

# JL SHEPHERD & ASSOCIATES

1010 ARROYO AVE., SAN FERNANDO, CALIFORNIA 91340-1822

818-898-2361 FAX 818-361-8095

June 8, 2001

Steven Baggett  
Senior Project Manager  
Spent Fuel Office, NMSS  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Reference: Docket No. 71-5984  
Your letter of May 22, 2001 requesting additional information

Dear Mr. Baggett:

Per your request, please find enclosed a copy of Drawings A-0068-10, A-0068-1B, A-0068-2C, A-0068-1BA and A-00681B-B. Also enclosed is a copy of the following letters: March 7, 1969 (enclosures have been previously submitted), March 31, 1969 (date over struck on my carbon copy, with A-0068-2B - should have been -2C, per 3/28 revision to show 2-1/4" eye bolts), February 4, 1969 (my files do not show a April 4 submittal, with enclosures which have been previously submitted, and February 12, 1990 letter with attachments (my files do not show a February 20, 1990 submittal).

If we may provide additional information, please do not hesitate to contact us.

Sincerely,



Mary F. Shepherd  
Vice President  
Acting QA/QC Administrator  
J.L. Shepherd and Associates

NMSS01 Public

March 23, 1969

Office of the Secretary of Transportation  
Hazardous Materials Board  
Washington, D. C. 20590

Attention: Mr. William A. Brobst

Ref: File 1205  
URGENT

Dear Mr. Brobst:

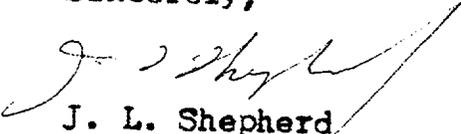
Confirming our telephone conversation with Mr. William Nixon, of the Atomic Energy Commission, Irradiated Fuels Branch, Division of Materials Licensing, we shall be pleased to replace the 1 1/4" eyebolts called out in our drawing A-0068-2B with 2 1/4" eyebolts.

Enclosed is a copy of the drawing (A-0068-2B) showing this change.

We look forward to receiving a permit for this box.

Thank you.

Sincerely,

  
J. L. Shepherd

cp

Encls. A-0068-2B

cc. Mr. William A. Nixon

00 Jan 207

# J L SHEPHERD

and Associates

Representatives  
Consultants  
Engineers

> *for nuclear applications*

1614 Victory Boulevard  
Glendale, Calif. 91201  
phone: (213) 245-0187

February 4, 1969

U. S. Atomic Energy Commission  
Irradiated Fuels Branch  
Division of Materials Licensing  
Washington, D. C. 20545

Attention: Mr. William A. Nixon

Ref: D.O.T. File 1205  
URGENT

Dear Mr. Nixon:

Following is the information requested during our recent telephone conversation:

71.22 b b      Chemical and physical form - Cesium chloride as compressed powder; packing density less than 62 curies/ c.c.; as special form material in J.L.S. capsule per drawing A-0068-10 (enclosed).

71.31            See attached Unus strength analysis report (revised 1-26-69)

71.32 a        Ditto

71.32 b        A capsule assembly, per J.L.S. drawing A-0068-10 was fabricated and filled with sodium chloride to simulate cesium chloride. The capsule was pressurized to greater than 25 psig. in a bomb and after removal showed no significant dimensional change, nor was there any damage (cracks or breaks) to the welded seals.

## 71.35

Analysis of capability of container with overcoat to withstand normal conditions of transport as listed in Appendix A of 10 CFR-71 and to meet requirements of Section 71.35, a(1), a(2), a(3), and C of 71.35.

## Analysis:

1. Heat. Direct sunlight at an ambient temperature of 130° F. in still air will not cause deterioration of the wood in the overcoat, or of the glue used in the overcoat, or of the steel or lead in the shielded container itself, or of the source capsule itself in any way.
2. Cold. An ambient temperature of -40° F. in still air and shade will not cause deterioration of the wood in the overcoat, or of the glue used in the overcoat, or of the steel or lead in the shielded container itself, or of the source capsule itself in any way.
3. An overpressure of 0.5 times standard atmosphere pressure will not cause deterioration of the wood in the overcoat, or of the glue used in the overcoat, or of the steel or lead in the shielded container itself, or of the source capsule itself in any way.
4. Vibrations normally incident to transport will not cause deterioration of the wood in the overcoat, or of the glue used in the overcoat, or of the steel or lead in the shielded container itself, or of the source capsule itself in any way.
5. A water spray sufficiently heavy to keep the entire exposed surface of the package, except the bottom, continuously wet during a period of 30 minutes will not cause deterioration of the wood in the overcoat, or of the glue used in the overcoat, or of the steel or lead in the shielded container itself, or of the source capsule itself in any way.

February 4, 1969

6. - 9. See attached Unus strength analysis report (revised 1--26-69).

71.35 a(3) The only gases in vapors present in the package will be air under ambient conditions.

71.35 c As shown in the detailed analysis of the capability of the shield with overcoat to withstand the normal conditions of transport given above, the container when loaded with a sealed Cs-137 source will remain intact under these conditions and there is no possibility that the Cs-137 will be vented to the atmosphere because of:

1. the Cs-137 is contained in a sealed source which will not be disturbed under the normal conditions of transport,
2. the shield cap and plug will remain in tact, and
3. the overcoat lid will remain intact.

71.51 a. A quality internal program for the shield work, the wooden overcoat, the source rod and the source capsule itself has been established. For subcontracted items, the P.O. includes a detailed list of quality control procedures which must be followed and identification of compliance is required. Final inspection on all subcontracted items takes place after they are delivered.

For items manufactured "in-house", a list of quality control procedures requiring step by step inspection until final inspection takes place.

For all items a certificate of materials as called out and complete dimensional check is called out. For all welded items a complete closure and certification thereof is required. For the source leak test, certification is required that the source passed the standard leak test required by the manufacturer's license and that the source has less than .005 microcuries of removable contamination at time of shipment.

For the wooden overcoat, certification that each layer of laminate has been glued 100% all over and

February 4, 1969

nailed in accordance with the drawing is required. For the shield, void free lead pour is called out and certification required. For the shielded container, all external surfaces are finished with two coats of primer and two coats of finish enamel. For the overcoat, the external surfaces are sealed, primed and painted with waterproof paint. The external 12 gauge steel cladding is primed and painted.

- b. Before each use of the container, it will be inspected to determine that:
1. the packaging has not been significantly damaged
  2. the closure of the packaging is present and free from defect
  3. the cavity of the shield has not been contaminated and decontaminate if necessary.

General Notes:

Heat calculations - See attached heat transfer calculations.

Source capsule - J.L.S. drawing A-0068-10 is enclosed, showing welds on both ends.

Source rod - See J.L.S. drawing A-0068-3A attached.

Note: The expansion ring closure of the source rod has been replaced with a welded disc.

Note: The shielded cask has removable eyebolts which are used for handling and lifting the unit in and out of the wooden overcoat.

Eyebolts - For revised details of the eyebolts, see revised details of attached Unus strength analysis report. The eyebolts will be mounted per the sketch on this report.

Thank you for your co-operation in giving your immediate attention to our request. If additional information is required please let us know.

Sincerely,

J. L. Shepherd  
JLS:cp Encl. A-0068-3A, A-0068-10, 2 sets of calculations.

# JL SHEPHERD & ASSOCIATES

1010 ARROYO AVE., SAN FERNANDO, CALIFORNIA 91340-1822

818-898-2361 FAX 818-361-8095

February 12, 1990

Charles E. MacDonald, Chief  
Transportation Branch  
Division of Safeguards and Transportation Branch, NMSS  
U.S.N.R.C.  
Washington, D.C. 20555

REFERENCE: Certificate of Compliance No. 5984

Gentlemen:

Enclosed are six copies of operating procedures, maintenance programs and acceptance tests, newly written per your letter of January 31, 1990, SGTB:ER, 71-7984. These additions meet the requirements of 10CFR71, Subpart G. This information also appears in our NRC approved Quality Assurance Manual #QA-RM-001-A, Revision 2 (meets requirements of 10CFR71, Subpart H) and our Radiological Safety Control Manual, approved by the State of California in our Radioactive Materials License #1777-70 Amendment 55, which are not included. Please request these documents, if you require them for verification purposes. My conversation with Mr. Rawls of your office in February 1, 1990 indicated that they not be submitted.

As this package has not changed from previous submittals, there is no change in the Strength and Heat Transfer Analysis or drawings for the Overpack, six copies are also enclosed, for your information.

Sincerely,

J.L. SHEPHERD AND ASSOCIATES

*Mary F. Shepherd*

Mary F. Shepherd

MFS/dfm



2ND DAY AIR  
SHIPPER RECEIPT  
TRACKING NO.

2105 3484 004

# JL SHEPHERD & ASSOCIATES

1010 ARROYO AVE., SAN FERNANDO, CALIFORNIA 91340-1822

818-898-2361 FAX 818-361-8095

## PROCEDURES FOR REMOVAL OF DOT 7A PACKAGING FROM OVERPACKS, COC 5984

### A. RADIOLOGICAL PROCEDURES FOR INCOMING SHIPMENTS OF DOT 7A PACKAGING IN OVERPACKS.

1. The incoming shipment will be surveyed with a calibrated survey meter to determine that external radiation levels correspond to diamond labels on package, shipping documentation, manifest and bill of lading.

2. Smear tests using absorbent material covering an area of 300 cm squared (minimum) will be made on a sufficient number of areas (3 minimum) to make a representative assessment of non-fixed contamination levels on the surface of the overpack. At least one area measured will be that most probable to show contamination if contents of overpack were leaking. The smears will then be counted on a calibrated digital detection device. If removable contamination is in excess of 1 dpm/cm squared, the overpack will be decontaminated (all surfaced) until it is below these levels.

3. After the DOT 7A package is removed from the overpack (procedures listed below), a smear test will be made on that area of the DOT 7A package which would be contaminated if the sources in the DOT 7A package were leaking. If this test shows greater than  $5 \times 10^{-3}$  removable contamination, the sources will be considered to be leaking and both the DOT 7A package and sources handled in accordance with procedures for non-sealed sources and contaminated DOT 7A packages.

4. Move the DOT 7A package to hot cell for removal of sources in accordance with standard procedures of hot cell operator. Source handling operations for these DOT 7A packages are normally conducted in hot cells owned and operated by others under contact with J.L. Shepherd & Associates.

### B. PHYSICAL PROCEDURES

1. Remove 12 each 1/4-20 bolts which attach angles on top steel plate to outer steel body of overpack.

2. Remove nuts and washers from 6 each 3/4-10 tierods.

3. Attach lifting chains or cables rated at 500 lb. to eyebolts on top of lid and remove wooden lid (with steel plate attached) from top of overpack. Vertical lift required.

4. Attach chains or cables rated greater than 2,000 lb. to eyebolts or ears on inner DOT 7A shield and lift shield vertically from overpack.

5. Move the DOT 7A to hot cell for removal of sources in accordance with standard procedures of the hot cell operator.

C. PHYSICAL PROCEDURES FOR LOADING INNER DOT 7A SHIPPING CASK INTO OVERPACK.

1. Attach chains/cables rated at greater than 2,000 lb. to the eyebolts/lifting ears of the DOT 7A and lift to place in the overpack.

2. Replace the lid of overpack with 1/2" steel plate attached, taking care to align with alignment marks provided.

3. Place 6 each 3/4-10 nuts on tie rods using washers provided and torque to 150 inch pound minimum.

4. Replace the 12 each 1/4-20 bolts which go through the angles on top of the lid through corresponding holes in the outer shell of the overpack and tightened to greater than 50 inch pounds.

5. Load the overpack on the shipping vehicle and tie down using eyebolts on top of unit for tiedown.

D. RADIOLOGICAL PROCEDURES FOR LOADING OF DOT 7A PACKAGING INTO THE OVERPACK.

1. Prior to loading sources into the DOT 7A package, the exterior of the DOT 7A package will be monitored to determine that fixed contamination levels are less than 10 dpm/cm squared over any 300 cm squared area on the surface of the DOT 7A package. Any higher levels will be decontaminated to lower than these levels.

2. All sources loaded into the DOT 7A package must have removable contamination of less than  $5 \times 10^{-3}$  microcuries. After loading into the DOT 7A package the portion of the DOT 7A package most likely to be contaminated by source contamination will be smear tested and must meet the criteria for sealed sources.

3. After sources have been loaded and prior to packaging in the overpack, external radiation levels will be monitored to determine that they meet DOT shipping specifications. Any non-conforming units will not be shipped.

4. After the DOT 7A package is loaded into the overpack, the overpack will be surveyed with a calibrated survey meter. Diamond labels, shipping documents, bills of lading and manifests will then be prepared in accordance with 49 CFR. 172.403, 173.488 and all applicable parts of 49 CFR. All shipments will be made in conformance with 49 CFR.

E. OVERPACK CHECKOUT AND MAINTENANCE PROCEDURES

Each time the overpack is received and prior to each shipment, it is thoroughly inspected according to the attached check list which is filled out and maintained on file for two years.

Any required maintenance is performed as follows:

1. Bolts are replaced if threads are not perfect or if corrosion is noted.
2. Each threaded hole is examined. If excessive corrosion is noted, the threaded section is replaced and rewelded in place. If threads are imperfect the hole is re-tapped.
3. Any cracked welds are repaired.
4. Lock washers are replaced if defective.
5. Labels and vent hole covers are replaced if defective.
6. The unit is repainted if necessary.
7. The built-in skid is repaired as required.
8. Hold down fixture and standoffs are repaired or replaced if defective.



## ACCEPTANCE TESTING

Acceptance testing relates to new overpacks ordered from outside contractors or to materials, subcontracted subassemblies and other outside procurements made for new overpacks constructed by J.L. Shepherd & Associates. Receipt by J.L. Shepherd & Associates of either loaded or empty overpacks which have been in use is covered under TESTING and MAINTENANCE PROCEDURES.

Standard acceptance testing procedures for overpacks falls under our USNRC approved QA manual under CFR 71 and is called out in detail therein. Title of the QA manual is QA-RM-001-A. A capsule summary follows:

1. All drawings and purchase orders must be approved by cognizant personnel.
2. All incoming materials, subcontracted parts or subassemblies are QA checked for material, quantity, dimensions and necessary material certificates if these are required, i.e., for critical materials. Nonconforming materials or parts are rejected.
3. All fabrication personnel, i.e., welders are required to have current certifications of competency if such certifications are required.
4. At each stage of fabrication, i.e., materials prepared prior to welding and fabrication, completion of welding or fabrication the part is inspected and QA form completed. Inspection included materials, dimensions and fabrication procedures. Upon completion the unit is 100% inspected, dimensions, materials, conformance to drawings, labels, fit of parts, and other pertinent requirements and QA inspection reports prepared.

**J. L. SHEPHERD & Assoc.**

1614 Victory Boulevard  
Glendale, California 91201  
(213) 245-0187

7 March 1969

Office of the Secretary of Transportation  
Hazardous Materials Board  
Washington, D. C. 20590

Attention: Mr. William A. Brobst

Ref: File 1295  
URGENT

Dear Mr. Brobst:

Confirming our discussion in Washington last Wednesday, we are enclosing additional drawings and heat transfer calculations requested, so that you can complete your evaluation of this container promptly and issue a shipping permit. The following are enclosed:

A-0068-2B - Wood overcoat for A-0068-1 shield, revised to show 12 ea. 2" x 2" x 1/8" angles 2" long welded to topplate for bolting to steel outer shell

A-0068-2C - Steel shell for wooden overcoat

Addendum to Heat Transfer Calculations for 11,500 Ci Cs-137 Source

We would appreciate your immediate attention so that we can proceed with fabrication of the irradiator.

Thank you.

Sincerely,

J. L. Shepherd

JLS:cp

Encl. A-0068-2B  
A-0068-2C  
Addendum to calculations

FIGURE WITHHELD UNDER 10 CFR 2.390

REV. 2 - A ADDED TO REF. DRAWG. A-0068-3F	
REV. 1, WELDS ADDED 4/26/65	
DRAWN BY D. TRAN   APPROVED BY	
J. L. SHEPHERD & ASSOC. 1010 ARROYO AVE. SAN FERNANDO, CALIFORNIA 91340-1822 818-978-2361	9/2/68 Scale None
Shielded Container (INNER CONTAINER FOR COC 5984)	10/7/68
IRRADIATOR. MODEL 68	A-0068 -1B

FIGURE WITHHELD UNDER 10 CFR 2.390

<p>J. L. SHEPHERD &amp; Assoc. 1010 Arroyo St., San Fernando, CA 91340 (818) 898-2361</p>	<p>975 Scale - none</p>
<p>Wood, overcoat</p>	<p>10/4/68</p>
<p>for A-0068 - shield Revised &amp; redrawn</p>	<p>A-0068 -2C</p>

FIGURE WITHHELD UNDER 10 CFR 2.390

<b>J.L. SHEPHERD</b> <i>and Associates</i>			
DRAWN BY D. TRAN	DATE 4/26/95	APPROVED BY JSE	SCALE NONE
SHIPPING SHIELD - INNER CONTAINER FOR			
COC 5984			A-0068-1B-A

FIGURE WITHHELD UNDER 10 CFR 2.390

J.L. SHEPHERD <i>and Associates</i>			
DRAWN BY D. TRAU	DATE 4/26/95	APPROVED BY 902	SCALE NONE
SHIPPING SHIELD LINER CONTAINER FOR			
COC 5984		A-0068-1B-B	

FIGURE WITHHELD UNDER 10 CFR 2.390

<b>J. L. SHEPHERD &amp; Assoc.</b> 1614 Victory Boulevard Glendale, California 91201 (213) 245-0187	Scale 2 4042
Capsule for	J-5
11,500 C (s-137) source	1/30/67
SPECIAL FORM.	A-0068 -10