

NOTE: All areas indicated in field notes are not required to be addressed during each inspection.

INDUSTRIAL RADIOGRAPHY INSPECTION FIELD NOTES  
Region III

Inspection Report No. 93-001 License No. 14-24479-01  
Licensee (name and address) Docket No. 030-18662

MASON & HANGER - Silas MASON Co., Inc.  
IOWA ARMY AMMUNITION PLANT  
MIDDLETOWN, IOWA  
52638

Licensee Contact Nicholas Kieler Telephone No. (319) 753-7434

Last Amendment No. 04 Date of Amendment 3/24/92

Priority: C-I

Program Codes:  03310 - Fixed  
 03320 - Temporary

Date of Last Inspection 8/6/91

Date of This Inspection 3/2/93

Type of Inspection:  Announced  Unannounced  
 Routine  Special  
 Initial  Reinspection

Next Inspection Date 3/94  Normal  Reduced  Extended

Summary of Findings and Action:

- No violations, Clear 591 or letter issued
- Violations, 591 or letter issued
- Action on Previous Violations

Inspector: [Signature]  
(Signature)

Date 3/2/93

Approved: [Signature]  
(Signature)

Date 3/31/93

B-11

1. ORGANIZATION

a. Briefly describe the organizational structure:

NICHOLAS KIELER, RSO  
 JOE SHANNAN, DIRECTOR, ENVIRONMENTAL SAFETY & HEALTH  
 DARL HEFFELBOWER, PLANT MANAGER

b. Organizational structure meets license requirements. [L/C]  Y ( ) N

c. Radiographers and Assistants named in license ( ) Y  N

d. List radiography personnel:  
 (Indicate if they are radiographers or assistants)

THE PROGRAM IS CURRENTLY INACTIVE; HOWEVER,  
 SIX TRAINED RADIOGRAPHERS ARE ON STAFF  
 LAST USE OF RADIOGRAPHY SOURCE WAS  
OCTOBER 24, 1990 - NOW USING ACCELERATOR  
 to do Radiography.

2. INSPECTION HISTORY

a. Last inspection conducted on 8/6/91

b. Violations or deviations were identified ( ) Y  N

c. Response letter or 591 dated NA

d. Violations from Previous Inspection

<u>Requirement</u>	<u>Violation</u>	<u>Corrective Action Taken (Y/N)</u>	<u>Status</u>
	NA		

e. Any previous violations not corrected ( ) Y ~~( )~~ N NA

Explain.

3. SCOPE OF PROGRAM

- a. License has multiple authorized locations of use ( ) Y (X) N  
b. If so, list location(s) inspected (X) N/A

c. List those individuals contacted during inspection

\* NICK KIETLER, RSO  
\* JOE SHANNAN, Director, Health & Safety  
\* PETE RICHARDSON, Acting Plant Manager  
RON JOHNSON, Radiographer

\*Indicates presence at exit meeting

d. Briefly describe scope, including types of equipment, types of use involving byproduct material, frequency of use, staff size, etc.

2 GAMMA INDUSTRIES MODEL A-11-T WERE IN STORAGE AT TIME OF THIS INSPECTION.

THE LAST USE OF THESE SOURCES WAS ON 10/24/90. EACH SOURCE WAS < 1,000 CURIES OF COBALT-60, SERIAL NOS. 2107 AND 1875. LICENSEE PLANS TO DISPOSE OF THESE SOURCES IN 1993, THEN REQUEST TERMINATION OF THIS LICENSE.

4. OPERATING AND EMERGENCY PROCEDURES

- a. Licensee maintains current procedures [34.32] (X) Y ( ) N  
b. Procedures contain all information specified in [34.32] (X) Y ( ) N  
c. Procedures are approved by NRC [34.11] (X) Y ( ) N

Remarks.

PROCEDURES WERE AVAILABLE

5. TRAINING, RETRAINING, AND INSTRUCTIONS TO WORKERS

- a. Instructions to workers per [10 CFR 19.12]  Y ( ) N
- b. Parts 19, 20, and 34; the license; and Operating and Emergency Procedures furnished to all radiographers and assistants [34.31(a)(2), (b)(1)]  Y ( ) N

Remarks.

- c. Training program required [L/C, 34.31] ( ) Y ( ) N

(1) If so, briefly describe training program:

- (2) Training program implemented ( ) Y ( ) N
- (3) Written tests completed by all radiographers and assistants [34.31(a)(4), (b)(3)] ( ) Y ( ) N
- (4) Oral tests [34.31(b)(3)] ( ) Y ( ) N
- (5) Inspector reviewed test results ( ) Y ( ) N
- (6) All radiographers completed on-the-job training ( ) Y ( ) N
- (7) Retraining program required ( ) Y ( ) N
- (8) Retraining program implemented ( ) Y ( ) N
- (9) Records maintained [34.31(c)] ( ) Y ( ) N

N.A.

Remarks.

*IN active program -*

6. INTERNAL AUDITS OR INSPECTIONS

- a. Audits or inspections of each radiographer and assistant are conducted per [34.11(d)] ( ) Y ( ) N
- b. Equipment check prior to use each day [34.28(a)] ( ) Y ( ) N
- c. Equipment inspection and maintenance performed at 3-month intervals per procedures [34.28(b)] ( ) Y ( ) N

N.A.

d. Records maintained.

( ) Y ( ) N

Remarks.

*Both Radiography Sources in Storage  
waiting to be shipped back to the  
MANUFACTURER*

7. FACILITIES

a. Permanent radiographic installation [34.2]

( ) N/A

(1) High Radiation Area entrances and exits controlled in accordance with [20.203(c)]

( ) Y ( ) N

(2) Entrance controls are of type described in [34.29(a)]

( ) Y ( ) N

If YES, complete (a)-(e) below:  
[34.29(b)]

( ) N/A

(a) Visible and audible signals warn of radiation

( ) Y ( ) N

(b) Visible signal actuates when source is exposed

( ) Y ( ) N

(c) Audible signal actuates if entry is attempted when source is exposed

( ) Y ( ) N

(d) System tested at 3-month intervals

( ) Y ( ) N

(e) Records maintained

( ) Y ( ) N

*N.A.*

Remarks.

*- SOURCES NOT USED -*

*IN STORAGE IN BUILDING 3A-100*

b. Temporary High Radiation Area entry controlled in accordance with [20.203(c)(4) and 34.41]

( ) Y ( ) N (X) N/A

c. Field location

(1) Field work authorized [L/C]

( ) Y ( ) N (X) N/A

(2) Field inspection conducted

( ) Y ( ) N (X) N/A

NOTE: If inspector performs field inspection, a separate radiography field audit report should be completed and attached to these field notes.

d. Storage Area

- (1) Storage facilities as described in license [L/C]  Y ( ) N
- (2) Sources locked in devices [34.22]  Y ( ) N
- (3) Devices secured to prevent tampering or unauthorized removal [34.23]  Y ( ) N

Remarks.

*BOTH CAMERAS WERE STORED IN A LOCKED STORAGE CELL IN BUILDING 3A-100 - BUILDING WAS POSTED AND LOCKED AT THE TIME OF THIS INSPECTION.*

6. MATERIALS AND EQUIPMENT

- a. Describe any special equipment used by licensee: (shields, collimators, etc.)
- b. Radiographic exposure devices and storage containers meet radiation level limits per [34.21] (new rule eff. 01/10/90)  Y ( ) N
- c. During radiographic operations, sources are locked in shielded position each time source is returned to that position [34.22(a)]  Y ( ) N
- d. All sealed sources not fastened to or contained in a radiographic exposure device are tagged per [34.25(e)]  Y ( ) N

Remarks.

e. Leak tests

- (1) Leak test method approved [34.25(c)]  Y ( ) N
- (2) Model of leak test kit UNKNOWN
- (3) Leak tests performed at intervals not to exceed six months [34.25(b)]  Y ( ) N
- (4) Records maintained [34.25(c)]  Y ( ) N

f. Inventory

- (1) Quarterly physical inventories conducted [34.26]  Y ( ) N
- (2) Inventories contain all required information [34.26]  Y ( ) N
- (3) Materials possessed as authorized by license [L/C]  Y ( ) N
- (4) Procurement and use in accordance with license [L/C]  Y ( ) N
- (5) Most recent BPM inventory conducted on JANUARY 1993

Source  
Changer  
Model #

Activity	Isotope	Source S/N	Camera Model and S/N
<1,000 Ci	Co-60	2107	Gamma Industries A-11-T
<1,000 Ci	Co-60	1875	"

Remarks.

g. Utilization logs

- (1) Utilization logs maintained [34.27] ( ) Y ( ) N
- (2) Logs contain all required information [34.27] ( ) Y ( ) N

Remarks.

} N.A.

9. INSTRUMENTATION

- a. Describe the type and number of survey instruments possessed by the licensee:  
*Multiple Survey Instruments are Available*
- b. Instruments are capable of measuring 2 mR/hr through 1 R/hr [34.24]  Y ( ) N
- c. Operable and calibrated survey instruments available and used on each job [34.43(a)]  Y ( ) N
- d. Calibration performed at intervals not to exceed three months [34.24]  Y ( ) N
- e. Records maintained [34.24]  Y ( ) N

Remarks.

*All Survey Instruments were up to date on calibration; however, Radiography was Not conducted during this inspection period.*

10. RADIATION SURVEYS

- a. Area or facility surveys conducted to show compliance with 20.105 [20.201(b)] ( ) Y ( ) N
- b. Records maintained [20.401(b)] ( ) Y ( ) N
- c. Survey after each exposure, including guide tube and entire circumference of device [34.43(b)] ( ) Y ( ) N
- d. Survey of device when placed in storage, including entire circumference of device [34.43(c)] ( ) Y ( ) N
- e. Records maintained of final survey made when devices are stored for day [34.43(d)] ( ) Y ( ) N

*N.A.*

Remarks.

11. PERSONNEL RADIATION PROTECTION - EXTERNAL

- a. Film or TLD supplier LANDAUER Frequency Monthly
- b. Supplier is NVLAP - approved  Y ( ) N
- c. Reports reviewed by RSO Frequency AS RECEIVED
- d. License exposure limit: ( ) 1.25 rem/qtr  3 rem/qtr
- e. NRC inspector reviewed personnel monitoring records for period 1990 to 1993
- f. NRC forms or equivalent
  - (1) NRC-4:  Y  N Complete:  Y ( ) N  N/A

NOTE: NRC-4 must be completed PRIOR to individual receiving more than 1.25 rem per calendar quarter.

- (2) NRC-5:  Y ( ) N Complete:  Y ( ) N ( ) N/A  
[20.401(a)]

- g. List maximum exposures (millirem):  
1991 - 20 to 40 Millirem/Month  
1992 - 20 Millirem/Month

- h. Each individual is assigned a pocket dosimeter, an alarm ratemeter (eff. 1/10/91), and a film badge/TLD [34.33(a)] ( ) Y ( ) N N/A

Remarks.

60-70 WORKERS FILM BADGED, ALL EXPOSURE to Radiography Staff was from their ACCELERATOR

- i. Pocket dosimeters Attachment B to REPORT 3018448/93001

- (1) Type \_\_\_\_\_
- (2) Range \_\_\_\_\_
- (3) Recharged at start of each shift [34.33(a)] ( ) Y ( ) N
- (4) Daily readings recorded [34.33(b)] ( ) Y ( ) N
- (5) Dosimeters checked for response ( $\pm 30\%$ ) at intervals not to exceed one year [34.33(c)] ( ) Y ( ) N

N.A.

j. Alarm ratemeters (eff. 01/10/91)

(1) Type \_\_\_\_\_

(2) Range \_\_\_\_\_

(3) Alarm checked at start of each shift  
[34.33(f)(1)]

( ) Y ( ) N

(4) Alarm preset at 500 mr/hr  
[34.33(f)(2)]

( ) Y ( ) N

(5) Alarm ratemeters calibrated ( $\pm 20\%$ )  
at intervals not to exceed one year  
[34.33(f)(4)]

( ) Y ( ) N

N.A.

Remarks.

SOURCES IN STORAGE

12. NOTIFICATION AND REPORTS

a. Licensee in compliance with [19.13]  
(reports to individuals)

( ) Y ( ) N (X) N/A

b. Licensee in compliance with [20.402]  
(theft or loss)

( ) Y ( ) N (X) None

c. Licensee in compliance with [20.403]  
AND [34.30 - eff. 01/10/91]  
(incidents)

( ) Y ( ) N (X) None

c. Licensee in compliance with [20.405]  
AND [34.30 - eff. 01/10/91]  
(overexposures)

( ) Y ( ) N (X) None

e. Annual reports furnished to NRC per  
[20.407]

( ) Y ( ) N

f. Termination reports furnished to NRC per  
[20.408]

( ) Y ( ) N

Remarks.

Not Reviewed  
During this inspection

13. POSTING AND LABELING

- a. Radiation Areas properly posted [20.203(b)]  Y ( ) N
- b. High Radiation Areas properly posted [20.203(c)(1)]  Y ( ) N
- c. Use or storage areas posted "Caution - Radioactive Materials" [20.203(e)(1)]  Y ( ) N
- d. Containers or devices properly labeled [20.203(f)]  Y ( ) N
- e. NRC-3 "Notice to Workers" is posted [19.11]  Y ( ) N
- f. Parts 19, 20, and 21 license are posted or a notice indicating where documents can be examined is posted [19.11, 21.6]  Y ( ) N

Remarks.

*All AREAS (Storage) properly posted*

14. RECEIPT AND TRANSFER OF RADIOACTIVE MATERIAL

- a. Procedures established and followed for picking up, receiving, and opening packages [20.205(d)] ( ) Y ( ) N — *NA*
- b. Incoming packages wiped per [20.205(b)] ( ) Y ( ) N — *NA*
- c. Incoming packages surveyed per [20.205(c)] ( ) Y ( ) N — *NA*
- d. Shipment of sources since last inspection  N/A
  - (1) Used container authorized by license [L/C] ( ) Y ( ) N
  - (2) Shipping papers and package labeling properly completed [71.5] ( ) Y ( ) N
  - (3) Transfer(s) performed per [30.41] ( ) Y ( ) N
- e. Records of surveys and receipt/transfer maintained per [20.401(b) and 30.51]  Y ( ) N

*N.A.*

Remarks.

15. TRANSPORTATION (10 CFR 71.5(a) and 49 CFR 171-189)

a. Licensee makes shipments of RAM

( ) Y (X) N

b. Shipments are:

- ( ) delivered to common carriers
- ( ) transported in licensee's own private vehicle
- ( ) both
- (X) no shipments since last inspection

Remarks.

Complete only if shipments made since last inspection:

c. Shipments

- (1) Authorized packages used [173.415,416] ( ) Y ( ) N ( ) N/A
- (2) Package type used \_\_\_\_\_
- (3) For DOT-7A packages, performance test record on file [173.415(a)] ( ) Y ( ) N ( ) N/A
- (4) For DOT-55 packages, use is approved by NRC [173.416(a)] ( ) Y ( ) N ( ) N/A
- (5) Other Type B packages used are approved [173.416(a)] ( ) Y ( ) N ( ) N/A
- (6) Licensee has COCs on file with NRC [71.12(c)(1)] ( ) Y ( ) N ( ) N/A
- (7) Licensee has a QA program approved by NRC [71.12(b)] ( ) Y ( ) N ( ) N/A
- (8) For special form sources, performance test record on file [173.476(a)] ( ) Y ( ) N ( ) N/A
- (9) Packages properly labeled [172.403, 173.441] ( ) Y ( ) N ( ) N/A
- (10) Packages properly marked [173.200] ( ) Y ( ) N ( ) N/A
- (11) Proper shipping papers prepared and used [172.200-204] ( ) Y ( ) N ( ) N/A
- (12) Shipping papers readily accessible during transport [177.817(e)] ( ) Y ( ) N ( ) N/A
- (13) Vehicles placarded as necessary [172.500, 504] ( ) Y ( ) N ( ) N/A
- (14) Cargo blocked and braced [177.842(d)] ( ) Y ( ) N ( ) N/A

(15) Any incidents reported to DOT  
[171.15-16]  
Remarks.

( ) Y ( ) N (X) None

16. RECORDKEEPING FOR DECOMMISSIONING ( ) N/A

- a. Records of information important to the safe and effective decommissioning of the facility maintained in an independent and identifiable location until license termination [30.35(g)] (X) Y ( ) N
- b. Records include all information outlined in [30.35(g)] (X) Y ( ) N

Remarks.

17. BULLETINS AND INFORMATION NOTICES

- a. Bulletins, Information Notices, etc., received by the licensee (X) Y ( ) N
- b. Licensee took appropriate action in response to Bulletins, INs, etc. (X) Y ( ) N

Remarks.

18. INDEPENDENT MEASUREMENTS

- a. Survey instrument used VICLAREN 190
- b. NRC Serial No. 699
- c. Last date of calibration 1/93
- d. Inspector's measurements were compared to licensee's  Y  N
- e. Describe the type and results of measurements:

*Sunny & AREA WAS < 2 MR/HOUR*

19. CONTINUATION OF REPORT ITEMS - USE BACK OF PAGE IF NECESSARY

20. LIST OF VIOLATIONS

*None*

21. PERFORMANCE EVALUATION FACTORS

Licensee (name & location) MASON & HANZEL-SILAR  
Middle town, IA

Inspector D.G. Wiedeman  
Inspection Date 3/2/93

- a. Lack of senior management involvement with the radiation safety program and/or Radiation Safety Officer (RSO) oversight ( ) Y  N
- b. RSO too busy with other assignments ( ) Y  N
- c. Insufficient staffing ( ) Y  N
- d. Radiation Safety Committee fails to meet or functions inadequately ( ) Y ( ) N  N/A
- e. Inadequate consulting services or inadequate audits ( ) Y ( ) N  N/A

Remarks (consider above assessment and/or other pertinent PEFs):

*NONE*

Regional follow-up on above PEFs citations:

*NONE*

## QUESTIONNAIRE FOR CLIENTS

Client Name: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Telephone No. \_\_\_\_\_

1. When was the last time radiography operations were performed at facility by the licensee?  
*10/24/90 - NOW USING H.92 ENERGY ACCELERATOR*
2. What is the frequency that operations are conducted by the licensee?  
*NONE*
3. What licensee crew members perform the radiographic operations?  
*P ALL WORK PRE-1990*
4. Has the individual observed radiographic operations being performed by the licensee?  
*UNKNOWN*
  - a. If the individual has seen radiographic operations being performed, inquire as to whether or not safety equipment was utilized (i.e., survey instruments, dosimeters, etc.), and whether or not radiation signs are posted, etc.  
*NOT REVIEWED*
  - b. Have any problems ever been noted while observing the licensee (i.e., source disconnect, equipment malfunction, leaving equipment unattended, etc.)?  
*NONE REPORTED*
  - c. What is the overall impression of the licensee's attitude toward safety?  
*UNKNOWN*