

ADVANCED MEDICAL SYSTEMS OPERATING PROCEDURE

INSPECTION AND PROCEDURE FOR CONTAINERS WITH OVERPACKS AUTHORIZED FOR THE SHIPMENT OF RADIOACTIVE MATERIAL

ISP-33 Rev. 01/95

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1.0 REQUIREMENTS AND DESCRIPTION:

1.1 In order to comply with NRC/DOT regulations concerning shipment of radioactive materials, this inspection procedure must be completed for each shipment of radioactive materials prior to movement of the material to the carrier for transportation. Defects found during inspections must be corrected prior to material movement.

1.2 The requirements are applicable when moving radioactive material in authorized containers from one customer location to another, from the field back to the Isotope facility, to the field from the Isotope Facility.

1.3 Authorized Shipping Containers

1.3.1 Cobalt 60 Shipments

1.3.1.1 590C, D, E, F and G Head in Overpack No. 181375.

1.3.1.2 C-12 Head in Overpack No. D-MEH-00-00004.

1.3.1.3 3320 AR Exchange Container in Overpack No. 181361.

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Approved by: *R Meschter*

Date: *1-24-95*

1.3.2 Cesium 137 shipments - 3320B Exchange Container in Overpack No. 181361.

1.4 Audit

In accordance with 10CFR 71.137, the Radiation Safety Officer will make an audit of the maintenance of the containers and overpacks according to the checklist. The audit shall be on an unannounced basis at intervals not to exceed one (1) year.

2.0 INSPECTIONS

2.1 The Inspection Data Sheet for Radioactive Material Containers and Overpacks (QA1014A) must be completed and forwarded to the Radiation Safety Officer and Isotope Facility for audit and record retention. Field operations are to return the Inspection Data Sheet in the pre-stamped, self-addressed envelope along with the waybill copy of the return shipment.

2.2 The only personnel permitted to perform the inspection and maintenance are those individuals qualified under the conditions of the license. Repairs may be permitted by an outside contractor; however, these repairs must be inspected before use.

3.0 HEAD OR SOURCE EXCHANGE CONTAINER PROCEDURE

Perform each inspection step as indicated. Defects found during inspection must be corrected and reinspected. Repairs must be listed on the Data Sheet along with the signature of the inspector. A check mark (✓) is to be placed on the Stat Sheet after each step.

3.1 Make a wipe survey of the external surface of the container. Field operations are to use a Victoreen 491 or equal to evaluate the wipe. The meter must read less than 220 DPM/100cm² when the wipe is held 1/4" from the Geiger Tube (Beta shield open). Factory operations are to use a well counter to determine wipe activity. Results must indicate 220 DPM/100cm² or less of removable contamination.

3.2 Perform a preliminary radiation survey of the container. Results should be 200mR/hour or less on the surface and 10mR/hour or less at 1 meter from the surface.

3.3 Verify that the shutter or drawer is locked.

- 3.4 Verify that the gaskets on 3320 AR are in good condition.
- 3.5 Inspect the lifting loops on 3320 AR. Loops must be in good condition, not bent, and welds must not exhibit cracks.
- 3.6 Inspect the container to insure there is no mechanical damage which will affect the radiation integrity of the unit.

4.0 OVERPACK PROCEDURE

Perform each inspection step as indicated. Defects found during inspection must be corrected and reinspected. Repairs must be listed on the Data Sheet along with signature of the inspector. A check mark (✓) is to be placed on the Data Sheet after each step.

- 4.1 Inspect the overpack for the following mechanical characteristics:
 - 4.1.1 All wood joints inside the overpack must be tight. Tighten reinforcing bars if necessary.
 - 4.1.2 The wood joints inside the overpack should be free of holes and voids. Holes can be filled with wood plugs.
 - 4.1.3 Lifting loops should be free of damage.
 - 4.1.4 Welds on the framework must be free of cracks and damage.
 - 4.1.5 Inspect the skid runners for damage.
- 4.2 Inspect the container hold-down system to insure it is properly secure.
- 4.3 Inspect that the bolts securing the overpack cover to the skid are tight, but not stripped.
- 4.4 Inspect the package and insure it is seal wired.
- 4.5 Survey the package with container inside. The radiation level must be less than 10mR/hour at any point 1 meter from the surface of the container and 200mR/hour or less at the surface.

- 4.6 Inspect the outside package for the following labels:
- 4.6.1 Two yellow Radioactive III diamond labels filled out indicating the radioactive material, number of curies and transport index (maximum radiation units at 1 meter) as measured in 4.5. These labels must be on opposite sides of the package.
 - 4.6.2 Verify that the overpack bears an 11" x 18" yellow sign with magenta lettering listing AMS, Cleveland, Ohio, U.S.A., part number of the overpack, Package I.D. Number, gross and empty weights, Made in U.S.A. and Radiation Symbols. All markings must be clear and legible.
 - 4.6.3 Verify that the opening instructions have been included with the package.

1.0

Preparing a source loaded head container (Model 1014A) for shipment.

Only properly qualified service engineers may remove a loaded teletherapy head from a machine. Once the head is removed and properly secured to the container base, the following procedure applies.

NOTE: QA Procedure 1014 and 1014A must be completed prior to shipment.

- A. Position the tie down head assembly around the machine head. Align the trunnion bolt holes with the tie down bracket slots such that the tie down strap is resting firmly against the machine head. (Use shims underneath the tie down bracket and/or head in order to achieve proper alignment.)
- B. Secure the tie down head assembly by first tightening the bracket-to-pallet base bolts, then tightening the bracket-to-head trunnion bolts. Verify that the strap is tight against the head.
- C. Attach the wooden support pads into place around the machine head.
- D. With a lifting device capable of lifting 1000 lbs., place the overpack in position over the head on the pallet base.
- E. Secure the overpack to the pallet base with the four one inch bolts and eight 1/2 inch bolts.
- F. Attach an appropriate shipping seal to one of the side lugs.
- G. Perform a radiation survey of the package at the surface (maximum reading 200 mR/hr). If the radiation levels exceed these limits, the package shall not be released for shipment. Notify the Radiation Safety Officer for further instructions.
- H. Apply the proper labels to the container. Verify that the package content description and caution markings are visible.
- I. Complete the shipping papers. Copies of QA 1014 and 1014A, shipping papers and other documentation should be returned to Advanced Medical Systems for record-keeping purposes.

- J. All shipments of radioactive material destined for Advanced Medical Systems should be shipped to:

Advanced Medical Systems, Inc.
1020 London Road
Cleveland, OH 44110

2.0

Unpacking a source loaded head container (Model 181375)

- A. The package must be removed from the transport vehicle with material handling equipment of a capacity equal to or greater than the gross package weight of 4000 lbs.
- B. Perform a radiation survey of the container to insure that the external radiation level does not exceed 200 mR/hr at the surface and 10 mR/hr at a distance of 1 meter from the surface. [If the level does exceed these limits, the appropriate NRC Regional Office and the final delivery carrier must be notified.]
- C. Verify that the shipping seal is intact. The shipping seal may be removed only by a person qualified to install the equipment. Until such a person is present, the container should be stored in accordance with 10 CFR 20.
- D. Upon the authorization of removal of the shipping seal, the overpack may be removed. Remove the four one-inch and eight 1-2-inch bolts securing the overpack to the pallet base (save hardware for reuse).
- E. With a lifting device capable of lifting 100 lbs., lift the overpack off the machine head and pallet base.

CAUTION: The machine head may not be removed from the pallet base until it has been moved into the room in which it is to be installed. This is to insure that the skid shield remains in place under the head.

- F. Move the pallet base with head attached into the therapy room.
- G. Remove the twelve bolts securing the tie down head bracket to the machine head and pallet bases (save hardware for reuse).

- H. Remove the wooden support pads and slide the tie down head assembly forward, away from the machine head. The head installation including the removal of the machine head from the pallet base, may only be performed by a qualified service engineer.

3.0

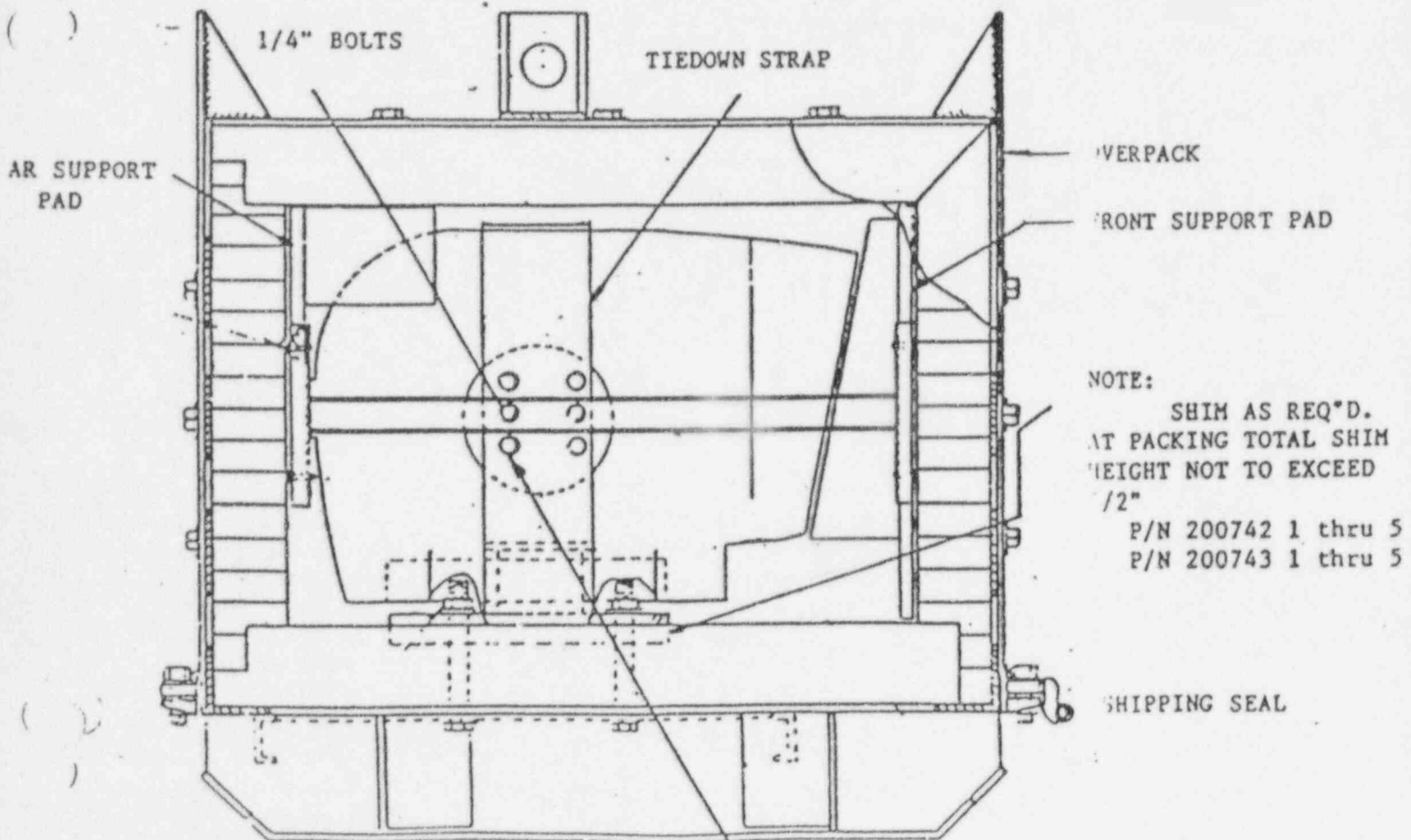
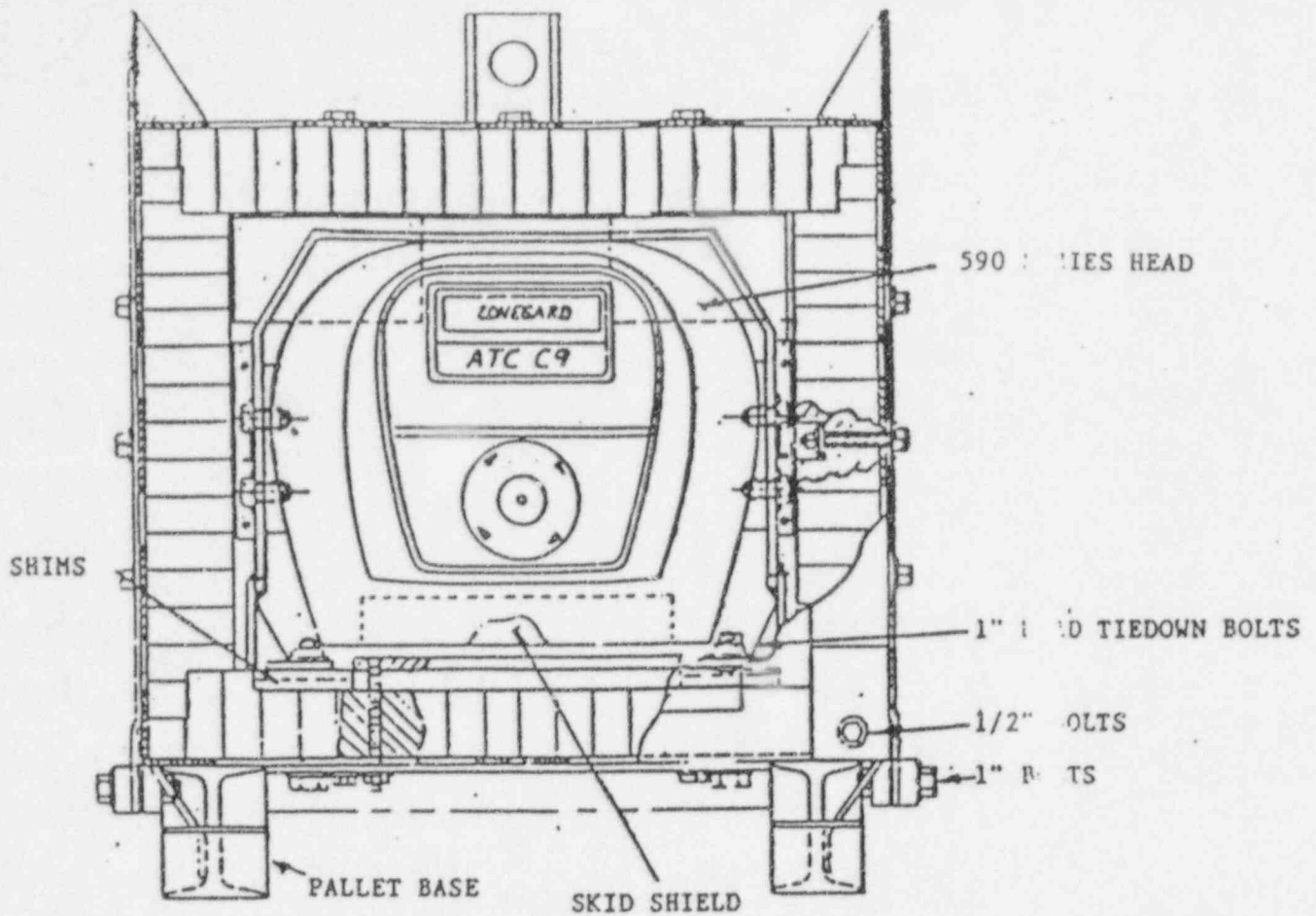
Preparing an empty head container (Model 1813754) for shipment.

NOTE: QA Procedure 1014 and 1014A must be completed prior to shipment.

- A. Bolt the skid shield into place on the pallet base
- B. Bolt the tie down head bracket with attached wooden support pads, to the pallet base.
- C. Place the overpack into position on the pallet base and secure it with the twelve bolts.
- D. Mask out any "Radioactive Material" labels and marks (tape may be used).
- E. Remove the Radioactive Yellow III labels and apply "Empty" labels to the container.
- F. Apply proper shipping labels.

All return shipments destined for Advanced Medical Systems should be shipped to:

Advanced Medical Systems, Inc.
1020 London Road
Cleveland, Ohio 44110



Control No _____

Source S/N _____

Source Shipment Documentation Checklist
for 181375 (head) Container

A. Pre-shipment Documents

- | | |
|--|-------|
| 1. Container inspection report (QA1014A) | _____ |
| 2. Head survey sheet | _____ |
| 3. Shipping tags or stencils | _____ |
| 4. Work sheet | _____ |

B. Service Engineer Package

1. Presentation folder with:

- | | |
|----------------------------|-------|
| a) Calibration certificate | _____ |
| b) Decay Tables (2) | _____ |
| c) Certificate of Wipe | _____ |
| d) Source Warranty | _____ |

2. Return documents

- | | | returned |
|---|-------|----------|
| a) Five year inspection report | _____ | _____ |
| b) Head survey sheets (2) | _____ | _____ |
| c) Service ticket | _____ | _____ |
| d) Return Bill of Lading | _____ | _____ |
| e) Container Inspection Report (QA1014) | _____ | _____ |
| f) Diamond labels (2) | _____ | NA |
| g) State Notification Letters | _____ | NA |

C. Customer file

The following should be in file before shipment:

1. AMS work order _____
2. Customer license _____
3. Calibration data sheets _____
4. Calibration certificate _____
5. Wipe data sheets _____
6. Wipe certificate _____
7. Source work sheet _____
8. Source shipment checklist _____
9. Consignee notification letter _____

The following should be placed in file once returned shipment is received:

10. Head survey sheet _____
11. Five year inspection report _____
12. Bills of Lading _____

D. Shipping Documents

- 1) Bill of Lading _____
- 2) Instructions to Driver (ISP-30) _____
- 3) Placards _____
- 4) Export only - Container Loading/Unloading
Instructions _____
- 5) Export only - IAEA Certificate of
Competent Authority _____

LOOSE SURFACE CONTAMINATION SURVEY

page _____ of _____

TE: _____

INST.: _____

S/N: _____

BKG. _____ CPM

ME: _____

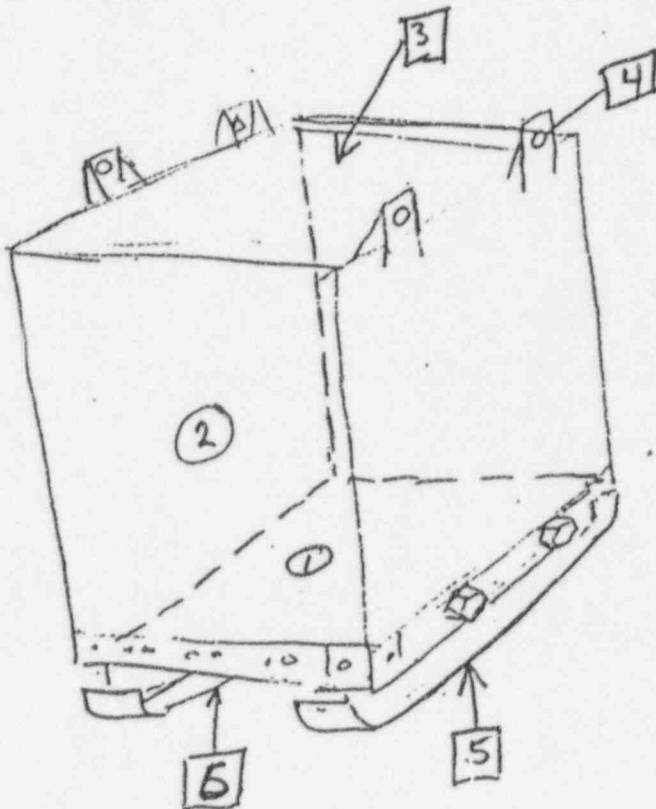
CAL. DATE: _____

Cell _____ %

AME: _____

AREA/ITEM SURVEYED _____

Avg. smear area _____ cm²

No.	Gcpm	Ccpm	DPM	DRAWING
				 <p>○ INTERNAL SMEAR □ EXTERNAL SMEAR</p>

Comments #7 gross MASSLIN
overs All

Reviewed by _____