

71-9160

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Amersham Corporation  
2636 South Clearbrook Drive  
Arlington Heights, Illinois 60005-4692  
(312) 593-6300

January 24, 1990



Nuclear Regulatory Commission  
Division of Safeguards and Transportation, NMSS  
Washington, DC 20555

Attn: Carl Withee  
Transportation Branch

Re: Type B Certificate No. 9160 Model Numbers 20-VS and 40-VS

Dear Mr. Withee,

Thank you for the information you had sent me.

I have revised the Operating Procedures, Acceptance Tests and Maintenance Programs to reflect changes in the regulations, and the fact that although Amersham Corporation acquired Gulf Nuclear, we have never manufactured these containers and do not intend to do so.

I hope that these revised procedures and the information I provided in my letter of September 22, 1989 addressed to Charles E. MacDonald will enable you to renew Certificate No. 9160.

Please do not hesitate to contact me should you require additional information or have any questions on that which I have submitted. I may be reached by phone at (708) 593-6300, extension 379.

Sincerely yours,

Bryan W. Baker, Ph.D.  
Manager, Environmental and Safety  
Regulatory Affairs

Enclosures

FEE NOT REQUIRED  
*additional info*

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U.S. NUCLEAR REGULATORY COMMISSION

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Amersham Corporation

OPERATING PROCEDURES,  
ACCEPTANCE TESTS AND MAINTENANCE PROGRAMS  
FOR MODEL NUMBERS 20-VS and 40-VS

January 24, 1990

## 4. OPERATING PROCEDURES

### 4.1 Procedures for Source Changing

The following is the standard procedure for source changing:

- (1) Connect source changer tube to nose of camera.
- (2) Connect crank out conduit to lock block.
- (3) Make sure lock is in up position.
- (4) Turn crank handle clock-wise and crank out enough cable to make connection on pigtail (approximately 3 inches).
- (5) Make connection between the disconnect and the connection on the pigtail.
- (6) Connect source changer tube to the changer.
- (7) Clear the area of all personnel.
- (8) Place a survey meter close to camera, in the on position, so that the meter movement can be seen.
- (9) Standing as far away as possible from the camera, rotate the crank handle counter-clockwise rapidly. The survey meter should go from a low reading to a high reading and back to the low reading.
- (10) Lock the camera.
- (11) Disconnect changer tube from camera and replace with safety plug.
- (12) Disconnect crankout conduit and replace with dust cover.
- (13) Monitor package with survey meter to ensure that radiation levels do not exceed 200 mRem/hr on surface and 10 mRem/hr one meter from surface.
- (14) Attach serial number and identification tag to package.

### 4.2 Procedure for Unloading the Package

When a package is received, it must be checked for contamination and radiation level as required in 10 CFR 20.205. If contamination or radiation levels are in excess of the specified limits, the required notification (per 10 CFR 20.205) will be made. If the contamination or radiation levels are within the specified limits, the following is the procedure to be followed for unloading the package.

- (1) Remove safety plug and attach changer tube to camera and changer.
- (2) Remove dust cover and connect drive cable to connector on pigtail.
- (3) Connect drive cable conduit to camera.
- (4) Using appropriate key, unlock camera.
- (5) Place a survey meter, in the on position, so that the meter movement can be seen.
- (6) Standing as far away as possible from the camera, rotate the crank handle, clockwise rapidly. The survey meter should go from a low reading to a high reading and back to a low reading.
- (7) Lock the changer.
- (8) Disconnect the changer tube from the changer.
- (9) Uncouple disconnect from the connector on the pigtail.
- (10) The radioactive material is now ready for removal to storage.
- (11) Remove the changer tube from the camera.
- (12) Check the changer tube and camera for contamination. The level of contamination must not exceed that given in 49 CFR.173.443(a).

## 5. ACCEPTANCE TESTS AND MAINTENANCE PROGRAMS

### 5.1 Acceptance Tests

All 20-VS and 40-VS containers were manufactured and used in accordance with Gulf Nuclear, Inc.'s Quality Assurance Program. Approval number 0210, Revision 2, Expiration Date, July 31, 1988.

#### 5.1.1 Visual Inspection

Each package was visually examined to insure proper assembly and that the package was properly marked.

#### 5.1.2 Structural and Pressure Tests

Prototypes of the 20-VS and 40-VS were tested to a minimum of 210 pounds external pressure.

#### 5.1.3 Leak Tests

All radioactive sources used in the Model 20-VS and 40-VS cameras were subject to leak tests as prescribed for special form materials (49 CFR 173.469) and IAEA Safety Series No. 6 1973 Revised Edition. Failure of any of these tests prevented use of the source capsule.

#### 5.1.4 Component Tests

The lock block assembly was tested for locking the radioactive materials securely inside the package. The shielding materials were checked for shielding integrity during manufacture and upon completion. The S-tube was checked for obstructions during preliminary construction and upon completion.

#### 5.1.5 Tests for Shielding Integrity

Shielding tests were conducted as component tests and during manufacture. Surface readings and at one meter were conducted using a source designed for the camera. Surface readings did not exceed 200 mRem/hr and one meter reading did not exceed 10 mRem/hr. Failure of this test, prevented use of the package.

#### 5.1.6 Thermal Acceptance Test

Not applicable.

## 5.2 MAINTENANCE PROGRAM

### 5.2.1 Structural and Pressure Tests

Not applicable.

### 5.2.2 Leak Tests

Described in section 5.1.3. The radioactive source capsule was leak tested at manufacture and at six month intervals.

### 5.2.3 Subsystem Maintenance

The lock assembly was tested as described in section 5.1.4 prior to the use of the package. The S-tube is checked for ease of movement every time the source is cranked in and out.

### 5.2.4 Values, Rupture Disks and Gaskets

Not applicable.

### 5.2.5 Shielding

Before the shipping of a package and when replacing a spent source, the radiation levels on the surface and at one meter are to be checked. If surface readings exceed 200 mRem/hr or one meter reading exceeds 10 mRem/hr, the package is to be rejected and taken out of use.

### 5.2.6 Thermal

Not applicable.

### 5.2.7 Miscellaneous

Not applicable.

## 5.3 Initial Acceptance

Upon receiving the depleted uranium camera castings, they were individually checked with a 220 Ci source. The castings were loaded and surface readings taken. Castings with readings which fell into 60 to 120 mR/hr range were marked 40VS and are loaded into the housing and a stainless steel label marked 40VS was placed on the camera. The castings which read 120 to 180 mR/hr range were considered 20VS and appropriately labeled. The castings which read over 180 mR/hr were rejected and sent back to the manufacturer. Each individual camera, after construction, was reloaded and checked to meet the above requirements.