

ADVANCED MEDICAL SYSTEMS OPERATING PROCEDURE

PACKAGING AND LABELING DEPLETED URANIUM PARTS AND SUBASSEMBLIES

ISP-21 Rev. 1/95

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1.0 PURPOSE: To ensure that the applicable regulations regarding the shipment of depleted Uranium are met.

2.0 PRECAUTIONS AND LIMITATIONS:

- 2.1 This procedure applies to each shipment of a depleted Uranium part, subassembly or assembly containing such a part.
- 2.2 Depleted Uranium is a radioactive material. Precautions for proper handling must be followed.
- 2.3 Do not guess at any data required. If assistance is needed, contact the RSO.
- 2.4 This procedure applies to each separate package containing depleted Uranium, even if part of a larger shipment.
- 2.5 By the definition given in 49CFR173.403(n), Depleted Uranium (DU) is an LSA (Low Specific Activity) material. As received from our supplier, DU parts are shipped as LSA in DOT Spec 7A Type A packages.

Once the DU components are incorporated into the machine head or rotor subassemblies, they can be shipped under 49CFR173.424, Excepted Articles, if all the pertinent requirements in 173.421 and 173.421-1 are met.

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3.0 INSTRUCTIONS:

3.1 Excepted Articles (assemblies and subassemblies)

- 3.1.1 Package the item(s) to be shipped.
- 3.1.2 With the survey meter, perform a survey of all exposed surfaces of the package.
 - a. Verify that the highest surface reading is less than or equal to 0.5mrem/hr.
 - b. If it exceeds this limit, then repackage the items to reduce surface readings.
 - c. Record the highest surface reading found.
- 3.1.3 Take a smear of the package surface.
 - a. If removable contamination does not exceed 2,200 dpm/100cm² then the package qualifies as an excepted article.
- 3.1.4 Mark the outside of the package "Radioactive".
- 3.1.5 Certify the package as being acceptable for shipment by having the following written notice in or on the package:

"This package conforms to the conditions and limitations specified in 49CFR173.424 for excepted radioactive material, articles manufactured from depleted Uranium, UN 2909."
- 3.1.6 No other labeling, shipping paper or certification requirements are required for transportation. (49CFR173.424)

3.2 LSA Material (DU Parts)

- 3.2.1 Package the item(s) in a DOT Spec 7A Type A package. (Ref. 49CFR178.350)

NOTE: Type A packaging must be tested per 49CFR173.465. Documentation of the testing results must be on file. (49CFR173.415)

3.2.2 Mark the outside of each package as follows:

"USA DOT 7A TYPE A"
"RADIOACTIVE MATERIAL"

NOTE: Use letters at least one half (1/2) inch high.

3.2.3 Perform a survey of all exposed surfaces of the package.

- a. Record the highest surface reading found.
- b. Maximum reading is 200mrem/hr.
(49CFR173.441)

3.2.4 Determine the Transport Index (see 49CFR173.403 (bb)) for the package by repeating the survey at a distance of one (1) meter from each point on the package surface and rounding the highest reading up to the first decimal place. The proper label to affix to the package is based upon both the radiation level at the surface of the package and the Transport Index. (49CFR172.403 (b))

NOTE: The label to be applied shall be the highest category required for either of the above determining conditions.

<u>Transport Index</u>	<u>Radiation Level (surface)</u>	<u>Label</u>
0	≤0.5mrem/hr	White I
≤1.0	>0.5mrem/hr but ≤50mrem/hr	Yellow II
>1.0	>50mrem/hr	Yellow III

- a. Apply two (2) of the appropriate labels to the package, on any two opposing sides.
- b. Enter the Transport Index on both labels.

3.2.5 Take a smear of the package surface. Removable contamination may not exceed 2,200 dpm/100cm².
(49CFR173.443)

3.2.6 Determine the Curie content of the packaged parts.

NOTE: The Curie content of depleted Uranium is very small.

- a. Refer to the following chart for the Curie content of one (1) part:

<u>Part #</u>	<u>Curie/part</u>
46411	0.0024
46879	0.0056
58429A	0.0385
58430	0.0064
58531A	0.0039
200670	0.0079

- b. Multiply the number of parts by the Curie/part.
- c. Enter this number on the labels.

3.2.7

Prepare the Bill of Lading

- a. Shipment of LSA material requires the use of a hazardous material bill of lading.
- b. Enter the description of the radioactive material as specified in 49CFR172.101 - "Radioactive material, low specific activity, n.o.s. UN2912, U238 Depleted Uranium Solid Form."
- c. Enter the Curie content.
- d. Enter the category of label applied to each package in the shipment (i.e. Radioactive I, II or III).
- e. Enter the Transport Index assigned to each package in the shipment bearing Radioactive II or III labels.
- f. Enter the total weight of the hazardous material.
- g. Sign the shippers certification statement.

3.2.8

Placarding per 49CFR173.466 is required only for Radioactive III labeled material.