
INSPECTION PROCEDURE 86740

INSPECTION OF TRANSPORTATION ACTIVITIES

Effective Date: October 5, 2026

PROGRAM APPLICABILITY: IMCs 2545, 2600, 2600B, 2602, 2800, and 2801

86740-01 INSPECTION OBJECTIVES

To determine whether the licensee has established and is maintaining an effective management-controlled program, to ensure radiological and nuclear safety in the receipt, packaging, delivery to a carrier and, as applicable, the private carriage of licensed radioactive materials; and to determine whether transportation and radiological waste activities are in compliance with the applicable U.S. Nuclear Regulatory Commission (NRC) (Title 10 of the Code of Federal Regulations (10 CFR) Parts 20, 61, and 71) and Department of Transportation (DOT) (Title 49 of the Code of Federal Regulations (49 CFR) Parts 171-178) transport regulations.

This inspection procedure is organized into two subsections: subsection A covers basic transportation requirements found in 10 CFR (Code of Federal Regulations) Part 20, 10 CFR Part 61, 10 CFR Part 71, Subpart A and G, and 49 CFR Parts 171-177. **Subsection B** covers additional transportation requirements found in 10 CFR Part 71, Subparts C, and H, and corresponding parts of 49 CFR.

SPECIAL NOTE: For fuel cycle facility licensees (enrichment, conversion, and fuel fabrication) inspected under Inspection Manual Chapter 2600, determine whether the licensee is an owner of an NRC transportation package certificate of compliance (CoC). If the licensee is an owner of an NRC CoC, the inspection may be concluded after conducting subsection A. If the licensee is not an owner of a CoC, both subsections A and B must be performed to conduct the inspection.

86740-02 INSPECTION REQUIREMENTS: SUBSECTION A, BASIC REQUIREMENTS.

02.01 Preparation of Packages for Shipment

Examine the licensee's written procedures and shipment records. As the situation allows, observe actual package preparations and operations to:

- a. Preliminary Determinations. Verify that before the initial use of any packaging, the licensee performs the required preliminary determinations and quality control relating to construction of the packaging (49 CFR 173.474).
- b. Routine Determinations. Verify that before each use of any packaging the licensee performs the required routine determinations and quality control (49 CFR 173.475 and 10 CFR 71.87).

c. Liquid Package Requirements

1. Verify that for non-low specific activity (LSA) Type A packages with liquid contents, the licensee has provided for the required special testing, double containment system, and absorbent material, as appropriate [49 CFR 173.412(k)].
2. Verify that when required for packages containing liquid contents exceeding a Type A quantity and destined for air shipment, a test for leakage is performed on the containment system [49 CFR 173.475(g)].

d. Packaging Marking. Verify that the licensee has marked the package with the applicable general and specific package markings that are required (49 CFR 172.300 - 310). Note that 49 CFR 172.324 addresses reportable quantity (RQ) markings on packages.

e. Package Labeling. Verify that for non-exempted packages, the licensee provides for and accomplishes labeling of each package with the appropriate category of RADIOACTIVE (White-I, Yellow-II, or Yellow-III) label, one each on two opposite sides of the package; and accurately completes the entry of the required information in the blank spaces thereon (49 CFR 172, Subpart E).

f. Radiation Monitoring. Verify that the licensee provides for and accomplishes monitoring of each completed package, to ensure that external radiation and removable surface contamination are within the allowable limits [49 CFR 173.441, 49 CFR 173.443, 49 CFR 173.475(i), and 10 CFR 71.87(i) and (j)].

g. Waste Characterization. Verify the licensee has established a waste characterization program and adequate methods to identify and properly classify radioactive waste streams associated with plant operations in accordance with the requirements of 10 CFR 61.55 and the license. Verify the licensee, has established measures to ensure the proper labeling and handling of solid radioactive waste storage containers while in interim storage prior to shipment and/or disposal offsite.

02.02 Delivery of Completed Packages to Carriers

Examine the licensee's written procedures, shipment records, and as the situation allows, observe actual transport operations.

a. Shipping Paper Documentation. Verify whether the licensee prepared the required shipping paper documentation and accurately included all the applicable required elements of information, including the shipper's certificate. [Note: for licensee private motor vehicle shipments, the certificate is not required [49 CFR 172.204(b)].

In the case of low-level solid radwaste shipments to licensed land burial sites (10 CFR Part 61), verify that the shipping paper documentation also includes the required additional "waste manifest" information (Appendix G, 10 CFR Part 20).

b. Loading and Placarding Non-Exclusive-Use Shipments. Verify that the licensee provides to a highway carrier, or applies directly to a rail vehicle, the required placards, whenever the licensee delivers any quantity of RADIOACTIVE-Yellow-III labeled packages to such carrier for transport (49 CFR 172.506 and 508).

c. Loading and Placarding Exclusive-Use Shipments

1. Verify that the licensee ensures that the package and vehicle radiation/contamination levels are within the regulatory limits (49 CFR 173.441 and 443).
2. Verify that, except for uranium or thorium ores, the transport vehicle is placarded by the licensee when delivering to a carrier any exclusive-use shipment for which placarding is required [49 CFR Part 172, Subpart F, and 49 CFR 173.427(a)(6)(v)].
3. Verify that shipping paper documentation provided by the licensee to the carrier contains satisfactory instructions for maintenance of exclusive-use shipment controls [49 CFR 173.441(c) and (e) and 49 CFR 173.427(a)(6)(iv)].
4. Verify that for exclusive-use shipments of LSA materials, the licensee has provided for the additional specific requirements [49 CFR 173.427(a), (b), or (c)].

- d. HAZMAT (Hazardous Material) Employee Training. Verify that persons involved in the packaging preparation and transport have received proper and adequate training, and that this training has been appropriately documented [49 CFR 172.700 - 704].

02.03 Receipt of Packages

Examine the licensee's procedures and records of incoming shipments to verify compliance with the applicable requirements relating to pickup from a carrier, receiving, and safe opening of packages (10 CFR 20.1906).

02.04 Records and Reports

Review the licensee's records and procedures for recordkeeping and reports to verify that a system is in place to:

- a. DOT Specification 7A Type A Packaging. Maintain, on file, for at least 2 years after shipment, the documentation of DOT Specification, 7A safety analysis/testing and/or special form testing [49 CFR 173.415(a), 49 CFR 173.469, and 49 CFR 173.476].
- b. Special Form Documentation. Verify that for packages where the licensee relies on a special form determination to qualify the package as either a limited or Type A quantity, the licensee maintains on file, for at least one year after any shipment, and provides, on request, the documentation demonstrating that the special form material meets the applicable test requirements (49 CFR 173.469 and 173.476).
- c. Incident Reporting. Immediately report to DOT, when transporting licensed material as a private carrier, any incident that occurs in which, as a direct result of the radioactive material, any person is killed, receives injuries requiring hospitalization; property damage exceeds \$50,000; or fire, breakage, spillage, or suspected radioactive contamination occurs (49 CFR 171.15 and 49 CFR 171.16).

02.05 Preparation of Packages for Shipment

- a. Package Marking. Verify that, for NRC-certificate packages or DOT revalidation packages of foreign origin, the outside of the package is durably and legibly marked with the package identification marking indicated in the CoC or the DOT Competent Authority Certificate.

- b. Advance Notification to Consignee. Verify that the licensee provides, for notification to the consignee before shipment: the dates of shipment and expected arrival, and any special loading/unloading or operating instructions whenever any non-exempt fissile materials and/or packages containing “highway route controlled quantities” are involved [49 CFR 173.22(c) and 10 CFR 71.89].
- c. Advance Notification to States. Verify that the licensee provides advance notification to the Governor of a State, or his designee, when required, as described in 10 CFR 71.97.

NOTE: This requirement is not the same as that required for safeguards purposes, pursuant to 10 CFR 73.72.

02.06 General License Requirements

Determine which general license(s) in 10 CFR Part 71, Subpart C, the licensee uses to ship radioactive material packages (e.g., 10 CFR 71.17, 71.19, 71.20, 71.21 and 71.22, etc.). Verify that **the licensee**:

- a. **Has** copies of the specific license, NRC CoC, DOT specification, or other approval of the package.
- b. If shipping NRC-certified package(s), has registered with NRC as a user of NRC-certified package(s).
- c. Complies with 10 CFR Part 71, Subparts A, G, and H, as applicable.
- d. Has a quality assurance (QA) program approval issued by the Commission, as applicable.
- e. Complies with other requirements specific to the general license(s) used.

02.07 Management Controls

Review the system of management controls for transportation activities and verify that:

- a. Transportation authorities and responsibilities are delineated among individuals and/or organizational **entities and** designated in writing.
- b. Written management-approved instructions have been established to carry out the various transportation activities, including authorized changes.

02.08 Indoctrination and Training Program

Verify implementation of the indoctrination and training program for persons involved in the licensee's transport activities:

- a. Verify the indoctrination program identifies major program elements such as the basis used for selection of personnel to be trained; the schedules and performance of training; and methods used to ensure qualification of competence; and methods to keep people informed of changes in procedures and requirements.
- b. **Verify** training completion for all employees involved in transport activities.

- c. Verify supervision and/or employee knowledge of licensee-related specific procedural requirements.

86740-03 INSPECTION REQUIREMENTS: SUBSECTION B, ADDITIONAL REQUIREMENTS.

03.01 Quality Assurance Program

Review the licensee's documented QA program, to ensure that the licensee has fulfilled all commitments made in the licensee's QA program application, including development of written QA procedures for transporting radioactive material.

03.02 Audit Program (10 CFR 71.137)

Review the report of the most recent audit of transport activities conducted by the licensee and, if possible, discuss the audit program with one to five employees, selected at random, to check their degree of knowledge of the program and to aid in ensuring that the licensee is conducting an adequate program. Employee knowledge may also be evaluated by reviewing shipping records and directly observing transportation activities. Verify whether:

- a. The most recent audit was conducted in accordance with the licensee's published procedures, and
- b. Identified deficiencies (if any) were corrected, or are being corrected, before any more shipments are made.

03.03 Procurement and Selection of Packagings

For packagings that are used by the licensee to transport or to deliver licensed material to a carrier for transport, review the procedures and records for the following:

- a. Fabrication of Packagings. Verify, by physical examination and examination of records, whether new packagings have been fabricated in accordance with the approved design (i.e., NRC CoC or DOT specification). For packagings supplied by, procured, or leased from a vendor or supplier, verify that the licensee has obtained a written statement from such supplier, certifying that the packaging has been fabricated in accordance with an NRC-approved QA program.
- b. DOT Revalidation of Foreign-Approved Packagings. Verify that for foreign-approved packagings used by the licensee, such designs have been revalidated by DOT, and the licensee possesses a copy of the applicable foreign certificate, DOT revalidations, and documentation referenced therein, which relate to the use and/or maintenance of the packaging and actions to be taken before shipment (49 CFR 173.473 and 10 CFR 71.21).

03.04 Periodic Maintenance of Packagings

For reusable NRC-certified, DOT specification, or DOT revalidated foreign-made packagings, examine the licensee's procedures and records for shipments, to verify that, before reuse, all the initial and periodic maintenance required by the certificate, specification, or revalidation has been performed. If possible, observe such maintenance

activities (49 CFR 173.474, 49 CFR 173.475, 10 CFR 71.85, and 10 CFR 71.87). For multi-user packages supplied by another party, the licensee-user shall obtain written certification that required periodic maintenance and quality control measures have been conducted in accordance with an NRC-approved QA program.

03.05 Records, Reports, and Notifications

Review the licensee's records and procedures for recordkeeping and reports to verify that a system is in place to:

- a. Record of Shipment. Maintain on file for three years after any shipment, a record of each shipment of licensed material (which is not exempt there from) and that such records contain the required information [10 CFR 71.91(a)].
- b. Quality Assurance Records - Components and Services. Maintain, for three years after the life of any packaging, sufficient quality assurance records documenting evidence of the quality of packaging components and those services that are of safety significance, including the results of required preliminary determinations before first use of any packaging [10 CFR 71.85 and 10 CFR 71.91(b)].
- c. Quality Assurance Records - Other. Maintain, for three years after the last shipment, sufficient QA records that furnish documented evidence to support the activities affecting QA of transport packages (10 CFR 71.135).
- d. Notification of Excess Contamination or Radiation Level. Immediately notify the appropriate regional office and the delivery carrier for instances in which removable radioactive surface contamination and/or external radiation levels on packages received in a shipment exceed the applicable reporting limits [10 CFR 20.1906(d)].
- e. Reduction in Package Effectiveness Report. Report to the Director, Division of Fuel Cycle, Office of Nuclear Material Safety and Safeguards (NMSS), within 30 days, any instances in which there has been a significant reduction in the effectiveness of any packaging during its use, providing additional details of any defects of safety significance to the packaging, after first use, and the means employed to repair such defects, to prevent their recurrence (10 CFR 71.95).

86740-04 RESOURCE ESTIMATE

Transportation safety inspection resource requirements vary greatly depending on facility size and shipping activity. On-site inspection hours can range from less than 1 hour at material licensee facilities with limited shipping activity, to more than 30 hours at reactors, fuel cycle facilities or other large facilities with significant shipments.

86740-05 PROCEDURE COMPLETION

Performance of each applicable inspection requirement, in accordance with the applicable NRC Inspection Manual Chapter, will constitute completion of this procedure.

86740-06 REFERENCES

- 10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste"
- 10 CFR Part 71, "Packaging and Transportation of Radioactive Material"
- 49 CFR Parts 100-178, "Hazardous Materials Regulations," of the U.S. Department of Transportation, revised annually, as of October 1
- Generic Letter 96-07, "Interim Guidance on Transportation of Steam Generators"
- International Atomic Energy Agency, "Regulations for the Safe Transport of Radioactive Material," Safety Series No. 6, 1985 (As Amended 1990, 1996), IAEA, Vienna, Austria
- Memorandum of Understanding between the NRC and DOT, July 7, 1979
- Information Notice (IN) 80-24, "Low-Level Waste Burial Criteria," May 30, 1980
- IN 80-25, "Transportation of Pyrophoric Uranium," May 30, 1980
- IN 80-32, "Clarification of Certain Requirements for Exclusive-Use Shipments of Radioactive Materials," August 29, 1980
- IN 80-32, Rev. 1, February 12, 1982
- IN 81-32, "Transfer and/or Disposal of Spent Generators," October 23, 1981
- IN 82-24, "Water Leaking from UF6 Overpacks," July 20, 1982
- IN 82-47, "Transportation of Type A quantities of Non-Fissile Radioactive Material," Nov. 30, 1982.
- IN 83-10, "Clarification of Several Aspects Relating to Use of NRC-Certified Transport Packages," March 11, 1983.
- IN 84-14, "Highlights of Recent Transport Regulatory Revisions by DOT and NRC," March 2, 1984.
- IN 84-50, "Clarification of Scope of Quality Assurance Programs for Transport Packages Pursuant to 10 CFR 50, Appendix B," June 21, 1984
- IN 84-72, "Clarification of Conditions for Water Shipments Subject to Hydrogen Gas Generation," September 10, 1984
- IN 85-46, "Clarification of Several Aspects of Removable Radioactive Surface Contamination Limits for Transport Packages," June 10, 1985
- IN 86-18, "NRC On-Scene Response during a Major Emergency" March 26, 1986
- IN 86-67, "Portable Moisture/Density Gauges: Recent Incidents and Common Violations of Requirements for Use, Transportation, and Storage," October 10, 1986

IN 86-86, "Clarification of Requirements for Fabrication and Export of Certain Previously Approved Type B Packages," June 11, 1987

IN 87-26, "Cracks in Stiffening Rings on 48-inch Diameter UF6 Cylinders," June 11, 1987

IN 87-31, "Blocking, Bracing, and Securing of Radioactive Materials Packages in Transportation," July 10, 1987

IN 87-37, "Compliance with the General License Provisions of 10 CFR Part 31," August 10, 1987

IN 87-47, "Transportation of Radiography Devices" October 5, 1987

IN 87-55, "Portable Moisture/Density Gauges: Recent Incidents of Portable Gauges Being Stolen or Lost," October 29, 1987

IN 88-101, "Shipment of Contaminated Equipment between Nuclear Power Stations." December 28, 1988

IN 88-16, "Identifying Waste Generators in Shipments of Low-Level Waste to Land Disposal Facilities." April 22, 1988

IN 88-18, "Malfunction of Lockbox on Radiography Device"

IN 88-33, (Bulletin), "Recent problems involving the Model No. SPEC 2-T Radiographic Exposure Device," May 27, 1988

IN 88-33, "Recent Problems Involving the Model SPEC- 2T Radiographic Exposure Device," April 25, 1988

IN 88-62, "Recent Findings Concerning Implementation of Quality Assurance Programs by Suppliers of Transport Packages." May 27, 1988

IN 88-66, "Industrial Radiography Inspection and Enforcement." August 12, 1988

IN 89-24, "Nuclear Criticality Safety." March 06, 1989

IN 89-74, "Clarification of Transportation Requirements Applicable to Return of Spent Radio pharmacy Dosages from Users to Suppliers." November 07, 1989

IN 90-24, "Transportation of Model SPEC 2-T Radiographic Exposure Device." April 10, 1990

IN 90-27, "Clarification of the Recent Revisions to the Regulatory Requirements for Packaging of Uranium Hexafluoride (UF6) for Transportation." April 30, 1990

IN 90-35, "Transportation of Type A Quantities of Non-Fissile Radioactive Materials." May 24, 1990

IN 90-50, "Minimization of Methane Gas in Plant Systems and Radwaste Shipping Containers." August 8, 1990

IN 90-66, "Incomplete Draining and Drying of Shipping Casks," October 20, 1990

IN 90-82, "Requirements for Use of NRC-Approved Transport Packages for Shipment of Type A Quantities of Radioactive Material," December 31, 1990

IN 91-39, "Compliance with 10 CFR Part 21, "Reporting of Defects and Noncompliance." June 17, 1991

IN 81-02, "Transportation of Radiography Devices," January 23, 1981

IN 79-21, "Transportation and Commercial Burial of Radioactive Waste," September 5, 1979

Regulatory Guide (RG) 7.4, "Leakage Tests on Packages for Shipment of Radioactive Materials (For Comment)," July 2020 (Revision 2). ML19240B383

RG 7.10, "Establishing Quality Assurance Programs for Packaging Used in the Transport of Radioactive Material," March 2005 (Revision 2), March 2005. ML050540330

RG 7.11, "Fracture Toughness Criteria of Base Material for Ferritic Steel Shipping Cask Containment Vessels with a Maximum Wall Thickness of 4 Inches (0.1 m)," June 1991. ML003739413

RG 7.12, "Fracture Toughness Criteria of Base Material for Ferritic Steel Shipping Cask Containment Vessels with a Wall Thickness Greater than 4 Inches (0.1 m) But Not Exceeding 12 Inches (0.3 m)," June 1991. ML003739424

RG 7.6, "Design Criteria for the Structural Analysis of Shipping Cask Containment Vessels," February 1977 or March 1978. ML003739418

RG 7.7, "Administrative Guide for Verifying Compliance with Packaging Requirements for Shipments of Radioactive Materials," March 2012 (Revision 1). ML112160407

RG 7.8, "Load Combinations for the Structural Analysis of Shipping Casks for Radioactive Material," March 1989 (Revision 1) ML003739501

RG 7.9, "Standard Format and Content of Part 71 Applications for Approval of Packages for Radioactive material," March 2005 (Revision 2). ML050540321

NUREG-1608, "Categorizing and Transporting Low Specific Activity Materials and Surface Contaminated Objects"

NUREG-1660, "U.S. Specific Schedules of Requirements for Transport of Specified Types of Radioactive Materials Consignments"

U.S. Department of Transportation, "2000 Emergency Response Guidebook"

U.S. Department of Transportation, "Radioactive Material Regulations Review," RAMREG 001-98

U.S. Postal Service Publication No. 6, Dec. 1975 "Radioactive Material," as amended by U.S. Postal Bulletin, June 30, 1982, pp. 2-5

END

Attachment 1: Revision History for IP 86740

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional, Non-Public Information)
N/A	ML080980411 10/30/08 CN 08-030	Researched commitments for 4 years and found none. IP 86740 was revised to capture the new 10 CFR Part 71 and 49 CFR regulations.	N/A	N/A
N/A	ML20328A116 12/14/20 CN 20-071	Revision to implement the recommendations from the Smarter Inspection Program (ML20077L247 and ML20073G659). Minor updates to reflect organizational changes, and updates to references.	N/A	N/A
N/A	ML26212A168 10/05/26 CN 26-046	Revision to implement the recommendations from the ADVANCE Act, Section 507	N/A	N/A