

THE BOEING COMPANY
Seattle Services Division

QUALITY ASSURANCE PROGRAM PLAN
FOR INDUSTRIAL RADIOGRAPHY
(10 CFR, PART 71)*

1.0 ORGANIZATION

The final responsibility for the Quality Assurance (QA) Program for Part 71 Requirements rests with The Boeing Company. Design and Fabrication shall not be conducted under this QA Program. The QA Program is implemented using the organization shown in the chart (*Attachment II*). Mr. William E. Morgan is the responsible individual for the Part 71 QA Requirements.

The Radiation Safety Officer is responsible for overall administration of the Program, training and certification, document control, and auditing.

The Radiographers are responsible for handling, storing, shipping, inspection, test and operating status, and record keeping.

2.0 QUALITY ASSURANCE PROGRAM

The management of Boeing Seattle Services Division establishes and implements this QA Program. Training, prior to engagement, for all QA functions is required according to written procedures. QA Program revisions will be made according to written procedures with management approval. The QA Program will ensure that all defined quality control procedures, engineering procedures, and specific provisions of the package design approval are satisfied. The QA Program will emphasize control of the characteristics of the package which are critical to safety.

The Radiation Safety Officer shall ensure that all radioactive material shipping packages are designed and manufactured under a QA Program approved by Nuclear Regulatory Commission for all packages designed or fabricated after the effective date of the QA Program. This requirement has been satisfied by receipt of a certification to this effect from the manufacturer.

* See Attachment I.

3.0 DOCUMENT CONTROL

All documents related to a specific shipping package will be controlled through the use of written procedures. All document changes will be performed according to written procedures approved by management.

The Radiation Safety Officer shall ensure that all QA functions are conducted in accordance with the latest applicable changes to these documents.

4.0 HANDLING, STORAGE, AND SHIPPING

Written safety procedures concerning the handling, storage, and shipping of packages for certain special form radioactive material will be followed. Shipments will not be made unless all tests, certifications, acceptances, and final inspections have been completed. Work instructions will be provided for handling, storage, and shipping operations. Specially trained lead radiographers will perform these functions.

5.0 INSPECTION, TEST, AND OPERATING STATUS

Inspection, test, and operating status of packages for certain special form radioactive material will be indicated and controlled by written procedures. Status will be indicated by tag, label, marking, or log entry. Status of non-conforming parts or packages will be positively maintained by written procedures. Lead radiographers will perform these functions, and a radiation protection engineer will ensure their completion.

6.0 QUALITY ASSURANCE RECORDS

Records of package approvals (*including references and drawings*), procurement, inspections, tests, operating logs, audit results, personal training and qualifications, and records of shipments will also be maintained. The records will include descriptions of equipment and written procedures, will be maintained per written procedures, and will be identified and retrievable. A radiation protection engineer will maintain a list of the records, and they will be stored at the Radiation Health Protection Central Office.

7.0 AUDITS

Established schedules of audits of the QA Program will be performed using written checklists. Results of audits will be maintained and reported to management. Audit reports will be evaluated and deficient areas corrected. The audits will be dependent upon the safety significance of the activity being audited, but each activity will be audited at least once per year. Audit reports will be maintained as part of the quality assurance records. Members of the audit team shall have no responsibility in the activity being audited.

Attachment I

NON-SPECIAL FORM MATERIAL COVERED BY THIS QA PROGRAM

Per the attached list (*Attachment I-A*), Boeing presently possesses twenty-nine ^{239}Pu Neutron Threshold Fission Foils. The total ^{239}Pu content of these Foils is 17.423 grams (1.07 Curies).

It is planned to transport these Foils in a Certified "6M" Packaging System to the Hanford, Washington disposal site. The Foils and Total Containment System are to be buried during this one-time transportation activity. This action must be accomplished prior to February 29, 1980. Therefore, early approval of this Quality Assurance Program would be greatly appreciated.

The ^{239}Pu Foils (*plated alloy*) are doubly encapsulated with 5.0 mil Aluminum and 5.0 mil Copper coatings soldered at the seams. There is no detectable removable activity from the exterior surfaces of the Foils (± 10 d/m, or $< 0.00005 \mu\text{Ci}$).

The Foils will be placed in an inner polyethylene bottle with screw-type cap. The bottle, in turn, will be "canned" in a metal container, which will be centered in a "2R" cylinder. Appropriate dunnage will ensure the centering of the metal container.

The "2R" cylinder, surrounded by solid industrial cane fiberboards, will be placed inside a Department of Transportation Specification 6C or 17 C outer drum (See drawing illustrated in *Attachment I-C*, and the manufacturer's certification statement recorded in *Attachment I-B*).

Four of the twenty-nine ^{239}Pu Foils have the following quantities of ^{235}U mixed in with the Plutonium:

1. Foil #36 = 0.067 gram ^{235}U
2. Foil #37 = 0.066 gram ^{235}U
3. Foil #38 = 0.034 gram ^{235}U
4. Foil #39 = 0.034 gram ^{235}U

0.201 gram ^{235}U - TOTAL IN 4 FOILS (0.4221 μCi)

Attachment I-A

<u>Foil Number</u>	<u>Isotope</u>	<u>Quantity (gm)</u>	<u>Location</u>
1	Pu-239	1.504	Sigma Pile Room
2	■	1.532	■
3	■	■	■
4	■	1.499	■
5	=	1.526	■
6	■	1.507	■
7	■	1.494	■
8	■	1.533	■
9	■	1.524	■
10	■	1.505	■
11	■	0.010	■
12	■	■	■
13	■	■	■
14	■	0.020	■
15	■	■	■
16	■	■	■
17	■	0.030	■
18	■	■	■
19	■	■	■
20	■	0.052	■
21	■	■	■
22	■	■	■
23	■	0.102	■
24	■	■	■
25	■	0.101	■
* 36	■	0.053	■
* 37	■	0.052	■
* 38	■	0.771	■
* 39	■	0.750	■

Total Monsanto Foils

17.423 gms

* Composite U-235 and Pu-239 Foils.

FBF, Incorporated

1201 Hilton Rd. - Middlebrook Industrial Park
Knoxville, Tenn. 37921

Phone 615/584-1863

Nuclear Containers and Equipment — Film Badges Fabricators —

Nuclear Containers and Casks for:

Fissile & Radioactive Material
Reactor Fuel Elements
Waste Material
Radioisotopes
Radioactive Sources

Containers and Casks:

Overpacks
Refurbishing & Repair
Drums
2-R Tubes
Cane Fiberboard Insulation
Benelex Insulation
Firedike Insulation
Vermiculite Insulation
Plywood Insulation
DOT & AEC Specification & Special Permits

Lead Products:

Lead Pots
Lead Shields
X-Ray Shields
Lead Brick
Lead Boxes
Lead Containers

Film Badges - for Radiation Detection

Finger Rings for TLD's

Special Radiation Filters

Certification of Compliance
with
DOT-6M Containers Specifications

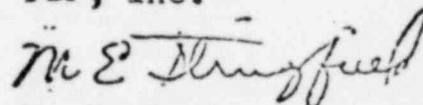
Reference is made to: New England Nuclear
Purchase Order #30277 T. Pepl Dated: 7-28-77

For: 12 ea. 15 gal. size Dot-6M Containers

This is to certify that the above containers manufactured under the above purchase order were constructed in strict compliance with the applicable DOT-6M specifications, and that the outer drum used as a component of these drums bear the embossment which certifies that the drums meet the required specifications of the Department of Transportation for the manufacture and sale of such drums.

Certified by:

FBF, Inc.

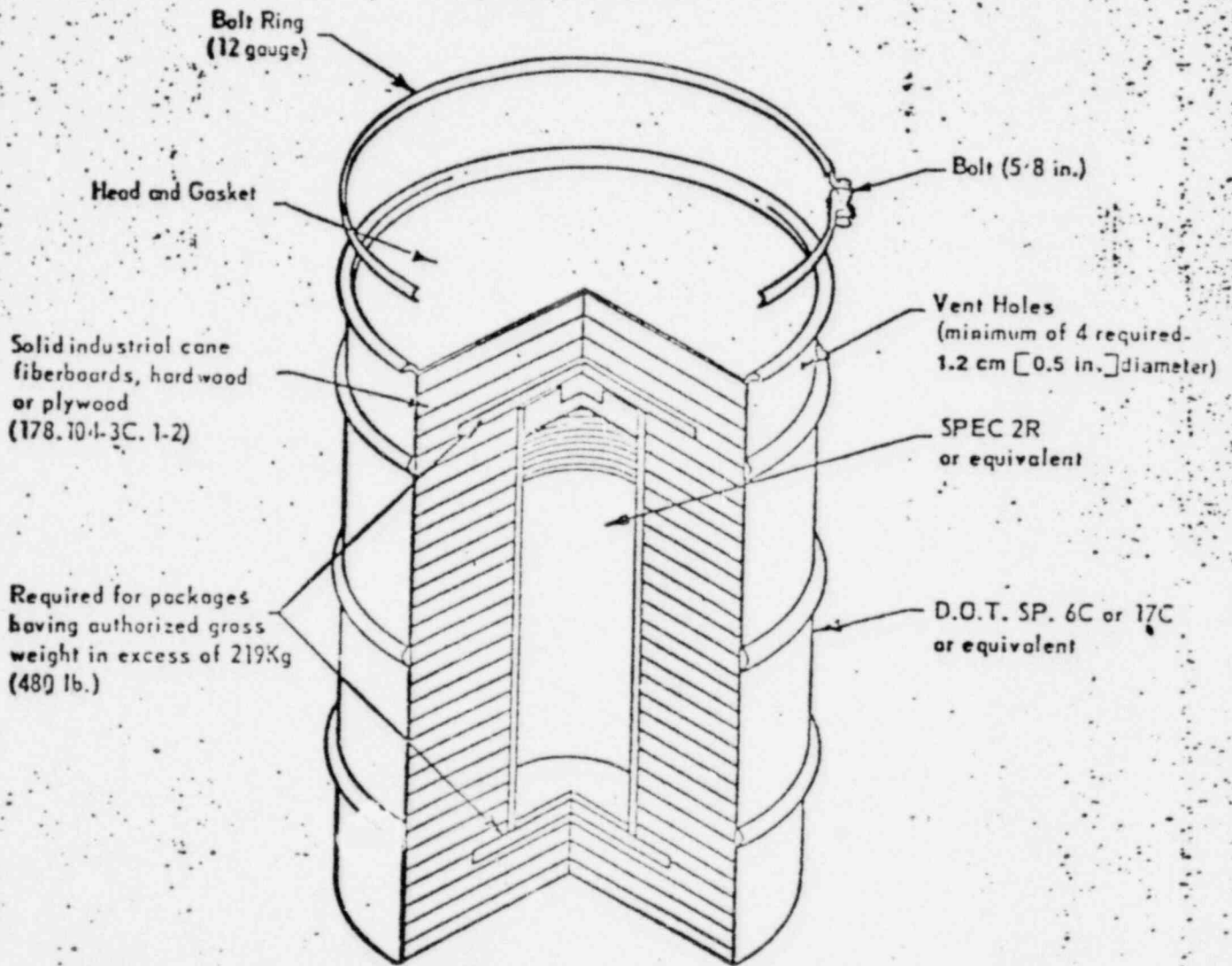


M. E. Stringfield, V-Pres.

POOR ORIGINAL

Attachment I-C

DOT SPEC. 6M
(CFR 49.5178.104)



POOR ORIGINAL

