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Director,
Office of Nuclear Material Safety and Safeguards,
US Nuclear Regulatory Commission,
Washington, DC 20555

Dear Sir:

Enclosed is T&K Inspections Quality Assurance Program for the use and maintenance of Type B containers for the approval by the Nuclear Regulatory Commission as referenced in 49 CFR Part 173.471 and cited in 49 CFR Part 71.101.

Section 13 of T&K Inspections Operating and Emergency Procedure manual deals with the requirements that are applicable to T&K Inspection. These requirements include the cleaning, inspection, operation, and maintenance of Type B containers. Section 13 is enclosed for your review and approval. Section 9 of T&K INspections Radiation Administrative Safety Manual deals with the periodic inspection and maintenance of radiographic equipment and is also enclosed for your review and approval.

Please Note: T&K Inspection is not authorized, and will not make any repairs or modifications to Type B containers.

Sincerely,

Ken Kain
RSO/General Partner
T&K Inspection

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8.0 PROCEDURE FOR CALIBRATING SURVEY METERS

8.1 Calibration of survey meters will be performed by any of the following:

- (a) The manufacturer of the meter.
- (b) Source Production and Equipment Co., Inc.

9.0 REQUIRMENTS FOR PERIODIC INSPECTION AND MAINTENANCE OF RADIOGRAPHIC EQUIPMENT

9.1 All radiographic equipment and area safegaurds of shielded facilities are to be inspected by management or its designated represenative at intervals not to exceed 90 days. Copies of the inspection reports will be filed with the Radiation Saftey Office.

- (a) Faulty equipment must be removed from service until authorized repairs are performed.

9.2 Inspection and maintenance procedures for exposure devices are as follows:

"WARNING" ALL MODELS OF EXPOSURE DEVICES CAN BE LOCKED IN AN UNSAFE POSITION

- (a) Check for abnormal surface radiation levels.
- (b) Establish a radiographic area and check the operation of the equipment. Make required surveys.
- (c) Lock the device, disconnect source tube and control assembly.

9.0 REQUIRMENTS FOR PERODIC INSPECTION AND MAINTENANCE OF
RADIOGRAPHIC EQUIPMENT CONT:

9.2 Inspection and maintenance procedures for exposure devices
cont:

(d) Inspect the source pigtail.

1. Inspect the connector for true elbow, straightness, excessive wear and cracks.
2. Inspect the flexible cable at the connector for straightness.
3. Maintenance: If defective, the source must be returned to the source supplier.

(e) Inspect the connector on drive cable. This hole will show some wear but should not be out-of-round to the extent that it will disconnect from the mating piece other than in the corec position. It should not be loose on the drive cable. The portion of the connector with the connector hole should not be bent, but should be straight and parallel with the body of connector.

1. Maintenance: Replace, if the connector does not meet the above requirments.

(f) Connect the drive cable to source pigtail connector. Test the connection by pulling straight back on the cable applying about 30 to 40 pounds of pressure.

1. CAUTION: BE SURE THE LOCK PLUNGER IS DEPRESSED
BEFORE MAKING THE PULL TEST.

9.0 REQUIRMENTS FOR PERODIC INSPECTION AND MAINTENANCE OF
RADIOGRAPHIC EQUIPMENT CONT:

9.1 Inspection and maintenance procedures for exposure
devices cont:

- (g) Remove drive cable from conduit and disassemble control assembly. Clean all parts with solvent and dry.
1. Inspect the drive cable for flexibility, wear and rust. The cable should be free of any stiffness, kinks or other damaging conditions that would prevent the cable from running on the gear in the gear housing.
 2. Special attention should be given to the first 12 to 18 inches of the drive cable at the source connector end. This portion of the cable is unprotected by the cable conduit when connecting the components for use and is most susceptible to foreign matter and damage.
 3. Maintenance: Repair or replace, as needed. Lubricate with a light rust inhibitor.
 4. Inspect the crank assembly parts for excessive wear or any damage that may impair operation. The bronze bushings in the gear housing and the plate are most likely places to find wear. Worn bushings permit the gear to wobble and eventually wear out. Wear around the inner circumference of the housing permits drive cable to slip on the gear and prevents the source from moving properly through the exposure device.

9.0 REQUIREMENTS FOR PERIODIC INSPECTION AND MAINTENANCE OF
RADIOGRAPHIC EQUIPMENT CONT:

9.1 Inspection and maintenance procedures for exposure
devices cont:

5. Maintenance: Reassemble and check for excessive wear and damage. Remove and replace parts, as needed. Apply a lightweight lubricant on the bushings.
 6. Inspect drive cable conduit for any damage or kinking that can prevent the drive cable from moving freely. This includes examining the conduit near the end connection for damage from excessive flexing while being assembled and disassembled. Also, inspect the cable conduit end fitting and the inlet connection of the exposure device by wear slack.
 7. Maintenance: In any case where the inner liner has been damaged, the conduit must be replaced. When the outer covering has been damaged, waterproof tape should be wrapped around the break to prevent the entrance of water or other corrosive substances. If the extreme ends of the conduit are damaged, these can be replaced with new pieces.
- (h) Connect the source tube to the exposure device. Test the connection by pulling straight back on the source tube applying about 5 pounds of pressure.

9.0 REQUIREMENTS FOR PERODIC INSPECTION AND MAINTENANCE OF
RADIOGRAPHIC EQUIPMENT CONT:

9.1 Inspection and maintenance proedures for exposure
devices cont:

- (i) Inspect the source tube for foreign matter, kinks or damage that may effect the source travel the tube.
 - 1. Maintenance: Crimps, kinks and other damage places may be cut out and connectors placed on ends so that tube is not shortened extensively. The coupling and end cap may also be removed and replaced. Remove foreign matter by washing with solvent and blowing with compressed air.
- (j) Inspect lock plunger ease of operation. The plunger should retract about 1/2 inch at its fullest extent. This permits free travel of the source in and out of the exposure device.
 - 1. Maintenance: Remove the lock plunger, wash with solvent and lubricate. Lock may also be cleaned and lubricated by spraying a lubricant into the lock.
- (k) Check all labels for legibility.
- (l) inspect for shifting of shield inside the device.
- (m) Replace missing and damaged protector or saftey plugs and caps.

PERIODIC INSPECTION AND MAINTENANCE of PROJECTOR TYPE EXPOSURE DEVICES

Date Inspected _____ Next Inspection Due _____

Manufacturer _____ Model No. _____ Serial No. _____

Type of Isotope _____ Source No. _____ Curie Strength _____

INSPECTION AND CORRECTION ACTION TAKEN IS PERFORMED IN ACCORDANCE
WITH PART 9 OF BASIN TESTING LABORATORY RADIATION SAFETY ADMINISTRATION MANUAL

CHECK EACH ITEM BELOW

	ITEM	ACCEPTABLE	CORRECTIVE ACTION TAKEN
SOURCE PROJECTOR	Safety Caps		
	Lock		
	Handle		
	Labels		
	Outlet Nipple and Threads		
SOURCE CONNECTOR	Snug Fit		
	Straightness		
	Excessive Wear		
	Pull Test		
SOURCE POSITIONER	Handle		
	Gear Box		
	Screws		
	Conduit Connections		
	Cable Flexibility		
	Straightness		
SOURCE TUBE	Physical Damage		
	End Cap		
	Foreign Material		
	Connections		
	Kinks and Crimps		

MISCELLANEOUS REMARKS _____

EXPOSURE DEVICE INSPECTED AND REPAIRED AS NOTED AND IS ACCEPTABLE FOR USE.

Performed By



RADIATION REPORT

WARNING — INTENTIONAL FAILURE TO RECORD INFORMATION ACCURATELY ON THIS FORM CAN RESULT IN A FINE AND/OR DISCIPLINARY ACTION

DAILY CHECK LIST

CHECK EACH ITEM BELOW

DATE _____ CITY _____ STATE _____

PROJECT _____ CUSTOMER _____

SOURCE OF RADIATION			ACTIVITY OF SOURCE
IR-192 <input type="checkbox"/>	CO-60 <input type="checkbox"/>	X-RAY <input type="checkbox"/>	CURIE _____
S/N _____	S/N _____	S/N _____	SURVEY INSTRUMENT MODEL NO. _____

EXPOSURE DEVICE MODEL NO. _____ S/N _____ VOID DATE _____

RADIOGRAPHIC EQUIPMENT INSPECTED IN ACCORDANCE WITH T & K INSPECTION O AND E PROCEDURE DAILY CHECK LIST

INSPECTION COMPLETED BY _____

RECORD OF PHYSICAL SURVEY MADE TO DETERMINE SOURCE IS IN SHIELDED POSITION PRIOR TO SECURING EXPOSURE DEVICE.

IR-192 _____ MR/HR @ 6' FROM SURFACE

CO-60 _____ MR/HR @ SURFACE OF EXPOSURE DEVICE

TOTAL EXPOSURE TIME FOR THIS DAY _____ HRS. _____ MINS.

PERSONNEL INFORMED _____

RADIOGRAPHER _____ RADIOGRAPHER'S ASSISTANT _____

SERIAL NO. OF DOSIMETER _____ AND _____

TOTAL MR RECORDED START 0 FINISH _____ MR AND START 0 FINISH _____ MR

FILM BADGE AND SERIAL NO. _____ AND _____

REMARKS: _____

SURVEY OF TRANSPORTING VEHICLE

MR/HR _____ MR/HR _____ MR/HR _____

	ITEM	Acceptable	CORRECTIVE ACTION TAKEN
SOURCE PROJECTOR	Safety Caps		
	Lock		
	Handle		
	Labels		
	Outlet Nipple & Threads		
SOURCE CONNECTOR	Snug Fit		
	Straightness		
	Excessive Wear		
	Pull Test		
SOURCE POSITIONER	Handle		
	Gear Box		
	Screws		
	Conduit Connections		
	Cable Flexibility		
	Straightness		
SOURCE TUBE	Physical Damage		
	End Cap		
	Foreign Material		
	Connections		
	Kinks and Crimps		

Miscellaneous Remarks _____

- 12.3.4 Withdraw the swab and place in the plastic envelope.
- 12.3.5 The swab should not be monitored by the survey meter set on its most sensitive range. Place the meter in a low background area and move the swab in its plastic envelope to the meter - not the meter to the swab.
- 12.3.6 If there is not indication on the meter above background, put the plastic envelope with the swab in the mailer supplied and mail to Source Production & Equipment.
- 12.3.7 NOTE: Be sure to fill out and return the identification sheet.
- 12.3.8 If there is an indication on the meter above background, it shall be considered as evidence of possible contamination. The individual making the test shall replace the shipping plug and lock the device. The device shall be returned to the storage area or place. Care should be taken to avoid any unnecessary contact with the equipment.

The radiation safety office should be notified immediately, and no further handling of the equipment is allowed until the equipment has been proven safe.

12.4 Evaluation of Swab

If no radiation is detected during the survey of the swabs, the kit is to be mailed to Source Production and Equipment Co., Inc., Kenner, LA.

12.5 Records

Records of leak test results shall be kept in units of microcuries and maintained for inspection at the radiation safety office.

13. REQUIREMENTS FOR DAILY INSPECTION OF RADIOGRAPHIC EQUIPMENT AND SOURCE CHANGERS

- 13.1 All exposure devices must be inspected at the beginning of each day that it is used. The radiographer making the inspection will sign the radiation report in the space provided, certifying the inspection was performed.
- 13.2 Daily inspections are to be made by using applicable checklist as follows:
- 13.2.1 GULF NUCLEAR MODEL 20VS

WARNING - ALL EXPOSURE DEVICES CAN BE LOCKED IN AN UNSAFE POSITION

1. Survey for excessive radiation levels.
2. Remove protector cap from lock box to expose the pigtail connector and wipe the connector clean.
 - (a) Inspect the connector for true elbow, straightness, excessive wear and cracks.
 - (b) Inspect the flexible cable at the connector for straightness.
 - (c) Inspect inlet for thread damage.
3. Inspect lock plunger for ease of operation. If not operating freely, clean and lubricate.

DEPRESS PLUNGER LOCK BEFORE MAKING ANY FURTHER INSPECTIONS

4. Check all labels for legibility.
5. Inspect for shifting of shield inside the device.
6. Inspect crank for excessive wear or damage that may impair its operation.
7. Inspect cable conduit for excessive wear or any damage that may prevent free movement of the cable.
8. Crank drive cable out about 12 inches, inspect cable for flexibility and inspect connector for excessive wear or damage.
9. Inspect cable conduit end fitting for thread damage.
10. Inspect source tube for any damage that may affect the free movement of the source throughout the tube.
11. Make sure source tube end cap is secure.
12. Inspect source tube connector fitting for thread damage.
13. Remove safety cap from source outlet and inspect for thread damage.

The inside of the source tube and all connections parts should be free of any foreign material that may impair the operation of the device before the components are assembled for use.

13.2.2 Periodic inspection and maintenance will also be done by a qualified Radiation Safety Officer as specified in Section 9.0 of the Administrative Manual.

13.2.3 Source Changers (See 10.3.1 for Operation)

1. Survey for excessive radiation levels prior to and after loading with radioactive material.
2. Prior to Loading:
 - (a) Check case for any damage that could create a hazard.
 - (b) Check all closures for proper operation.
 - (c) Check for shifting of shield inside device.
3. After loading survey changer, no surface reading should exceed 200 milliroentgens per hour or 10 milliroentgens per hour at one meter.

SEE APPENDIX E FOR SHIPPING INSTRUCTIONS