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Bristol Steel

AND IRON WORKS, INC.

April 15, 1984

U.S. Nuclear Regulatory Commission
Region II
Material Radiation Protection Section
101 Marietta Street
Suite 2900
Atlanta, GA. 30323

RECEIVED BY LFMB
Date: 5/2/85
Log: Apr 84
By: Brown
Sig. To: 5/9/85
Action Compl. 5/9/85

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#230/30
Amendment
5/2/85
Bacon

Reference: License Number 45-16947-01

Gentlemen:

Bristol Steel & Iron Works, Inc. respectfully requests an amendment to our US NRC Radioactive Material License No. 45-16947-01 to reflect the following changes:

1. Delete the Automation Industries Model 200-520-010 sealed source assembly from our license. We would however like to retain approval to continue to use the Automation Industries Model 200-520-009 sealed source assembly as long as it is still available from the supplier, which is now Tech/Ops, Inc.; Burlington, MA.
2. Add the Tech/Ops, Inc. Iridium 192 Sealed Source Model 866, sources not to exceed 120 curies, for use in the Automation Industries Model 520 "Iriditron" exposure device for industrial radiography.
3. Add the Industrial Nuclear Iridium 192 Sealed Source Models 5 and 6, sources not to exceed 120 curies, for use in the Automation Industries Model 520 "Iriditron" exposure device for industrial radiography.
4. Add authorization to use Tech/Ops, Inc. Source Changer Model 650, and Industrial Nuclear Co. Source Changer Model IR 50. We would like to also retain authorization to continue to use the Automation Industries Model 500-SU Source Changer.
5. Add authorization to use the Tech/Ops, Inc. Model 518, and the Industrial Nuclear Co. Model INCA Leak Test Kits. Use of the Automation Industries Model LT-100 Leak Test Kit would no longer be authorized upon approval of the amendment.

Please find enclosed our check in the amount of \$230.00 to cover the amendment fee.

Also, please find enclosed two copies each of page 6, section 3.5 ; Attachment 2, pages 1 thru 4 ; and Attachment 4, pages 1 thru 5 of our Operating and Emergency Procedures for the Safe Use and Security of Radioactive Isotopes. These pages contain the necessary revisions (which have been marked by a vertical line in the right hand margin) to modify our procedures to accomodate the License amendments we are requesting. Our original Procedures, for which these modifications are necessary, were submitted with the necessary applications and our letter dated March 9, 1981, and subsequent correspondance dated November 18, 1981.

Should you have need for futher information or clarification, please do not hesitate

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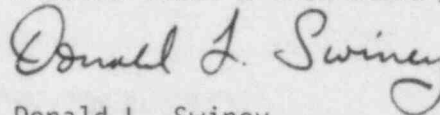
Bristol Steel
AND IRON WORKS INC.

to contact the undersigned.

We are most anxious to expedite this amendment, therefore, your prompt attention to this matter will be greatly appreciated.

Very truly yours,

BRISTOL STEEL & IRON WORKS, INC.

A handwritten signature in cursive script that reads "Donald L. Swiney". The signature is written in dark ink and is positioned above the printed name and title.

Donald L. Swiney
Radiation Safety Officer

DLS/ds

Enclosures

capsule assemblies used shall be the AI Model 200-520-009, or the Tech/Ops Model 866, or the Industrial Nuclear Model 5 or the Industrial Nuclear Model 6. Sources shall be shipped to the BSIW Radiation Safety Officer at the following address:

Bristol Steel and Iron Works, Inc.
ATTN: Donald L. Swiney - Plant No. 3
Washington County Industrial Park
Industrial Park Road
Bristol, VA. 24201

Optional shipping addresses may be specified by the Radiation Safety Officer only.

Source transfer from the shipping container to the camera shall be performed in accordance with Attachment 4.

3.6 Organizational Structure

The executive management of the facility has delegated the authority and responsibility for administration and enforcement of the Radiation Safety Program, as described in these procedures, to the Radiation Safety Officer. The Radiation Safety Officer has sufficient organizational independence from production pressures (such as cost and schedule) to administer the Radiation Safety Program. A chart showing the organizational structure is shown in Attachment 7.

4.0 PROGRAM REQUIREMENTS

4.1 Area Restrictions

Access controls will be determined by the conditions of each application. In all cases, constant direct surveillance of the area shall be performed. Access shall be controlled to such a degree that an unauthorized person could not receive a dose in excess of 2MREM in any one hour or 100 MREM in any seven consecutive days.

4.1.1 Restricted Areas

A "restricted area" is any area, access to which is controlled for purposes of protection of individuals from exposure to radiation and radioactive materials. Any area must be made a "restricted area" when the radiation level is such that, an individual continuously present in the area could receive a dose in excess of 2MREM in any one hour, or 100 MREM in any seven consecutive days. Access to a "restricted area" shall be controlled by constant direct surveillance. As a matter of practice and principle, the restricted area boundary should be established where the survey meter reading is 2 mr/hr or less.

4.1.2 Radiation Area

A "radiation area" is any area accessible to personnel in which there exists radiation levels such that an individual could receive a dose in excess of 5 MREM in any one hour or 100 MREM in any 5 consecutive days. A "radiographic area" is identical to a "radiation area". Normally, colored ropes or tapes and signs strung approximately waist

LEAK TEST PROCEDURE

Leak tests of sources shall be performed by the Radiation Safety Officer, or his designee. The Tech/Ops, Inc. Model 518 or the Industrial Nuclear Co. Model INCA Leak Test Kit shall be used. Sources shall be leak tested at least once every six months in accordance with this procedure.

To perform a leak test, the Radiation Safety Officer or his designee shall perform the following actions, in the following sequence:

- Step 1: Obtain film badge and calibrated dosimeter.
- Step 2: Obtain calibrated survey meter and check batteries.
- Step 3: Obtain Model 518 or Model INCA Leak Test Kit.
- Step 4: Prior to removing the camera from storage, verify that the safety cap and plug are properly positioned.
- Step 5: Remove camera from storage box to just outside the storage area.
- Step 6: Survey the camera(left and right) to ensure that the source is in the properly shielded position and that the survey meter is properly operating.
- Step 7: Remove the safety plug from the front (exit port) of the camera.
- Step 8: Remove the swab, vial of liquid, and plastic envelope from the leak test kit.
- Step 9: Dip the swab into the liquid solution in the vial. Remove any excess liquid from the swab by pressing the swab against the inside surface of the vial.
- Step 10: Insert the wetted swab into the exit port of the camera internal guide tube ("S" Tube). Push the swab into the camera as far as the flexible swab holder will allow, rotating the swab to thoroughly wipe all surfaces internal guide tube.
- Step 11: Remove the swab from the camera and place in the plastic envelope supplied with the test kit, USING CAUTION TO NOT TOUCH THE SWAB WITH ANY PART OF YOUR BODY.
- Step 12: Replace the safety plug back into the front of the camera.
- Step 13: Set the survey meter on the most sensitivity setting, and place the plastic envelope containing the swab in a low background area (at least ten feet away from the camera).
- Step 14: Bring the survey meter in close enough proximity to the camera to verify that it is still working properly.

Step 15: Survey the plastic envelope containing the swab. Survey the envelope on contact.

Step 16: If the survey reading of the envelope is more than 0.5 mr/hr, follow the Emergency Procedure listed below. If the reading is less than 0.5 mr/hr proceed to Step 17.

EMERGENCY PROCEDURE FOR READINGS
IN EXCESS OF 0.5 MR/HR

When survey meter readings are in excess of 0.5 mr/hr on the surface of the plastic envelope, the following shall apply:

- a. If a designee of the Radiation Safety Officer is performing the leak test, immediately notify the Radiation Safety Officer.
- b. The Radiation Safety Officer, or his designee, shall perform the following actions, in the following sequence:
 - 1: Place the plastic envelope back in the leak test kit shipping container.
 - 2: Place the leak test kit shipping container into the camera storage box.
 - 3: Survey the camera around the entire circumference and on contact (left and right) to ensure that the source is in the fully shielded safe position.
 - 4: Place the camera back into the storage box.
 - 5: Survey the area to determine if any contamination is present.
 - 6: Survey your body, paying particular attention to the hands and feet, to determine if any contamination is present.
 - 7: Wash your hands with lukewarm water.
 - 8: Notify the NRC, at phone number 404-221-4503. Provide all requested information.
 - 9: Notify the source vendor, using the phone number furnished with the leak test kit. Provide all requested information.
 - 10: Follow the instructions of the NRC and the source vendor. Document the incident on a "Incident Report".

Step 17: Place the plastic envelope in the shipping container, making sure all required labels are in place.

Step 18: Survey the camera around the entire circumference and survey the camera on contact (left and right) to ensure that the source is still in the fully shielded safe position.

Step 19: Return the camera to the storage box, verifying that the cap and safety plug is in place.

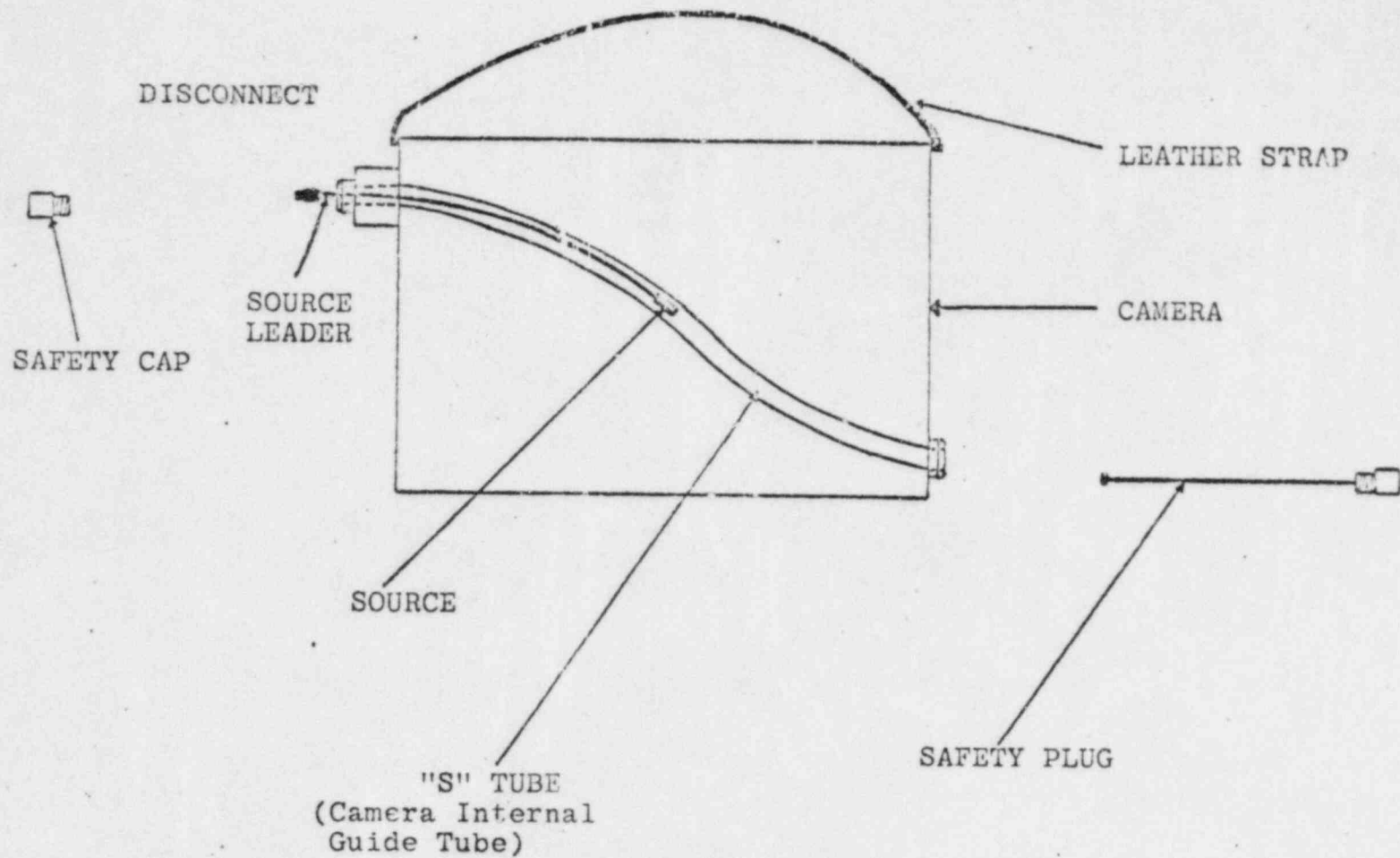
Step 20: Complete the applicable portions of leak test kit information form furnished with the kit. Place the information form in the shipping container, after retaining a copy for BSIW files.

Step 21: Ship the leak test to the appropriate vendor.

Step 22: The vendor will perform a precise radio-assay of the test sample and notify the Radiation Safety Officer in the following manner:

- a. Acceptable results-Forward a certificate of leak test results by return mail.
- b. Unacceptable results-Notify the Radiation Safety Officer by telegram or telephone immediately.

The Radiation Safety Officer shall implement follow up action in all cases where leak test results are not received within 21 days from the time of shipment.



PROCEDURE FOR INTERCHANGE OF SOURCES

Radiation sources shall be shipped to BSIW in the AI-Tech/Ops Model 500-SU, the Tech/Ops Model 650, or the Industrial Nuclear Model IR-50 Source Changers. Only personnel qualified as Radiographic Operator may receive sources for BSIW. Upon receipt of a replacement source, the Radiographic Operator shall perform the following actions in the following sequence:

- Step 1: Obtain film badge and calibrated dosimeter. Initiate "Source Receipt/Exchange/Shipment Form". Complete appropriate portions of the Form.
- Step 2: Obtain a calibrated survey meter and check batteries. Enter serial number on Form.
- Step 3: Survey the source changer on contact (left and right), and survey the changer around the entire circumference to ensure that the source is properly shielded. A properly shielded source will always produce meter readings of less than 200 mr/hr. on contact. Enter the contact readings on the Form.
- Step 4: Transport the source changer to just outside the permanent or temporary storage area (as applicable). Survey the source changer left and right. Store the source changer.
- Step 5: Notify the Radiation Safety Officer that a replacement source has been received and stored. Provide the following additional information:
 - a. Number of curies and source type (from DOT shipping labels).
- Step 6: Complete appropriate portions of the "Source Receipt/Exchange/Shipment Form" and forward to the Radiation Safety Officer.

To interchange the depleted source and the new source, the Radiation Safety Officer (or his properly trained designee-Radiographic Operator) shall perform the following actions in the following sequence:

- Step 1: Obtain film badge and calibrated dosimeter. Obtain pliers, screw driver, and a dummy source. Obtain "Source Receipt/Exchange/Shipment Form" and complete the appropriate portions.
- Step 2: Obtain calibrated survey meter and check batteries. Enter serial number on the Form.
- Step 3: Remove the source changer from storage to just outside the storage area. Survey the source changer(left and right), and survey the changer around the entire circumference to ensure that the source is properly shielded. Enter the left and right contact readings and complete the additional appropriate portions of the Form.

- Step 4: Remove the camera (Automation Industries Model 520) from storage to just outside the storage area. Survey the camera left and right on contact, and survey the entire circumference of the camera to ensure that the source is properly shielded. Inspect the camera and control cable and complete the applicable portions of the Form.
- Step 5: Transport the source changer and the camera to the temporary radiographic area which will be used for the source interchange.
- Step 6: Calculate and establish radiation area barriers. Clear the area of all unauthorized personnel.
- Step 7: Position the source changer, camera and control cable to obtain the maximum distance and shielding. The source changer and camera must be placed within four feet of one another.
- Step 8: Remove the cap covering the decayed source leader connection on the camera. Inspect the source leader connection fit. Connect the control cable to the source leader. Connect the control cable housing to the camera. Complete the applicable portions of the Source Receipt/Exchange/Shipment Form.
- Step 9: Remove-open the cover on the source changer. Remove the source change tube from the source changer. Visually inspect the source change tube for damage. Hold the source change tube in a vertical position and drop the dummy source into the tube. NOTE: IF THE DUMMY SOURCE DOES NOT PASS EASILY THROUGH THE TUBE, THE SOURCE SHALL NOT BE INTERCHANGED UNTIL THE OBSTRUCTION HAS BEEN CLEARED AND THE TUBE RECHECKED, OR UNTIL A SATISFACTORY REPLACEMENT TUBE HAS BEEN OBTAINED AND CHECKED.
- Step 10: Remove the plug from the front of the camera. Connect the source change tube to the camera.
- Step 11: Remove any lead seal wire from the source changer cap/cover/plug. Retain the replacement source serial number plate for later installation.
- Step 12: Carefully remove the cap/cover/plug from the empty storage side of the source changer. Verify that the storage hole is empty. Connect the source change tube to the empty hole in the source changer, and the exit port of the camera. Verify that the camera and the source changer are positioned so that the source change tube is free of any sharp bends. Complete the applicable portions of the "Source Receipt/Exchange/Shipment Form."
- Step 13: Survey the camera and source changer for their entire circumference.
- Step 14: Unlock the camera. Unlock the empty side of the source changer if the changer is equipped with locks.

- Step 15: Transfer the decayed source to the source changer using a smooth steady motion, slowing down as the source approaches the shielded (stop) position in the source changer.
- Step 16: Survey the area as you approach the camera and source changer. Survey the entire circumference of the camera. Survey the entire length of the source change tube. Survey the entire circumference of the source changer. Secure the lock on the source changer if so equipped.
- Step 17: EXERCISING EXTREME CAUTION, disconnect the source change tube from the source changer. Disengage the source leader connection from the drive cable end, being careful not to pull the decayed source out of the storage hole of the source changer.
- Step 18: Replace the cap/cover/plug on the source changer, securing the decayed source in a safe shielded storage position. Complete the applicable portions of the "Source Receipt/Exchange/Shipment Form."
- Step 19: EXERCISING EXTREME CAUTION, remove the cap/cover/plug covering the new source in the safe shielded storage position of the source changer, being careful not to pull the new source out of the source changer.
- Step 20: Connect the control cable end to the source leader connection of the new source. NOTE: If the source leader does not protrude from the source changer storage hole sufficiently to allow connection of the source leader and drive cable, carefully pull the source leader out only far enough ($\frac{1}{2}$ inch maximum) to allow joining of the connections. Connect the source change tube to the source changer after the drive cable-source leader connection has been made.
- Step 21: Survey the source changer for the entire circumference. Unlock the source changer if the changer is so equipped with locks.
- Step 22: Retract the new source into the camera, using a smooth steady motion, slowing down as the source reaches the shielded position and is fully retracted in the camera.
- Step 23: Survey the area as you approach the camera and source changer.
- Step 24: Survey the entire circumference of the camera. Survey the entire length of the source change tube. Survey the entire circumference of the source changer. Lock the camera. Survey the camera and the source changer on contact (left and right). Complete the applicable portions of the "Source Receipt/Exchange/Shipment Form."

NOTE: PROPERLY SHIELDED SOURCES IN BOTH THE CAMERA AND THE SOURCE CHANGER WILL NOT PRODUCE SURVEY METER READINGS GREATER THAN 200 MR/HR ON CONTACT.

- Step 25: Disconnect the source change tube from the camera and the source changer. Place the tube in the storage compartment of the source changer.
- Step 26: Replace the plug in the front of the camera. Replace the cap/cover/ plug on the now empty storage hole in the source changer.
- Step 27: Disconnect the control cable housing from the camera. Disconnect the control drive cable from the source leader connection. Replace the cap over the source leader protruding from the rear of the camera.
- Step 28: Remove the decayed source serial number plate from the camera and attach the new source serial number plate in its place.
- Step 29: Thread the new lead seal wire through the source changer cover/ cap/plugs and the decayed source serial number plate. Seal the source changer by crimping the lead seal. Lock any additional locks.
- Step 30: Complete the applicable portions of the "Source Receipt/Exchange/ Shipment Form."
- Step 31: Survey the source changer at a distance of one meter (39.37 inches) on all four sides. If the meter readings are 10 mr/hr or less, proceed to the next step. If the meter readings are greater than 10 mr/hr., notify the Radiation Safety Officer.
- Step 32: Obtain two new DOT style shipping labels to place over the old labels on the outside of the source changer. If the contact survey readings obtained in Step 24 are 50 mr/hr or less, and the one meter survey readings obtained in Step 31 are 1.0 or less, Radioactive Yellow II labels are to be used. If the survey readings are in excess of this, Radioactive Yellow III labels must be used.
- Step 33: Fill in the blank spaces on the DOT style labels as follows and place over the old labels on the outside of the source changer:
- Contents- IRIDIUM 192 (Spell out- DO NOT USE IR 192)
- Activity- Enter the number of active curies of the decayed source being shipped back to the vendor.
- Transport Index- Enter the number of mr/hr obtained from the one meter distance survey performed in Step 31.
- Step 34: Return the camera and source changer (if changer is not shipped) to storage. Complete the applicable portions of the "Source Receipt/ Exchange/Shipment Form."

Shipment of the decayed source and source changer back to the vendor shall be performed by the Radiation Safety Officer (or his properly trained designee-Radiographic Operator) by performing the following actions in the following sequence:

- Step 1: Obtain film badge, calibrated dosimeter, and calibrated survey meter. Check batteries of survey meter, and enter serial number on "Source Receipt/Exchange/Shipment Form."
- Step 2: Prepare shipping papers per the requirements of 49 CFR 172-178. The shipping papers must include:
- a. Proper shipping name and identification number-(RADIOACTIVE MATERIAL, Special Form, N.O.S., UN2974)
 - b. Name of radionuclide-(Iridium 192)
 - c. Activity of source-(in curies)
 - d. Category of Label applied-(i.e. Radioactive Yellow II)
 - e. Transport Index
 - f. Package Identification Number-(i.e. USA/9006/B(U) Type B)
 - g. Shippers Certifications
- Step 3: Remove the source changer from storage (if applicable) to just outside the storage area. Survey the source changer around the entire circumference and on contact left and right. Enter the contact readings on the "Source Receipt/Exchange/Shipment Form" and complete the additional appropriate portions of the Form.
- Step 4: Apply correct address label and ship source changer motor freight as applicable to:
- | | | |
|-----------------------|----|------------------------|
| Tech-Ops Inc. | | Industrial Nuclear Co. |
| 40 North Ave. | or | 1124 Chess Drive |
| Burlington, MA. 01803 | | Foster City, CA. 94404 |
- Step 5: Notify the consignee of the dates of shipment and expected arrival. Complete the remaining portions of the "Source Receipt/Exchange/Shipment Form" and forward to the Radiation Safety Officer.
- Step 6: Obtain receipt acknowledgement from consignee. If written acknowledgement is not received in 21 days from shipping date, the Radiation Safety Officer shall implement follow-up action.

NOTE: In addition to the above listed requirements, any additional requirements specified in BSIW's NRC approved 10 CFR Part 71 QA Program For Industrial Radiography Licensees must be met.