

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 30-16028/85-01
Docket No. 30-16028
License No. 18-19078-01 Priority I Category CI
Licensee: Quality Assurance Laboratories, Inc.
80 Pleasant Avenue
South Portland Maine 04106
Facility Name: Quality Assurance Laboratories, Inc.
Inspection At: South Portland, Maine
Inspection Conducted: October 4 and 7, 1985
Inspector: Thomas K. Thompson 11/4/85
Thomas K. Thompson, Health Physicist date
Approved by: John E. Glenn 11/4/85
John E. Glenn, Chief date
Nuclear Materials Safety Section B

Inspection Summary: Routine, unannounced inspection of the radiation safety program on October 4 and 7, 1985 (Report No. 30-16028/85-01)

Areas Inspected: Radiation safety organization, scope of operations and utilization of materials, facilities and equipment, exposure control - field site, exposure control - unrestricted area, security of materials, exposure control - internal, training, transportation, and independent measurements. In addition, field site inspections were conducted to observe work in progress.

The inspection involved 11 hours onsite by one NRC inspector.

Results: Thirteen violations were identified: failure to maintain a current utilization log, paragraph 4; failure to provide adequate visible and audible signals for a permanent radiography installation, paragraph 5; failure to conspicuously post a high radiation area, paragraph 6; failure to survey the entire circumference or the guide tube of a radiography device after each exposure, paragraph 6; failure to have a calibrated and operable survey instrument at a radiographic field site, paragraph 6; failure to wear a film badge during radiographic operations, paragraph 6; failure to recharge a pocket dosimeter at the beginning of a work shift, paragraph 6; failure to calibrate pocket dosimeters annually, paragraph 6; failure to perform an adequate survey,

paragraph 7; failure to maintain direct surveillance of a radiographic operation, paragraph 8; failure to placard a truck, paragraph 11; failure to properly label a shipping container, paragraph 11 failure to possess shipping papers, paragraph 11.

DETAILS

1. Persons Contacted

*Robert H. Parechanian, President
Robert H. Parechanian, Jr., Radiographer
Arthur S. Gallant, RSO, Radiographer
S. Bellerose, Trainee

*Denotes those present at exit interview.

2. Licensee Action on Previous Inspection Findings

(Open) Inspection 84-01: Failure to have the required warning signals installed in a permanent radiographic facility in compliance with 10 CFR 34.29(b). A warning system was installed; however, due to its dependence on first plugging the system in, it has been determined to be inadequate.

This item has recurred.

(Closed) Inspection 84-01: Failure to have an adequate visual warning signal on a permanent radiographic facility in compliance with 10 CFR 34.29(b). The alarm was observed to have an adequate visual signal when activated.

3. Organization

Arthur Gallant is the Radiation Safety Officer and a radiographer. There are two other radiographers and one trainee.

4. Scope of Operations and Utilization of Materials

The licensee performs field radiography as well as in-cell radiography in a permanent facility at the South Portland location.

The RSO stated that panoramic, uncollimated, in-cell radiography is performed weekly.

The inspector observed that no utilization log had been prepared for field work being performed the day of the inspection in South Portland. The inspector returned with the radiographer from the field site at which time the radiographer was questioned about the utilization log he was required to complete. The radiographer stated that he had forgotten to fill out the log. The radiographer then began completing the log. (See Enclosure 3)

The failure to maintain a current utilization log is an apparent violation of 10 CFR 34.27.

5. Facilities and Equipment

The inspector observed the licensee's permanent radiography facility. The shield wall around the permanent cell was 8' high with an adjacent loft (storage area) at the 8' level. No ladders were present, however, it was apparent that the adjacent area was accessible due to its use for storage. The alarm system had been modified in response to the findings of the last NRC inspection. The present system includes a visual red light which, because of administrative procedures, must first be actuated by plugging the unit into a wall socket adjacent to the access door. Thereafter, the visual system is actuated by radiation, and an audible signal is actuated by opening the cell door when the source is exposed, as required by 10 CFR 34.29(b).

This failure to continuously provide a permanent radiographic installation with a monitor which has the ability to provide 1) a visible signal actuated by radiation and 2) an audible signal actuated when an attempt is made to enter the installation, constitutes an apparent violation of 10 CFR 34.29(b).

6. Exposure Control - Field Site

The inspector observed a licensee's radiographer at a field site perform radiography. The field site was at a Bancroft-Martin Company yard at Wallace Avenue in South Portland. The radiographer stated that he had a 101 curie Ir-192 source. The camera was labeled as a Model 660, Serial No. 1255. The radiographer was radiographing rolled steel pieces in an open area. The inspector made the following observations:

- a. The radiographer failed to rope off or otherwise provide a continuous barrier with conspicuous postings on one side of the restricted area (leaving an opening of approximately 50 feet or more).

The inspector noted that during radiographic operations a non-licensee employee walked toward the open, unroped area. The radiographer returned the source to the shielded position prior to the employee gaining access to the radiation area. The inspector discussed with the radiographer the inadequacy of the barriers and postings as evidenced by the individual who walked toward the radiation area with little hesitation. The radiographer stated that he did not have sufficient rope to place around the entire restricted area.

The failure to conspicuously post a high radiation area is an apparent violation of 10 CFR 20.203(c).

- b. The radiographer did not survey the guide tube or the entire circumference of the radiographic exposure device after each exposure. The inspector observed the radiographer walk to the camera after an exposure and place the survey instrument along the side of the camera, without completing the survey.

The failure to perform a survey of the entire circumference of the radiographic exposure device and the source guide tube is an apparent violation of 10 CFR 34.43(b).

- c. The radiographer's survey instrument, a Ludlum Model 6, Serial No. 20368, indicated the batteries were not adequate when switched to the "battery check" position. The instrument needle also failed to return to zero. The needle would not return below 10 mR/hr on the 10X scale, and below 100 mR/hr on the 100X scale.

The failure to have an operable radiation survey instrument at a radiography field site is an apparent violation of 10 CFR 34.43(a).

- d. The radiographer did not wear a film badge during the exposures. He stated that his film badge was mistakenly picked up by another radiographer that day and he, therefore, did not have a badge to take with him.

The inspector asked the radiographer if he was going to proceed with radiographic operations without a film badge. The radiographer ceased operations and returned to the licensee's office.

The failure to wear a film badge during radiographic operations is an apparent violation of 10 CFR 34.33(a).

- e. The radiographer stated that he did not recharge his pocket dosimeter at the beginning of the shift. One of his self-reading dosimeters read approximately 30 mR and the other self-reading dosimeter indicated about 40 mR. The radiographer stated that these were the readings at the start of the shift. The licensee's President was later questioned by the inspector about this failure to recharge pocket dosimeters. The President indicated he could not understand this, since the radiographer is required to record his pocket dosimeter readings on two separate records. The President submitted the form (Enclosure 4) to the inspector. The inspector noted that the October 4, 1985 "start" entry indicated 0 mR for the radiographer observed that day. The inspector asked the President why this disagreed with the pocket dosimeter readings the radiographer reported to the inspector for the start of the shift. The President indicated he did not know. The radiographer stated that he had not filled out the record shown in Enclosure 4.

The failure to recharge a pocket dosimeter is an apparent violation of 10 CFR 34.33(a).

- f. The RSO stated that he was unaware of when the pocket dosimeters were last calibrated, but that it was more than a year prior to the day of the inspection.

This failure to calibrate pocket dosimeters at least annually is an apparent violation of 10 CFR 34.33(c).

7. Exposure Control - Unrestricted Area

The Radiation Safety Officer stated that panoramic, uncollimated radiography operations were performed weekly. The inspector asked the licensee's President what the radiation levels were outside the facility, on the roof, adjacent utility pole and on top of a nearby truck trailer. The President stated that he was unaware of the radiation levels at these locations. The roof of this facility is unshielded, approximately 13'6" high. There is a utility pole 10' from the radiography cell wall which extends approximately 6' above the roof line (see Enclosure 2). There is also a truck trailer approximately 11' from the cell wall with several piles of ladders nearby.

The failure to perform an adequate survey to demonstrate compliance with 10 CFR 20.105(b) is an apparent violation of 10 CFR 20.201.

8. Security of Materials

The inspector observed that a radiographer did not maintain continuous surveillance over the high radiation area at the Bancroft-Martin field site. The radiographer walked behind a set of crane tracks adjacent to several large I-beams during the process of performing a survey of the area with the source exposed. (See attached Enclosure 1.) He was out of view of the exposed source for several seconds and, therefore, unable to maintain direct visual surveillance of the high radiation area.

The failure to maintain direct surveillance of the radiographic operation to protect against unauthorized entry into a high radiation area is an apparent violation of 10 CFR 34.41.

The inspector observed that radiography cameras were locked in storage when not in use.

9. Exposure Control - Internal

The licensee maintains leak test records which indicated these tests were performed on time for sources held over six months.

No violations were observed.

10. Training

The licensee representative stated that annual refresher training is provided to radiographers. The licensee has one individual in training to become an assistant radiographer.

No violations were observed.

11. Transportation

A licensee radiographer transported 101 curies of Ir-192 on October 4, 1985, in an unplacarded vehicle. The inspector observed, at the Bancroft-Martin field site, that the licensee had labeled a Model 660, Serial No. 1255, radiographic camera as a DOT Yellow II package containing a 24-curie Ir-192 source. No transport index was indicated. The inspector asked the radiographer what strength source he was using. The radiographer stated the camera contained an approximately 101-curie Ir-192 source. The inspector measured the surface of the camera with an Eberline E-120 survey meter, NRC 003559, calibrated February 2, 1985. The inspector measured 55 mR/hr. The inspector then placed the licensee's survey meter, a Ludlum Model 6, Serial No. 20368, calibrated August 16, 1985, on the camera. This instrument also measured 55 mR/hr. The radiographer stated that he had forgotten to change the label on the camera when he received the new source.

The radiographer did not have any shipping papers in his possession or in the truck on the day of the field site inspection.

The following apparent violations of 10 CFR 71.5 were identified:

- a. Failure to placard a truck containing a byproduct materials package requiring DOT Yellow III labeling because surface levels were in excess of 50 mR/hr.
- b. Failure to label a shipping container with the correct activity, with the correct DOT label (Yellow III), and with the appropriate Transport Index.
- c. Failure to possess proper shipping papers.

12. Independent Measurements

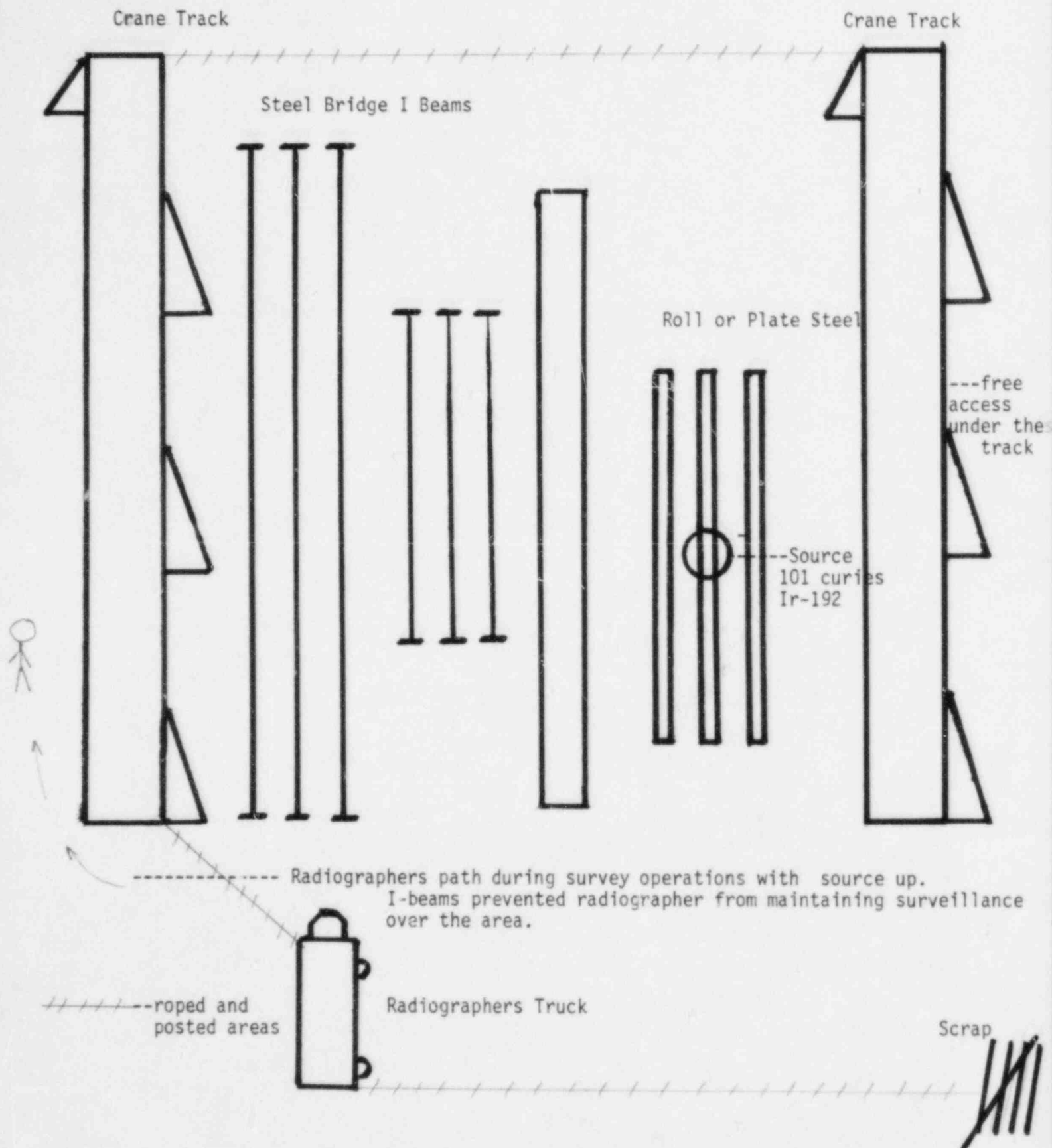
The inspector made measurements of radiation levels around the permanent facility on October 7, 1985, during the use of an uncollimated 101-curie Ir-192 source placed inside a large steel casting, a similar configuration to that utilized the week before during normal cell use. Enclosure 2 indicates the NRC values measured with an Eberline E-120 instrument described in Section 9 of this report. The licensee's radiographer stated that the exposure time for this particular shot was short enough that 2 mR in any one hour would not be exceeded outside the facility walls. The NRC measurements confirmed this premise.

No violations were observed.

13. Exit Interview

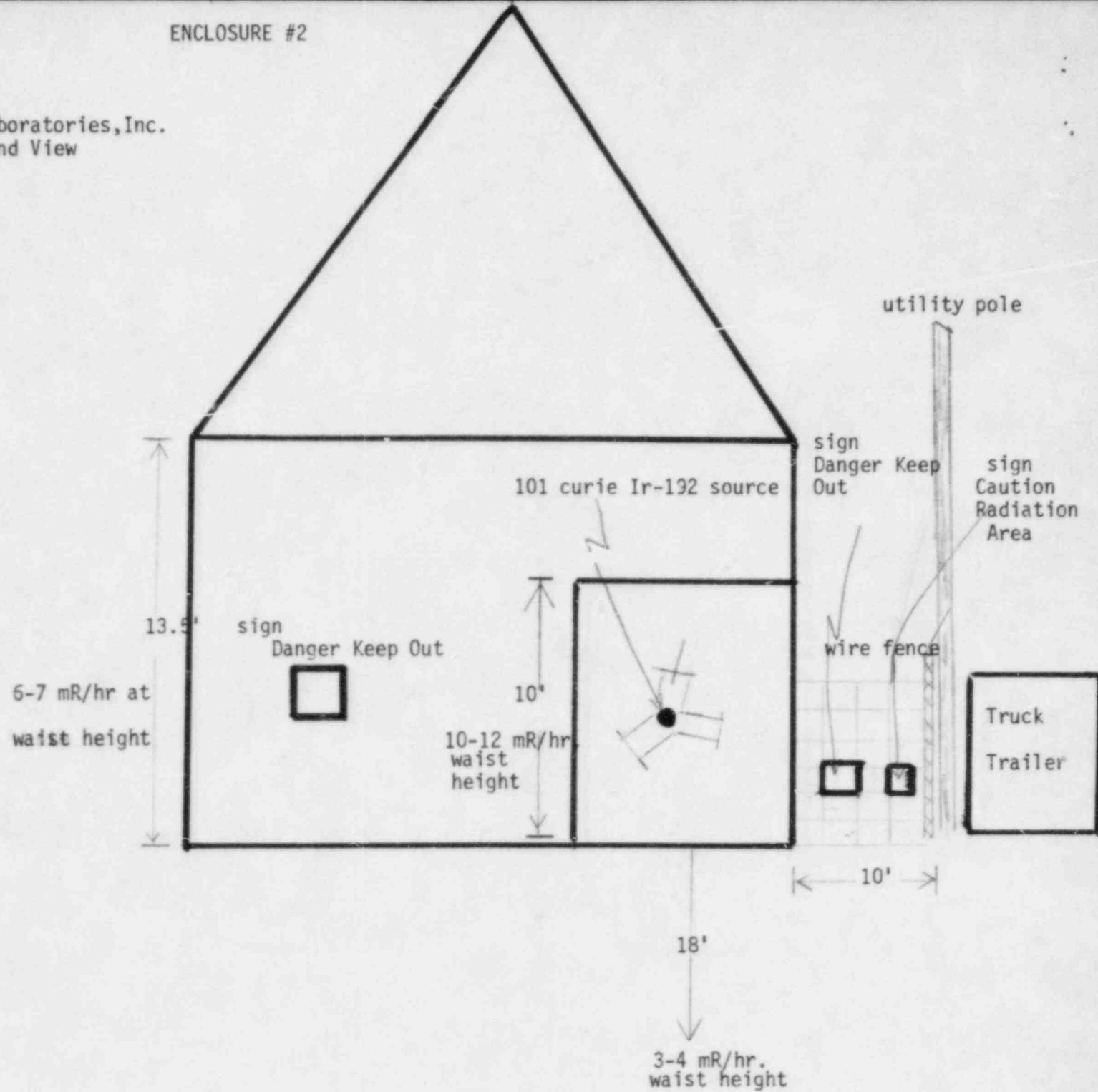
The inspector met with the licensee representative denoted in paragraph 1 at the conclusion of the inspection. The inspector summarized the purpose and scope of the inspection and the inspection findings.

Field Site (Bancroft-Martin Yard) on 10/4/85



ENCLOSURE #2

Quality Assurance Laboratories, Inc.
Facility Exterior, End View



ENCLOSURE #3

Radiographic Report No. _____ KV _____ 14 x 17 _____
 Customers Name _____ MA _____ 7 x 17 _____
 Shop Order No. _____ Time _____ 4½ x 17 _____
 Customer P.O. No. _____ FF Distance _____ 4½ x 10 _____
 Part No. _____ Material _____ 5 x 7 _____
 Part Name _____ Thickness _____ Other _____
 Quantity X-rayed _____ Penetrameter _____ Film Type _____
 Specification _____ No. of Views _____ No. of Film _____

Leave Lab _____ Arr. Job _____ Start Job _____ Finish Job _____ Arr. Lab _____
 Mileage Start _____ Mileage Finish _____

Date _____ Source Out AM PM _____ M/R Housed _____
 Source Returned AM PM _____ M/R Housed _____

Location Source Used _____

Source Used _____ CO 60 S/N _____ IR 192 S/N _____

Radiographer _____ Dosimeter Start _____ Finish _____

Radiographer Assistant _____ Dosimeter Start _____ Finish _____

Number of Signs Posted _____ Perimeter Source Exposed M/R _____

Exposures:

Time _____ Time _____ Time _____ Time _____ Time _____
 Number _____ Number _____ Number _____ Number _____ Number _____

Schematic or Explanation of Area and Posting Requirements:

Equipment Check:

Source Switch _____ Lights (if Applicable) _____
 Source Guide Tube _____ Exterior Signs _____
 Source Cable _____ (Radiation Warning) _____
 Drive Assembly _____ Housing Appearance _____
 (Physical Damage) _____

✓ INDICATES NORMAL OPERATION — CONDITION

X INDICATES NEEDS ATTENTION

WEEK ENDING

10/5/85

DOSIMETER
READING

START FINI

	8:30 ^{4m}		8:30 ^{PM}	SUNDAY	9/29/85	0	0
SKIP	8:30 AM	(12 hrs.)	8:30 PM			0	0
ART	8:00	- 1/2 hr	4:30	MONDAY	9/30/85	0	0
GARY	VAC						
ROB	8:10	1 hr	4:45			0	0
SKIP	8:00 AM	(1/2 hr Break)	4:30 PM			0	0
ART	7:30		4:30	TUESDAY	10/1/85	0	0
GARY	VAC						
ROB	8:15		4:30			0	0
SKIP	8:00 AM		4:30 PM			0	0
ART	8:00		4:30	WEDNESDAY	10/2/85	0	0
GARY	VAC						
ROB	8:15		4:15			0	0
SKIP	8:00 AM		4:05 PM			0	0
ART	8:00		4:30	THURSDAY	10/3/85	0	0
GARY	VAC						
ROB	8:05		4:05			0	0
SKIP	8:00 AM		6:00 PM			0	0
ART				FRIDAY	10/4/85	0	
GARY	VAC						
ROB						0	
SKIP						0	
				SATURDAY	10/5/85		