fixed and removable contamination. Residual contamination (fixed) remained on the pin after decontamination efforts so the component was bagged and taken back to the site.

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4. Requirements

b. *Receipt of Materials Shipments.*

(1) *DOE organizations must ensure that all shipments are inspected upon receipt for damage or loss and evidence of leakage.*

(a) *Radioactive material shipments shall be inspected for external contamination and radiation levels (10 CFR 835.405, Occupational Radiation Protection).*

(b) *Claims must be filed according to the provisions of the DOE Accounting Handbook and facility procedures.*

(2) *If a delivery vehicle is contaminated as a result of radioactive cargo or surveys indicate potential exposure above acceptable limits, the vehicle must be detained and the carrier immediately notified so that other potentially contaminated vehicles can be surveyed. **Release limits are specified in 49 CFR 177.843, Contamination of Vehicles. Specific response activities will follow facility procedures.** (Emphasis Added)*

The Contractor Requirements Document (CRD) for DOE O 460.2A contains the same language.

4.0 Description of Relevant Incidents and Team Observations

The observations made by the DOT versus DOE Limits Team were as follows:

- The following is a description of a recent situation that happened at Brookhaven National Laboratory (BNL) as described in a May 21, 2013 email.
 - BNL called in a commercial transport truck to take a shipment to the NNSS for disposal. RadCon personnel identified many areas of fixed contamination above the 10 CFR 835 limits (5-6-13), but below the DOT limits. When there are only a couple of spots, BNL personnel often try to remove them to save the shipment, but in this case it was obviously going to be a huge effort, so they rejected the truck. Approximately a week later, a second truck arrived at the facility to take the same load to the NNSS, and again RadCon personnel identified many areas of fixed contamination above the 10 CFR 835 limits. BNL personnel then decided that rather than continuing to call for numerous trucks with the potential for multiple failures to come, they would simply route the shipment to EnergySolutions. They reworked the manifests and the labeling and sent the truck out the next day to EnergySolutions.
 - BNL bears the cost associated with rejecting trucks (for NNSS shipments) that are compliant with DOT regulations. They also bear the cost of the very extensive labor required to do the 10 CFR 835 surveys. They estimate that there is a delta of 8 hours of RadCon labor for each shipment sent to the NNSS, and one day of demurrage that they don't experience when loading for EnergySolutions. When they are able to bring a truck in, survey it, load it, and send it off to the NNSS without incident that delta in demurrage and RadCon cost is definitely offset by the savings in disposal cost. In this case they simply made a decision to stop tying up RadCon and Operations personnel with this shipment and send it on down the road, since they didn't know

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how many more trucks they might waste time going through before finding one that would pass.

- Recent trailer contamination incidents at the NNSS have resulted primarily from removable (non-fixed) radiological contamination found on the trailers which exceeds the limits allowed by 10 CFR 835, Appendix D for commercial transportation company equipment (e.g. trailers) used to transport radioactive waste packages to the NNSS.
- The *NNSS Waste Acceptance Criteria* specify that the external contamination levels for release of the waste packages and transport vehicles shall meet the limits specified in 10 CFR 835, Appendix D. NNSS is therefore required to use the more restrictive free release limits and is prevented from releasing any transport equipment back into commerce if the outgoing surveys detect contamination above these limits.
- From FY 2009 through FY 2011, there were a total of 21 incidents involving radiologically-contaminated shipment trailers received at the NNSS Area 5 Radioactive Waste Management Site (RWMS) and the EnergySolutions Clive, UT, disposal site.
- External contamination observed during ongoing NNSS trailer surveys could not be uniquely identified with any one particular DOE originating site location.
- Trailer histories provided by the commercial carrier showed that, in many instances, the trailers had been used at several different DOE sites, as well as for various commercial power plant shipments to commercial disposal sites.
- Many DOE sites were not performing a thorough trailer survey prior to loading DOE radioactive packages for subsequent transport to NNSS for disposal.
- The EnergySolutions Clive disposal site reported several documented situations in the past few years where external contamination levels on incoming waste packages exceeded DOT limits. These shipments included both those which originated at a DOE site location as well as at a commercial site.
- Commercial nuclear power facilities and commercial disposal sites release transport equipment to the DOT commercial transportation limits.
- The DOE/NNSA governance model objective, as we understand it, is to reduce unnecessary and duplicate regulations. The use of 10 CFR 835, Appendix D and DOE O 458.1 limits for the release of commercial transport equipment is more restrictive than using DOT return to service limits. Also, it is unclear if or when DOE O 460.2A applies to these shipments. To complicate matters further, the DOE release limits are not applicable to commercial disposal sites. The increased cost of operations and difficulty of interpretation would seem to occur due to inconsistent regulations and DOE Orders/Regulations being provided to DOE contractors and transporters of DOE radioactive packages using non-DOE owned conveyances. It seems that since the DOT regulations are the accepted body of regulations that govern in-commerce transportation of radioactive materials by non-DOE participants, that consideration should be given to allow implementation of the DOT regulations by DOE to improve consistency of regulation. It also seems that consistency in application of these requirements would be

appropriate and a renewed evaluation of ALARA considerations be initiated to consider cost vs. benefit.

5.0 Team Communications

The DOE versus DOT Release Limits Team was formed under the leadership of Mike Waters, CH2M Hill Plateau Remediation Company (CHPRC), and Jim Portsmouth, CH2M Hill. The Team is made up of individuals from many of the DOE sites Complex-wide and contains representatives from the NNSS (NSTec), Idaho (CH2MHill/Washington Group) Los Alamos National Laboratory (LANL), The Portsmouth Gaseous Diffusion Plant (Fluor-B&W), EnergySolutions (ES) Clive and Bear Creek facilities, as well as NNSA Office of Packaging and Transportation, (NA-00-40), DOE Office of Worker Safety and Health (HSS-11), and DOE Office of Packaging and Transportation (EM-33); the sponsor of this evaluation. The Team is comprised of professionals from the transportation management, hazardous materials, radioactive waste management, waste shipping and RadCon subject matter experts (SME's) as well as representatives from the EFCOG Radiation Protection and Nuclear Operations and Quality Assurance Quality Control fields.

The Team members and site locations are as follows:

- Mike Waters, Hanford
- Jim Portsmouth, Hanford
- Syd Gordon, NNSS - NSTec
- Ashok Kapoor, EM-33
- Andy Baumer, LANL
- John McCoy, Portsmouth
- Bob Stueckrath, NNSS - NSTec
- Travis Myers, CWI Idaho
- Mark Ledoux, Clive (EnergySolutions)
- Ted Giltz, Hanford, Chair, EFCOG Radiation Protection Subgroup of the Environmental Safety and Health Working Group

Because of travel limitations placed on DOE, NNSA and its contractors, most of the meetings for the Team were accomplished by conference calls. An EFCOG meeting was held June 2012 in conjunction with DOE-HQ Contractor Transportation Management Association (CTMA) / Packaging Management Council/Transportation Management Council (TMC) conference in Reno, Nevada. A second meeting took place in December 2012 as part of the EFCOG meeting in Washington, DC, and a third meeting was conducted at the Nevada Site Office in conjunction with the NNSS Generators meeting in April 2013. In all cases, several key Team members were unable to be at the meetings and participated via conference call.

There was obviously a need to gather data from across the DOE complex in order to determine how these situations were handled complex-wide and which processes were employed to meet requirements. There was also a need to assess which regulatory requirements were being

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utilized. A survey was developed by the Team and sent to DOE and NNSA complex sites in July 2012. There were 11 responses to the survey. The responses to the questions in the survey varied widely. A summary of the survey results is provided in Appendix E.

- At some DOE Site locations, radiological surveys were only performed when there was visible damage to waste packages. Other DOE Sites performed detailed inbound and outbound radiological surveys on all shipments and conveyances that were loading or had unloaded LLW shipments.
- Two-thirds of the Complex sites use 10 CFR 835 as release criteria. Some sites incorporated at least one of the exclusions in 10 CFR 835, while others did not incorporate any of the exclusions.
- The fact that the NNSA disposal facility has incorporated 10 CFR 835 release limits into their Waste Acceptance Criteria (WAC), forces a generator to use the more conservative release criteria while a commercial disposal facility will use the 49 CFR return to service criteria.

6.0 Team Findings

During the course of evaluating the problem by the Team, it became apparent that the primary factors leading to the retention of commercial transport vehicles and subsequent requirements for the decontamination (prior to release of the contaminated trailers at the NNSA) were release of contamination from selected packages, legacy contamination on trailers, and the application of more restrictive DOE radiological “release” limits for surface contamination on commercial transport equipment. The apparent inconsistency between the DOE and DOT criteria was reviewed by the Team to develop a mutually acceptable resolution that ensures consistency in application of the appropriate regulations and minimizes or prevents incidents of this type in the future. The applicability of DOE O 458.1 to offsite transportation activities is also an area that needs to be addressed in addition to the other requirements. No information was identified that explains the basis for established release values. Each of the requirements is determined by the respective organizations to be protective of the public and the environment.

As stated previously, there is an exclusion to the DOE regulations in 10 CFR 835.1 (b) that allows the DOT regulations of 49 CFR 173-178 to be used in place of the 10 CFR 835 limits if the radioactive material transportation is not being performed by DOE or a DOE contractor. This provision also excludes certain types of radioactive material transportation from all of the provisions of 10 CFR 835 if the radioactive materials are being transported by a CMV operated by a private or commercial motor carrier and not by a DOE or DOE contractor. Consistent application of the exclusion across the DOE Complex, along with establishing appropriate radiological survey protocols and techniques, will prevent or at least minimize impacts due to the differences between the regulations. See Appendices B, C and D for supporting documentation.

7.0 Comments

The following are the Team’s comments based on the evaluation:

- DOE-HQ EM 33, in concert with HSS, NE, SC and NNSA, should consider the development of guidance on the consistent application of the appropriate regulations for

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the release of packages containing, or last containing, DOE radioactive materials, as well as the subsequent release of commercial carrier equipment used for the transportation of radioactive material on or between DOE sites complex-wide.

- The DOE and NNSA should consider clarification and implementation of guidelines for the consistent application of the exclusion in §835.1(b)(7). Consistent application of the appropriate DOT regulations for the return to service limits of commercial motor carrier equipment used by DOE and NNSA contractor personnel for transporting radioactive materials will result in immediate cost and schedule benefits for private and government entities.
- The DOT regulations promulgated in 49 CFR 173-178 should be, in the Team's opinion, the fundamental and underlying specification for the return to service limits of transportation equipment and transport packages used for the transport of radioactive materials in commerce.
- The DOE and NNSA should consider the resolution of conflicts between DOE O 458.1 and DOE O 460.2A with those of DOT.
- Because it was apparent that the inconsistent application of the release standards increased the costs of waste transportation activities, it may be appropriate to reevaluate the application of these regulations consistent with the principles of ALARA.
- Resolution of the conflict (DOE vs. DOT limits), when combined with consistent performance of thorough radiological surveys, will greatly reduce equipment holds and resulting demurrage costs as well as decontamination costs for the commercial carrier equipment to achieve the lower DOE release limits specified in 10 CFR 835, which are more stringent than the DOT regulatory limits governing the transport of radioactive materials in general commerce.
- Consistent and thorough radiological surveys at the shipment originating location prior to loading of the commercial carrier's transport equipment should identify any existing contamination or legacy materials on the trailer prior to a DOE site location loading the trailer with DOE-owned radioactive materials or wastes. Consistent surveys will also permit early detection and correction of contamination due to improper packaging or storage operations prior to the release of commercial equipment from a DOE site.
- Variation in survey techniques and processes from one site to another could be a contributing cause for the non-detection of legacy trailer contamination, which may result in a future failure of the trailers to meet DOE release requirements.
- The Team supports Recommendation #1 made by the EFCOG Trailer Contamination and Supersack Integrity Team in its September 2012 Report to EM/HQ, as follows:

Develop and implement consistent performance standards for radiological surveys on radioactive material packaging and transport equipment when either enters or exits a DOE-controlled site. It is important that waste generators perform comprehensive surveys on empty transporter equipment prior to loading waste packages. Provide guidance to improve large area survey techniques to

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ensure that legacy or new contamination is identified, quantified, and documented in a timely manner. This should include specification of appropriate survey techniques, equipment and operating procedures that will offer efficient and accurate results from one site/location to another.

- Establish reliable and consistent performance standards for contractor oversight on radiological surveys - including guidance for large area surveys of commercial transporter equipment.
- Develop and disseminate “best practice” guidance for the radiological survey of commercial motor carrier equipment.
- Enhanced oversight of both pre-loading and pre-shipment vehicle surveys. For example, the D&D contractor at the Portsmouth site began using a mobile radiation contamination device. The device runs on rollers that is placed on a trailer and is more effective at detecting legacy contamination on the bed of the trailer.
- Use trailers with metal flooring instead of wood flooring for the transportation of radioactive material and waste shipments, when practicable. Wood flooring, when in use as the flooring structure for a trailer, is more porous and is more easily contaminated and harder to clean up should the trailer become contaminated. Additionally, wood floored trailers more easily mask legacy contamination, if present.

8.0 Appendix

APPENDIX A - 49 CFR PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

APPENDIX B – 10 CFR 835 - 2011 Amended Text

APPENDIX C – DOE G 441.1-1C, 05-19-08, Chg. 1, 07-08-11 -- RADIATION PROTECTION PROGRAMS GUIDE for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection

APPENDIX D – DOE-STD-1098-2008, October 2008, Change Notice 1, May 2009 DOE STANDARD RADIOLOGICAL CONTROL

APPENDIX E - Survey Response Summary

APPENDIX A

49 CFR PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

Subpart I—Class 7 (Radioactive) Materials

§ 173.403 Definitions.

Closed transport vehicle means a transport vehicle or conveyance equipped with a securely attached exterior enclosure that during normal transportation restricts the access of unauthorized persons to the cargo space containing the Class 7 (radioactive) materials. The enclosure may be either temporary or permanent, and in the case of packaged materials may be of the “see through” type, and must limit access from top, sides, and bottom.

Contamination means the presence of a radioactive substance on a surface in quantities in excess of 0.4 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters or 0.04 Bq/cm² for all other alpha emitters. Contamination exists in two phases.

(1) Fixed radioactive contamination means radioactive contamination that cannot be removed from a surface during normal conditions of transport.

(2) Non-fixed radioactive contamination means radioactive contamination that can be removed from a surface during normal conditions of transport.

Exclusive use means sole use by a single consignor of a conveyance for which all initial, intermediate, and final loading and unloading are carried out in accordance with the direction of the consignor or consignee. The consignor and the carrier must ensure that any loading or unloading is performed by personnel having radiological training and resources appropriate for safe handling of the consignment. The consignor must provide to the initial carrier specific written instructions for maintenance of exclusive use shipment controls, including the vehicle survey requirement of § 173.443 (c) as applicable, and include these instructions with the shipping paper information provided to the carrier by the consignor.

Low toxicity alpha emitters means natural uranium; depleted uranium; natural thorium; uranium-235 or uranium-238; thorium-232; thorium-228 and thorium-230 when contained in ores or physical and chemical concentrates; and alpha emitters with a half-life of less than 10 days.

§ 173.443 Contamination control.

(a) The level of non-fixed (removable) radioactive contamination on the external surfaces of each package offered for transport must be kept as low as reasonable achievable. The level of non-fixed radioactive contamination may not exceed the limits set forth in Table 9 and must be determined by either:

(1) Wiping an area of 300 cm² of the surface concerned with an absorbent material, using moderate pressure, and measuring the activity on the wiping material. Sufficient measurements must be taken in the most appropriate locations to yield a representative assessment of the non-fixed contamination levels. The amount of radioactivity measured on any single wiping material, divided by the surface area wiped and divided by the efficiency of the wipe procedure (the fraction of removable contamination transferred from the surface to the absorbent material), may

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not exceed the limits set forth in Table 9 at any time during transport. For this purpose the actual wipe efficiency may be used, or the wipe efficiency may be assumed to be 0.10; or

(2) Alternatively, the level of non-fixed radioactive contamination may be determined by using other methods of equal or greater efficiency.

Table 9 is as follows:

TABLE 9—NON-FIXED EXTERNAL RADIOACTIVE CONTAMINATION LIMITS FOR PACKAGES

Contaminant	Maximum permissible limits		
	Bq/cm ²	uCi/cm ²	dpm/cm ²
1. Beta and gamma emitters and low toxicity alpha emitters	4	10^{-4}	220
2. All other alpha emitting radionuclides	0.4	10^{-5}	22

(b) Except as provided in paragraph (d) of this section, in the case of packages transported as exclusive use shipments by rail or public highway only, the removable (non-fixed) radioactive contamination on any package at any time during transport may not exceed ten times the levels prescribed in paragraph (a) of this section. The levels at the beginning of transport may not exceed the levels prescribed in paragraph (a) of this section.

(c) Except as provided in paragraph (d) of this section, each transport vehicle used for transporting Class 7 (radioactive) materials as an exclusive use shipment that utilizes the provisions of paragraph (b) of this section must be surveyed with appropriate radiation detection instruments after each use. A vehicle may not be returned to service until the radiation dose rate at each accessible surface is 0.005 mSv per hour (0.5 mrem per hour) or less, and there is no significant removable (non-fixed) radioactive surface contamination as specified in paragraph (a) of this section.

(d) Paragraphs (b) and (c) of this section do not apply to any closed transport vehicle used solely for the transportation by highway or rail of Class 7 (radioactive) material packages with contamination levels that do not exceed 10 times the levels prescribed in paragraph (a) of this section if—

(1) A survey of the interior surfaces of the empty vehicle shows that the radiation dose rate at any point does not exceed 0.1 mSv per hour (10 mrem per hour) at the surface or 0.02 mSv per hour (2 mrem per hour) at 1 m (3.3 feet) from the surface;

(2) Each vehicle is stenciled with the words “For Radioactive Materials Use Only” in letters at least 76 millimeters (3 inches) high in a conspicuous place on both sides of the exterior of the vehicle; and (3) Each vehicle is kept closed except for loading or unloading.

49 CFR PART 174—CARRIAGE BY RAIL

§ 174.715 Cleanliness of transport vehicles after use.

(a) Each transport vehicle used for transporting Class 7 (radioactive) materials as exclusive use, as defined in § 173.403 of this subchapter, must be surveyed with appropriate radiation detection instruments after each use. A transport vehicle may not be returned to service until the radiation

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dose rate at any accessible surface is 0.005 mSv per hour (0.5 mrem per hour) or less, and there is no significant removable radioactive surface contamination, as defined in § 173.443 of this subchapter.

(b) This section does not apply to any transport vehicle used solely for transporting Class 7 (radioactive) materials if a survey of the interior surface shows that the radiation dose rate does not exceed 0.1 mSv per hour (10 mrem per hour) at the interior surface or 0.02 mSv per hour (2 mrem per hour) at 1 m (3.3 feet) from any interior surface. The transport vehicle must be stenciled with the words “FOR RADIOACTIVE MATERIALS USE ONLY” in lettering at least 7.6 cm (3 inches) high in a conspicuous place on both sides of the exterior of the transport vehicle, and it must be kept closed at all times other than during loading and unloading.

49 CFR PART 177—CARRIAGE BY PUBLIC HIGHWAY

§ 177.843 Contamination of vehicles.

(a) Each motor vehicle used for transporting Class 7 (radioactive) materials under exclusive use conditions in accordance with § 173.427(b)(4) or (c) or § 173.443(c) of this subchapter must be surveyed with radiation detection instruments after each use. A vehicle may not be returned to service until the radiation dose rate at every accessible surface is 0.005 mSv per hour (0.5 mrem per hour) or less and the removable (non-fixed) radioactive surface contamination is not greater than the level prescribed in § 173.443(a) of this subchapter.

(b) This section does not apply to any vehicle used solely for transporting Class 7 (radioactive) material if a survey of the interior surface shows that the radiation dose rate does not exceed 0.1 mSv per hour (10 mrem per hour) at the interior surface or 0.02 mSv per hour (2 mrem per hour) at 1 meter (3.3 feet) from any interior surface. These vehicles must be stenciled with the words “For Radioactive Materials Use Only” in lettering at least 7.6 cm (3 inches) high in a conspicuous place, on both sides of the exterior of the vehicle. These vehicles must be kept closed at all times other than loading and unloading.

APPENDIX B

10 CFR 835 - 2011 Amended Text

Subpart A - General Provisions

§ 835.1 Scope.

- (a) General. The rules in this part establish radiation protection standards, limits, and program requirements for protecting individuals from ionizing radiation resulting from the conduct of DOE activities.
- (b) Exclusion. Except as provided in paragraph (c) of this section, the requirements in this part do not apply to:
 - (1) Activities that are regulated through a license by the Nuclear Regulatory Commission or a State under an Agreement with the Nuclear Regulatory Commission, including activities certified by the Nuclear Regulatory Commission under section 1701 of the Atomic Energy Act;
 - (2) Activities conducted under the authority of the Deputy Administrator for Naval Reactors, as described in Pub. L. 98-525 and 106-65;
 - (3) Activities conducted under the Nuclear Explosives and Weapons Surety Program relating to the prevention of accidental or unauthorized nuclear detonations.
 - (4) DOE activities conducted outside the United States on territory under the jurisdiction of a foreign government to the extent governed by occupational radiation protection requirements agreed to between the United States and the cognizant government;
 - (5) Background radiation, radiation doses received as a patient for the purposes of medical diagnosis or therapy, or radiation doses received from participation as a subject in medical research programs; or
 - (6) Radioactive material on or within material, equipment, and real property which is approved for release when the radiological conditions of the material, equipment, and real property have been documented to comply with the criteria for release set forth in a DOE authorized limit which has been approved by a Secretarial Officer in consultation with the Chief Health, Safety and Security Officer.
 - (7) Radioactive material transportation not performed by DOE or a DOE contractor.
- (c) Occupational doses received as a result of excluded activities and radioactive material transportation, listed in paragraphs (b)(1) through (b)(4) and (b)(7) of this section, shall be included to the extent practicable when determining compliance with the occupational dose limits at §§ 835.202 and 835.207, and with the limits for the embryo/fetus at § 835.206. Occupational doses resulting from authorized emergency exposures and planned special exposures shall not be considered when determining compliance with the dose limits at §§ 835.202 and 835.207.
- (d) The requirements in subparts F and G of this part do not apply to radioactive material transportation by DOE or a DOE contractor conducted:

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- (1) Under the continuous observation and control of an individual who is knowledgeable of and implements required exposure control measures, or
- (2) In accordance with Department of Transportation regulations or DOE orders that govern such movements.

§ 835.2 Definitions.

Radioactive material transportation means the movement of radioactive material by aircraft, rail, vessel, or highway vehicle. Radioactive material transportation does not include preparation of material or packaging's for transportation, storage of material awaiting transportation, or application of markings and labels required for transportation.

Real property means land and anything permanently affixed to the land such as buildings, fences and those things attached to the buildings, such as light fixtures, plumbing and heating fixtures.

§ 835.405 Receipt of packages containing radioactive material.

- (a) If packages containing quantities of radioactive material in excess of a Type A quantity (as defined at 10 CFR 71.4) are expected to be received from radioactive material transportation, arrangements shall be made to either:
 - (1) Take possession of the package when the carrier offers it for delivery; or
 - (2) Receive notification as soon as practicable after arrival of the package at the carrier's terminal and to take possession of the package expeditiously after receiving such notification.
- (b) Upon receipt from radioactive material transportation, external surfaces of packages known to contain radioactive material shall be monitored if the package:
 - (1) Is labeled with a Radioactive White I, Yellow II, or Yellow III label (as specified at 49 CFR 172.403 and 172.436-440); or
 - (2) Has been transported as low specific activity material (as defined at 10 CFR 71.4) on an exclusive use vehicle (as defined at 10 CFR 71.4); or
 - (3) Has evidence of degradation, such as packages that are crushed, wet, or damaged.
- (c) The monitoring required by paragraph (b) of this section shall include:
 - (1) Measurements of removable contamination levels, unless the package contains only special form (as defined at 10 CFR 71.4) or gaseous radioactive material; and
 - (2) Measurements of the radiation levels, if the package contains a Type B quantity (as defined at 10 CFR 71.4) of radioactive material.
- (d) The monitoring required by paragraph (b) of this section shall be completed as soon as practicable following receipt of the package, but not later than 8 hours after the beginning of the working day following receipt of the package.
- (e) Monitoring pursuant to § 835.405(b) is not required for packages transported on a DOE site which have remained under the continuous observation and control of a DOE employee or DOE contractor employee who is knowledgeable of and implements required exposure control measures.

APPENDIX C

Applicable Citations pertaining to the subject

DOE G 441.1-1C, 05-19-08, Chg. 1, 07-08-11 -- RADIATION PROTECTION PROGRAMS GUIDE for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection

[This Guide describes no mandatory approaches for meeting requirements. Guides are not requirements documents and are not to be construed as requirements in any audit or appraisal for compliance with the parent Rule, Policy, Order, Notice, or Manual.]

1.0 PURPOSE AND APPLICABILITY

This Guide provides guidance with respect to implementing the provisions of all the functional areas contained in 10 CFR 835. These are listed in Chapter 3 of this Guide. Specific regulatory citations are provided in the body of the Guide.

3.2.4 Radioactive Material Transportation Exclusion

10 CFR part 835 excludes radioactive material transportation not performed by DOE or a DOE contractor (10 CFR 835.1(b)(7)). The intent is to exclude from 10 CFR part 835 transportation by the U. S. Postal Service or a commercial carrier, such as FedEx or UPS, which transport radioactive material as part of their normal operations. A company or subsidiary of a corporation that operates a DOE facility would not be considered a commercial carrier - even if such an organization transports radioactive material as part of its contractual agreement with DOE. Activities related to transportation such as the preparation of material or packaging for transportation, storage of material awaiting transportation, or application of markings and labels required for transportation is not included in the exclusion (See 10 CFR 835.2, Definitions, Radioactive material transportation).

Subparts F (Entry Control Program) and G (Posting and Labeling) do not apply to radioactive material transportation conducted by a DOE individual or DOE contractor, when the radioactive material is under the continuous observation and control of an individual who is knowledgeable of and implements required exposure control measures or when conducted in accordance with Department of Transportation regulations or DOE orders that govern such movements (10 CFR 835.1(d)). This does not affect the application of requirements to radioactive material transportation in the other subparts of 10 CFR part 835. In accordance with the definition of "radioactive material transportation," the exclusion applies while the material is in the process of undergoing movement, including nominal stoppages such as for traffic considerations or refueling activities.

Occupational doses received as a result of radioactive material transportation performed by other than the DOE or a DOE contractor, shall be considered to the extent practicable when determining compliance with the occupational dose limits (10 CFR 835.1(c)). Occupational doses received by DOE or DOE contractor employees while conducting radioactive material transportation shall be considered when determining compliance with the occupational dose limits.

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APPENDIX D

DOE-STD-1098-2008, October 2008, Change Notice 1, May 2009, DOE STANDARD RADIOLOGICAL CONTROL

CHAPTER 4 RADIOACTIVE MATERIALS

PART 2 Release and Transportation of Radioactive Material

421 Release to Controlled

Areas.....4-7

422 Release to Uncontrolled

Areas.....4-8

423 Transportation of Radioactive

Material.....4-10

423 Transportation of Radioactive Material

1. 49 CFR 170 through 180 establish requirements for inspecting and surveying packages, containers, and transport conveyances prior to transport via the public transportation system. These regulations apply to radioactive material transportation in commerce.
2. DOE Orders 460.1B, Packaging and Transportation Safety and 460.2A, Departmental Materials Transportation and Packaging Management provide requirements that are in conformance with 49 CFR requirements for transportation of radioactive material using any conveyance. 10 CFR 835.1(b)(7) excludes activities not performed by DOE or DOE contractors. 10 CFR 835.1(b)(7) excludes radioactive material transportation not performed by DOE or DOE contractors from compliance with 10 CFR 835 regulations. However, radioactive material transportation (as defined in 10 CFR 835) does not include preparation of materials for shipment, packaging and labeling, or storage of material awaiting transportation for shipment. These activities shall be conducted in accordance with 10 CFR 835 [see 835.2(a), radioactive material transportation, and 835.1(b)] and should be conducted in accordance with this Standard.
3. Table 2-2 removable contamination values are more limiting than 49 CFR requirements and should be used as controlling limits for on-site and off-site transportation when using a conveyance that is owned by DOE or a DOE contractor [835.1(d)]. However, when a shipment is received from an off-site destination, by a non-DOE conveyance, the 49 CFR 173 transportation contamination values should be applied to all subsequent on-site transfers to the ultimate on-site destination.
4. On-site transfers over non-public thoroughfares or between facilities on the same site should be performed in accordance with written procedures utilizing pre-approved routes. The procedures or other measures should include requirements to ensure appropriate monitoring and control of the radioactive material and should be approved or concurred with by the radiological control organization.
5. On-site transfers over public thoroughfares by non-DOE conveyance shall be performed in accordance with Department of Transportation, state and local shipping requirements and pre-approved agreements. Onsite transfers over public thoroughfares by DOE conveyance

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shall be performed in accordance with applicable DOE Orders and should conform with state and local shipping requirements and pre-approved agreements [see DOE 460.1B].

6. Before shipment and upon receipt of a radioactive material shipment, a visual inspection of packages should be performed to ensure that packages are not damaged. The inspection should identify dents, flaking paint, debris, package orientation, and any indication of leakage.
7. Before shipment and upon receipt of a radioactive material shipment, a comparison of package count to the shipping manifest should be made to ensure accountability.
8. Transport conveyances should be visually inspected prior to loading to ensure the trailers are acceptable for the intended use.
9. To the extent practicable, transport conveyances should be radiologically surveyed before loading, especially when using commercial carriers specializing in radioactive transport. The surveys should be adequate to identify any contamination remaining on the vehicle from previous radioactive material transport evolutions, such that DOE and its contractors would not be held liable.
10. Transport of large volumes of radioactive material by non-DOE motor vehicles should be "exclusive use" to prevent commingling of DOE and other commercial shipments.
11. The site emergency plan should describe provisions for response for those potential on-site radioactive material transportation accidents that would be categorized as an Operational Emergency.
12. Specific arrangements shall be made for receiving packages containing radioactive material, regardless of the means of conveyance, in excess of Type A quantities (as defined in 10 CFR 71.4). These arrangements shall include making arrangements to receive packages upon delivery or to receive notification of delivery which leads to expeditious receipt of the package [see 835.405(a)].
13. Written procedures for safely opening packages should be developed and maintained. These procedures should include due consideration of the type of package and potential hazards present.

DOT Return to Service versus DOE Release Limits

APPENDIX E

Survey Response Summary

What site are you responding for?	NNSS	Portsmouth
Do you have site procedures for release of commercial carrier equipment?	Yes	Yes
Do you perform incoming and outbound contamination surveys of commercial carrier equipment?	Yes	Yes
If yes to question #3, briefly describe survey methodology	Incoming surveys on accessible surfaces before and after waste packages are off-loaded. Outbound equipment is surveyed at 100% based on 10 CFR 835 Appendix D limits	Floor monitors
After a commercial carrier's conveyance/equipment arrives on a DOE site, when is it considered to be "out of transport" and the provisions of 10 CFR 835 apply	Site RadCon considers the waste shipment to be in commerce continually and that 10 CFR 835 Appendix D applies whenever it enters or leaves the NNSS.	We have to use 10 CFR 835 when it arrives. We do not designate trailers as out of transport per se.
When a commercial carrier's conveyance/equipment is prepared for a shipment when it considered to be "in transportation?"	Our waste generator sites consider shipments to be in commerce when they depart their fence line	It is "in commerce" when released from the site
Have you incorporated exclusions 10 CFR 835.1(b), 835.1(b)(7) or 835.1(d) into your transportations processes?	No response	No response
What criteria do you use for the release of commercial carrier equipment?	10 CFR 835 Appendix D	10 CFR 835, Appendix D
Have you incorporated provisions of the DOE Standard for Radiological Control, DOE-STD-1098-2008, PART 2, Section 423, Transportation of Radioactive Material?	Yes	No
Other applicable information that may describe your process for release of commercial carrier equipment.	No response	No response

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What site are you responding for?	Idaho Cleanup Project	LANL
Do you have site procedures for release of commercial carrier equipment?	Yes	Yes
Do you perform incoming and outbound contamination surveys of commercial carrier equipment?	Yes	Yes
If yes to question #3, briefly describe survey methodology	Surveys are performed to 10 CFR 835. If contamination is found, levels are evaluated to 49 CFR 443. For shipments made to NNSS the WAC requires 10 CFR 835 only. Large area detectors, exclusive trailers, and checklists for 100% direct scan	Dose rates and contamination surveys
After a commercial carrier's conveyance/equipment arrives on a DOE site, when is it considered to be "out of transport" and the provisions of 10 CFR 835 apply	Remains as commercial equipment. If contamination is detected, evaluate to 49 CFR 443 and found to be less than DOT, effort would be made to decon below 10 CFR 835 as BMP. No ORPS unless the contamination >DOT or NNSS WAC for shipments to Nevada	Once accepted into the facility
When a commercial carrier's conveyance/equipment is prepared for a shipment when it considered to be "in transportation?"	Trailers owned by a carrier remain as commercial equipment	Once released by the facility
Have you incorporated exclusions 10 CFR 835.1(b), 835.1(b)(7) or 835.1(d) into your transportations processes?	835.1(b), 835.1(b)(7), 835.1(d)	No response
What criteria do you use for the release of commercial carrier equipment?	49 CFR 173.443	10 CFR 835, Appendix D
Have you incorporated provisions of the DOE Standard for Radiological Control, DOE-STD-1098-2008, PART 2, Section 423, Transportation of Radioactive Material?	Yes	No
Other applicable information that may describe your process for release of commercial carrier equipment.	To recognize commercial carriers as being outside of "DOE activities" and give credence to 49 CFR 443 regulation, NNSS WAC needs revision. It is appropriate to apply 49 CFR conveyances owned by carriers.	No response

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What site are you responding for?	LANL	Los Alamos Site Office
Do you have site procedures for release of commercial carrier equipment?	Yes	Yes
Do you perform incoming and outbound contamination surveys of commercial carrier equipment?	Yes	Yes
If yes to question #3, briefly describe survey methodology	Depending on the equipment it may involve smears and dose measurements of the equipment or spears and dose on incoming packages (to infer presence of vehicle contamination).	Normally all RAM Packages are subject to direct and smear surveys for contamination by an RCT in accordance with 835. If contamination is found, the conveyance is also surveyed. If the package is clean, then it is assumed the conveyance is also clean.
After a commercial carrier's conveyance/equipment arrives on a DOE site, when is it considered to be "out of transport" and the provisions of 10 CFR 835 apply	When it is shown to have contamination above DOE limits	For a package, when it is delivered to the destination on the manifest or bill of lading, it is out of transport. I believe commercial conveyance is always in transport
When a commercial carrier's conveyance/equipment is prepared for a shipment when it considered to be "in transportation?"	Period waiting for package contamination results and after required decontamination is complete	Again, I believe the commercial conveyance is always in transport
Have you incorporated exclusions 10 CFR 835.1(b), 835.1(b)(7) or 835.1(d) into your transportations processes?	835.1(d)	835.1(b), 835.1(b)(7), 835.1(d)
What criteria do you use for the release of commercial carrier equipment?	10 CFR 835, Appendix D	RCTs survey to 10 CFR 835 Appendix D and DOE O 458.1. If the result is any detectable amount above background, then both 835 and DOT would have to be met. To my knowledge, other than internal contamination in containers, this has never been an issue.
Have you incorporated provisions of the DOE Standard for Radiological Control, DOE-STD-1098-2008, PART 2, Section 423, Transportation of Radioactive Material?	No response	No
Other applicable information that may describe your process for release of commercial carrier equipment.	No response	Question #7 - these exclusions are clearly captured in the 835 Radiation Protection Plan and in the Institutional RP procedure and, therefore, in LANL's transportation processes.

DOT Return to Service versus DOE Release Limits

What site are you responding for?	NNSS	Pantex
Do you have site procedures for release of commercial carrier equipment?	Yes	Yes
Do you perform incoming and outbound contamination surveys of commercial carrier equipment?	Yes	Yes
If yes to question #3, briefly describe survey methodology	Incoming: Perform swipe surveys & direct scans, both for Alpha and Beta-Gamma. Outgoing: same, plus radiation surveys. Use 10CFR835 limits for all contamination surveys.	Routine survey of incoming general commercial carrier conveyance is not performed. Radiological surveys consisting of removable alpha and tritium contamination swipes, and GM survey instrument frisk are performed only if visible damage to the package is noted at off-load. Long haul commercial conveyances with Q cleared drivers such as Fluid Transport Mettler are surveyed/cleared the same as DOE Conveyances. All trailers to contain outgoing waste shipments are surveyed prior to loading.
After a commercial carrier's conveyance/equipment arrives on a DOE site, when is it considered to be "out of transport" and the provisions of 10 CFR 835 apply	After it is off-loaded, and we have accepted custody of the packages, the shipment is considered "out of transport"	When backed up to the dock and door opened and package(s) presented to the site.
When a commercial carrier's conveyance/equipment is prepared for a shipment when it considered to be "in transportation?"	After we have given control of it to the transport driver.	When door closed and moved from the dock
Have you incorporated exclusions 10 CFR 835.1(b), 835.1(b)(7) or 835.1(d) into your transportations processes?	No response	835.1(d)
What criteria do you use for the release of commercial carrier equipment?	10 CFR 835, Appendix D	10 CFR 835, Appendix D
Have you incorporated provisions of the DOE Standard for Radiological Control, DOE-STD-1098-2008, PART 2, Section 423, Transportation of Radioactive Material?	No	Yes

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What site are you responding for?	NNSS	Pantex
<p>Other applicable information that may describe your process for release of commercial carrier equipment.</p>	<p>Basically, we use 10CFR835 limits for shipments to ensure our site is overall maintained below these limits. The site is currently not set-up to routinely handle shipments over 10CFR835 limits. If the shipments arrive over 10CFR835 limits, we would be required to actually handle the off-loading of the shipments using 10CFR835 controls (even though they would be considered "in transport"). If it is over 10CFR835 limits, it would require PPE, have to be off-loaded in a Contamination Area, equipment used to off-load the shipment would need to be controlled as contaminated until an extensive release survey was completed (or would have to have equipment specifically designated for off-loading). Because, once the shipment has left and the packages are in the burial cell, 10CFR835 limits would apply, hence, all would be a CA until released.</p>	<p style="text-align: center;">No response</p>

DOT Return to Service versus DOE Release Limits

What site are you responding for?	Hanford	CHPRC Hanford
Do you have site procedures for release of commercial carrier equipment?	Yes	No - Not specifically directed at commercial carrier equipment
Do you perform incoming and outbound contamination surveys of commercial carrier equipment?	Yes	Yes
If yes to question #3, briefly describe survey methodology	Use the RadCon procedures and release to DOT limits in 49 CFR 173.443 if we are utilizing commercial carrier equipment	Direct and smear. Survey of conveyances and vehicle.
After a commercial carrier's conveyance/equipment arrives on a DOE site, when is it considered to be "out of transport" and the provisions of 10 CFR 835 apply	It doesn't. When the equipment is unloaded it is released to 173.443© RTS limits.	Once the shipment has been surveyed and accepted/offloaded
When a commercial carrier's conveyance/equipment is prepared for a shipment when it considered to be "in transportation?"	When it is being loaded for transport or in the process of preparing the shipment for transport per 49 CFR 171.1(b).	Not driven by RadCon - Once loaded and manifest signed/turned over to driver/carrier.
Have you incorporated exclusions 10 CFR 835.1(b), 835.1(b)(7) or 835.1(d) into your transportations processes?	835.1(b)(7)	835.1(b), 835.1(b)(7), 835.1(d)
What criteria do you use for the release of commercial carrier equipment?	49 CFR 173.443	49 CFR 173.443 - When non-DOE conveyance is involved.
Have you incorporated provisions of the DOE Standard for Radiological Control, DOE-STD-1098-2008, PART 2, Section 423, Transportation of Radioactive Material?	No response	In our company Radiological Control Manual
Other applicable information that may describe your process for release of commercial carrier equipment.	No response	No response

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What site are you responding for?	EnergySolutions mostly related to Clive
Do you have site procedures for release of commercial carrier equipment?	Yes
Do you perform incoming and outbound contamination surveys of commercial carrier equipment?	Yes
If yes to question #3, briefly describe survey methodology	Incoming: General contamination survey since access to entire shipment and conveyance is not possible. Outgoing: release vehicle or large freight containers to 49 CFR 173.443©
After a commercial carrier's conveyance/equipment arrives on a DOE site, when is it considered to be "out of transport" and the provisions of 10 CFR 835 apply	Non DOE site (Clive) - conveyance is out of transportation when arrives onsite. If outside restricted area and >DOT limits, then controlled for normal radcon.
When a commercial carrier's conveyance/equipment is prepared for a shipment when it considered to be "in transportation?"	Once the driver accepts the load for transport and sign manifest
Have you incorporated exclusions 10 CFR 835.1(b), 835.1(b)(7) or 835.1(d) into your transportations processes?	No response
What criteria do you use for the release of commercial carrier equipment?	49 CFR 173.443
Have you incorporated provisions of the DOE Standard for Radiological Control, DOE-STD-1098-2008, PART 2, Section 423, Transportation of Radioactive Material?	No
Other applicable information that may describe your process for release of commercial carrier equipment.	No response