

ATTACHMENT D  
RADIOGRAPHY INSPECTION FIELD NOTES  
REGION 3

Inspection Report No. 90001

License No. 14-24479-01

Licensee (name and address)

Docket No. 030-18662

Mason & Hanger-Silas Mason Co., Inc.  
Iowa Army Ammunition Plant  
Middletown, IA 52638

Licensee Contact. Joe Shannan

Telephone No. (319) 753-7308

Last Amendment No. 02

Date of Amendment. 3/12/90

Priority: 1 Program Code ( 03310 - Fixed ( ) 03320 - Temporary

Date of Inspection 5/23/90

Type of Inspection ( Announced ( ) Initial  
( ) Unannounced ( ) Special ( Reinspection  
Next Inspection Date at 1191 ( ) Normal ( Extended ( ) Reduced

Summary of Findings and Action:

- ( No violations, Clear 591 issued ( ) Action on Previous N/C  
( ) Violations, 591 or Regional letter issued ( ) Regional Action  
( ) HQ Action

Personnel Contacted

- \* Joe Shannan - RSO
- \* Nicholas Krieler - Alternate RSO
- Carl Beziard - Radiographer
- \* Those present at exit interview.

Inspector

James L. Lynch  
(Signature)

5/31/90

(Date Signed)

Approved

[Signature]  
(Signature)

6/1/90

(Date Signed)

B-7

ORGANIZATION

a. Management Structure

b. Administrative structure meets license requirements.  
() Yes ( ) No [L/C] [34.11(e)]

Remarks.

c. Individuals identified in the license as being responsible for the programs still hold those positions. () Yes ( ) No

Remarks.

d. Radiography Personnel

<u>Radiographers</u>	<u>Radiographer's Assistants</u>
Carl Bezard	NONE
Dennis Brobston	Roy Smith
John Carlson	Ron Johnson
Phil Clem	Pauline Osborne

(continue d., if needed, on paragraph 22.)

2. INSPECTION HISTORY

a. Item(s) of noncompliance or deviations noted during last inspection conducted on 3/15/88 ( ) Yes () No

Corrected by letter dated \_\_\_\_\_

b. Requirement                      Severity                      Corrected                      Status


(continue b., if needed, on paragraph 22.)

c. If any item(s) of noncompliance or deviations noted during last inspection were not corrected, explain.

(continue c., if needed, on paragraph 22.)

This is a fixed radiography program which is actually an irradiation facility. Radiographs are taken of munitions in a continuous fashion. Shells are placed in holders in conveyor ring which rotates into the irradiation (radiograph) chamber. 2 such facilities are used, each using modified Tech Ops 180 cameras

3. SCOPE OF PROGRAM with sources of Co-60 currently at 613 and 473 Ci.

4. TRAINING, RETRAINING AND SUPERVISION OF RADIOGRAPHY PERSONNEL

a. Radiographers and Assistants named in license. ( ) Yes (  ) No

b. Radiographer's Assistant under direct supervision of a Radiographer. (  ) Yes ( ) No [34.44]

Remarks. None at present

c. Approved training program. (  ) Yes ( ) No

d. Deficiencies noted. ( ) Yes (  ) No [L/C]

Remarks. In house training + Amersham course

e. Training provided by. RSO + Amersham

f. Written tests. (  ) Yes ( ) No

g. Oral tests. (  ) Yes ( ) No

h. Radiographers completed field examination. [34.31a)(4) and (b)(3)] (  ) Yes ( ) No

i. Record of test results. (  ) Yes ( ) No [34.31(c)]  
Remarks.

j. Test results reviewed by NRC inspector. (  ) Yes ( ) No

k. Radiographer completed on-the-job training. [34.11(b)(3)]  
(  ) Yes ( ) No

Remarks. 3 months minimum

l. Retraining program required by License Condition. (  ) Yes ( ) No

m. Periodic training. (  ) Yes ( ) No Annual

n. Retraining program implemented: (  ) Yes ( ) No [L/C]

Remarks.

- o. Records of retraining reviewed. ( Yes ( ) No Test included
- p. Instruction to workers in accordance with 19.12.  
( Yes ( ) No

Remarks.

5. INTERNAL AUDITS OR INSPECTIONS

- a. Audits or inspections conducted at 3-month intervals in accordance with 34.11(d). ( Yes ( ) No [L/C]

Remarks. Only 2 individuals up to date, others must be audited during next use. Understood by licensee.

- b. Records maintained. ( Yes ( ) No [L/C]

Remarks.

6. INSPECTION AND MAINTENANCE OF DEVICES, CONTAINERS, AND CHANGERS

- a. Included in Operating and Emergency Procedures.  
( Yes ( ) No [34.32(j)]

Remarks.

- b. Equipment check prior to use each day. ( Yes ( ) No [34.28(a)]

Remarks.

- c. Equipment check at 3-month intervals. ( Yes ( ) No [34.28(b)]

Remarks.

- d. Record of results maintained. ( Yes ( ) No [34.28(b)]

Remarks.

7. NRC REGULATIONS, LICENSE AND OPERATING AND EMERGENCY PROCEDURES

- a. Parts 19, 20, and 34; the license; and Operating and Emergency Procedures furnished to all radiographers and radiographer's assistants. ( Yes ( ) No [34.31(a)(2)]

Remarks.

- b. ~~Operating~~ and Emergency Procedures approved by NRC. [34.11(c)]  
 Yes ( ) No

8. UTILIZATION LOG

- a. Utilization log maintained.  Yes ( ) No [34.27]  
 Remarks.
- b. Utilization log contains all required information.  Yes  
 ( ) No [34.27(a),(b),(c)]  
 Remarks.

9. QUARTERLY INVENTORIES

- a. Quarterly physical inventories conducted.  Yes ( ) No  
 [34.26]  
 Remarks.
- b. Quarterly inventories contain all information.  Yes ( ) No  
 [34.26]  
 Remarks.
- c. Materials possessed authorized by the license.  Yes ( ) No  
 Remarks.

d. Byproduct Material inventory on. 4/90

*Amersham replaces  
 source and  
 camera*

Source Changer Model #	Quantity	Isotope	Source S/N	Camera Model	S/N
N/A	613 Ci	Co-60	2107	<del>T/0180</del>	
	473 Ci	Co-60	1875	T/0180	
	125 mCi	Cs-137		T/0773	Calibrator

- e. Procurement and use of byproduct material in accordance with license requirements.  Yes ( ) No [L/C]  
 Remarks.

10. MATERIALS, FACILITIES AND EQUIPMENT

a. Fixed Facility.

1) As described in application dated 10/27/89, Report dated \_\_\_\_\_, or \_\_\_\_\_

All shots in Bldgs 3A 100 and 310

(a). Cell(s) interlocked [20.203(c)(2)(i)] ( Yes ( ) No

(b). Cell(s) controlled in accordance with 20.203(c)(2)(ii) or (iii). [34.29(b)] ( Yes ( ) No

Remarks.

(2) Entrance controlled in accordance with 20.203(c)(2).

( Yes ( ) No [20.203(c)(2)]

Remarks.

Door interlocked w/ source  
Radiation monitor alarm if door is  
opened while rad levels present  
Keys required for start

(3) Exit in accordance with 20.203(c)(3). ( Yes ( ) No

Remarks:

Emerg. exit switch in cells  
(audible + source interlock)

(4) Surveillance or locked to prevent unauthorized entry.

( Yes ( ) No [20.203(c)(4), 34.41]

Remarks.

(5) Visible and audible signals to warn of the presence of radiation: ( Yes ( ) No [34.29(b)]

Audible door closing warning

(a) Alarms operated correctly; i.e., visible due to radiation; audible when entrance attempted during source exposure. [34.29(b)]

Remarks.

(6) Alarm system tested at 3 month intervals. ( Yes ( ) No [34.29(c)]

Remarks.

(7) Record of alarm system test. ( Yes ( ) No [34.29(c)]

Remarks.

(8) Radiographic exposure devices and storage containers meet radiation level limits of 34.21. ( Yes ( ) No

Remarks.

b. Storage Area.

(1) Sources locked in device. () Yes ( ) No [34.22(a)]

Remarks.

(2) Storage devices meet radiation levels () Yes ( ) No [34.21]

Remarks.

(3) Devices secured to prevent unauthorized removal from an unrestricted area. () Yes ( ) No [20.207]

Remarks.

c. Field Location

NO RADIOGRAPHY OUTSIDE CELLS

(1) Field work authorized. ( ) Yes ( ) No [L/C]

Remarks.

(2) Field inspection conducted. ( ) Yes ( ) No

(3) Proper postings (signs, ropes, etc., available as required by regulations or license. ( ) Yes ( ) No

Remarks.

d. Survey Meters

(1) Calibrated and operable meters available and used: () Yes ( ) No [34.43(c)]

Remarks.

(2) Type and number available. Victoreen 592, 440, 400

(3) 2 mR/hr through 1 R/hr can be measured. () Yes ( ) No [34.24]

Remarks.

(4) Calibrated by. Kieler

(5) Calibration method authorized. ( Yes ( ) No [L/C]

Remarks.

(6) Calibrated at 3-month intervals. ( Yes ( ) No [34.24]

Remarks.

e. Special Equipment (shields, collimators, etc.)

Remarks. on radiography assembly

11. PERSONNEL MONITORING

a. Film or TLD badge supplier. Landauer Frequency Monthly [L/C]

b. Reports reviewed by: RSO Frequency: Monthly

c. NRC inspector reviewed personnel monitoring records for period 1/89 to 4/90

d. License exposure limit. 1.25 R/Quarter  3 R/Quarter

e. NRC forms or equivalent.

(1) NRC-4. ( ) Yes ( No Complete ( ) Yes ( ) No  
Must be completed before individuals receive more than  
1.25 rems per calendar quarter.

(2) NRC-5. ( Yes ( ) No Complete. ( Yes ( ) No  
[20.401(a)]

f. Maximum quarterly exposure. 50 mrem Average. 20 mrem

g. Each individual assigned film badge and dosimeter. ( Yes  
( ) No [34.33(a)]

Remarks.

h. Dosimeter type. Victoreen 541  
Landaverk L-50 Range. 0-200 mrem

i. Annual check of dosimeter for correct response. ( Yes ( ) No  
[34.33(c)]

Remarks.



j. Dosimeter recharged at start of each shift. (  ) Yes ( ) No [34.33(a)]

Remarks.

k. Dosimeter dose recorded daily. (  ) Yes ( ) No [34.33(b)]

Remarks.

12. LEAK TESTS

a. Leak test method approved. (  ) Yes ( ) No [34.25(c)]

Remarks.

b. Model of leak test kit. In house

c. Test at 6-month intervals. (  ) Yes ( ) No [34.25(b)]

Remarks. Beird 135 prop. counter

d. Record of leak test results maintained. (  ) Yes ( ) No [34.25(c)]

e. Records reviewed by NRC inspector for period 1/89 to 4/90.

Remarks.

13. SURVEYS

a. Area of facility survey conducted to show compliance with 20.105. (  ) Yes ( ) No [20.201(b)]

Remarks.

b. Area of facility survey recorded. (  ) Yes ( ) No [20.401(b)]

Remarks.

c. NRC inspector reviewed records for period 1/89 to 4/90

d. Maximum radiation levels in unrestricted areas.

Remarks. < 0.2 mR/hr

- e. Survey after each exposure: ( ) Yes ( ) No [34.43(b)]  
 Remarks. Continuous exposure, survey after series
- f. Survey includes guide tube. ( ) Yes ( ) No [34.43(b)]  
 Remarks. N/A
- g. Record of final survey before securing device at place-of-storage. (✓) Yes ( ) No  
 Remarks.

14. POSTING AND LABELING

- a. High Radiation Area posted as required. (✓) Yes ( ) No [20.203(c)(1)]  
 Remarks.
- b. Radiation Area posted as required. (✓) Yes ( ) No [20.203(b)]  
 Remarks.
- c. Use of storage area posted "Caution - Radioactive Material". (✓) Yes ( ) No [20.203(e)(1)]  
 Remarks.
- d. Containers or devices properly labeled. (✓) Yes ( ) No [20.203(f)]  
 Remarks.
- e. Posting of "Notice to Workers". (✓) Yes ( ) No [19.11(a) or (b)]  
 Remarks.
- f. Posting of "Notice to Employees". (✓) Yes ( ) No [19.11(c)]  
 Remarks.

15. CONFIRMATORY MEASUREMENTS

- a. Confirmatory measurements made by inspector. ( Yes ( ) No
- b. Survey instrument. Xetex 305B NRC Serial No. 8372  
Last date of calibration. 2/14/90
- c. Describe type and results of measurements and compare these with licensee's measurements. Survey around cell  $\leq 0.2$  mR/hr  
Surface of camera 35 mR/hr surface 3 mR/hr accessible area (restricted)

16. RECEIVING AND SHIPPING OF RADIOACTIVE MATERIALS

- a. Procedures for picking up, receiving, and opening of packages.  
( Yes ( ) No [20.205]

Remarks. Vendor installs new sources

- b. Written procedures. ( Yes ( ) No

- c. Shipping incidents since last inspection. ( ) Yes ( No

- d. Survey of packages when received. ( Yes ( ) No [20.205(c)(1)]

Remarks.

- e. Record of survey of packages. ( Yes ( ) No [20.401(b)]

Remarks.

- f. Shipment of sources since last inspection. ( ) Yes ( No

- (1) Only container authorized by licensee has been used.  
( Yes ( ) No

Remarks.

- (2) Shipping papers and package labeling properly completed.  
( Yes ( ) No [71.5]

Remarks.

- (3) Licensed material transferred in accordance with 30.41.  
( Yes ( ) No

Remarks.

(4) Record of receipt and transfer. (  ) Yes ( ) No [30.51]

Remarks.

17. TRANSPORTATION 10 CFR 71.5a and 49 CFR 171-178

	Yes ( )	N/A ( <input checked="" type="checkbox"/> )	Vig. ( )
a. Licensee makes shipments of RAM? Such shipments are:			
( ) delivered to Common Carriers?			
( ) transported in licensee's own vehicle as private carrier?			
( ) both?			
If a. above is "Yes," complete following items:			
b. Are Authorized Packages used? [173.415-416]	( )	( )	( )
Types used:			
DOT-7A, Type A [173.415]			
Performance test records on file? DOT-55 [173.416(a)]	( )	( )	( )
Licensee aware of 6/30/85 Cutoff on use?	( )	( )	( )
( ) Certified [173.416(b)]			
NRC COC's on file? [71.12(c)(1)]	( )	( )	( )
Registered with NRC as user? [71.12(c)(3)]	( )	( )	( )
Documented NRC-Approved Q/A program? [71.12(b)]	( )	( )	( )
NRC Q/A Approval No. _____			
( ) Other _____			
c. Special Form Material Performance test records available for each source design [173.476(a)]	( )	( )	( )
d. Packages labeled as required? [172.403(a)(b)(c)(e)(f)]	( )	( )	( )
( ) Excepted ( ) WI ( ) YII ( ) YIII	( )	( )	( )
Surveys performed to select correct label category and compliance with radiation limits? (175.475(i)).	( )	( )	( )
e. Packages marked with required, i.e., proper shipping name, Spec. No., COC No., etc. [172.200 thru 172.310)]	( )	( <input checked="" type="checkbox"/> )	( )

- f. Shipping papers prepared for each shipment? [172.200] ( ) ( ) ( )  
Such papers contain required information [172.203(d)] ( ) ( ) ( )
- g. For licensee Private Carrier Shipments:  
Vehicles placarded as required? [172.500, 172.504] ( ) ( ) ( )  
Cargo blocked, braced, tied down in vehicle? [177.842(d)] ( ) ( ) ( )  
Any incidents reported to DOT? [171.15-16] ( ) ( ) ( )
- h. Licensee carries shipping papers that are readily accessible when transporting RAM. ( ) ( ) ( )

18. NOTIFICATION AND REPORTS

- a. Licensee in compliance with 19.13 (reports to individuals).  
() Yes ( ) No [19.13]

Remarks.

- b. Licensee in compliance with 20.405 (overexposures).  
() Yes ( ) No [20.405(a)]

Remarks.

- c. Licensee in compliance with 20.403 (incidents).  
() Yes ( ) No

Remarks.

- d. Licensee in compliance with 20.402 (theft or loss).  
() Yes ( ) No

Remarks.

- e. Annual Report to Commission. () Yes ( ) No [20.407]

Remarks. 5/90

- f. Termination Report to Commission. () Yes ( ) No [20.408]

Remarks. Last in 8/88

19. LICENSE CONDITIONS

- a. All License Conditions reviewed during inspection. () Yes  
( ) No
- b. Activities were conducted in accordance with License Conditions except as noted elsewhere in this report. () Yes ( ) No

Remarks.

20. BULLETINS AND INFORMATION NOTICES

- a. Bulletins and Information Notices issued during current year.  
() Yes ( ) No 89-25 Ownership changes
- b. Bulletins and Information Notices received by licensee. () Yes  
( ) No
- c. Licensee took appropriate action in response to Bulletins and Information Notices. () Yes ( ) No

Remarks.

21. PERFORMANCE EVALUATION FACTORS (PEFs)

The PEFs are not violations, but could be precursors to violations. Therefore, discuss them at the exit interview with senior licensee management.

- a. Lack of senior management involvement with the radiation safety program and/or Radiation Safety Officer (RSO) oversight  
( ) Yes () No

Remarks:

- b. Radiation Safety Officer too busy with other assignments  
( ) Yes (  ) No

Remarks:

- c. Insufficient staffing  
( ) Yes (  ) No

Remarks:

- d. Radiation Safety Committee fails to meet or functions inadequately  
( ) Yes (  ) No

Remarks:

- e. Inadequate consulting services or inadequate audits  
( ) Yes (  ) No

Remarks:

22. ITEMS OF NONCOMPLIANCE None

23. CONTINUATION OF PREVIOUS PARAGRAPHS - USE BACK OF PAGE IF NECESSARY