OCT 13 1989

In Reply Refer To:
License: 35-11114-01
Docket: 30-05933

Capital X-Ray Services, Inc.
ATTN: George Johnson
Radiation Safety Officer
2133 South 49th West Avenue
Tulsa, Oklahoma 74107

Gentlemen:

Thank you for your letter of September 13, 1989, in response to the safety inspection conducted on August 30, 1989, and to the inspector's findings which were discussed with you at the conclusion of the inspection.

We appreciate your candid correspondence and are pleased to note that you have performed additional radiographer audits relative to the findings of this inspection and have initiated prompt corrective actions. We will review the implementation of your corrective actions during a future inspection to determine that full compliance has been achieved and will be maintained.

Sincerely,
Original Signed By:
A. B. BEACH

A. Bill Beach, Director
Division of Radiation Safety
and Safeguards

cc:
Oklahoma Radiation Control Program Director

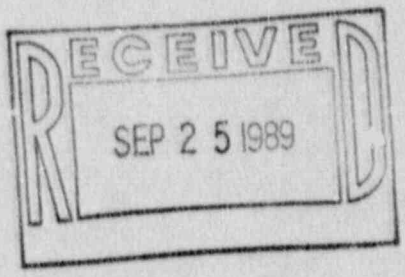
bcc w/copy of licensee letter:
DMB - Original (IE-07)
RDMartin
ABBeach
LAYandell
LShea, RM/ALF (AR-2015)
CLCain
RJEverett
LLKasner
NMSB
MIS System
RIV Files (2)
RSTS Operator

RIV:NMIS	C:NMIS	D:DRSS
LLKasner:ch	CLCain	ABBeach
10/12/89	10/12/89	10/13/89

IE-07
1/1

Capital X-Ray Services, Inc.

NRC License No. 35-11114-01
September 13, 1989



Linda L. Kasner; Health Physicist
US Nuclear Regulatory Commission - Region IV
Nuclear Material Inspection Section
811 Ryan Plaza Drive - Suite 1000
Arlington, Texas 76011

Ms. Kasner:

This letter and the attached documents are respective to your observations during the 8-31-89 inspection of Capital X-Ray Services, Inc's By-Product Material License Program Records and the surveillance inspections at two (2) temporary job site locations.

Friday afternoon, 9/1/89 I visited two (2) temporary job site locations where two (2) Radiographers other than the two (2) you observed, were working. I primarily observed the performance of the Physical Radiation Surveys of the Exposure Devices and **the Source Guide Tubes** following each exposure.

Both Radiographers were surveying both the exposure device and the source guide tube. In my opinion however, the surveys of the guide tube were somewhat inadequate. Both Radiographers did survey the threaded guide tube connection at the exposure device, but their surveys of the full length of the guide tube were somewhat perfunctory.

Capital X-Ray Services, Inc. primarily employs Canadian Admiral RD 5016C Survey Instruments which exhibit very rapid or "fast" response times respective to the response times of instruments such as Victoreen or Smith manufacturer. The Radiographers were primarily depending upon their survey instrument in-hand approach to the exposure device/guide tube location and their survey of the exposure device at the guide tube connection to determine if the sealed source was in the fully shielded position.

During Training Programs, I do demonstrate the surveying of the full length of the guide tube and particularly the guide tube/exposure device connection due to the "hang-up" potential at the connection. I have allowed the survey of the guide tube at this location to be a sufficient guide tube survey.

For corrective actions, I developed and posted for review, the 9-5-89 Notice to Radiographers (as addended to this letter). Each Radiographer has also attended demonstrations performed by myself as to the proper methods of surveying the exposure device and **the guide tube** following each exposure.

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8911003240 7pp.

During job site surveillance audits of Radiographers, I, Wayne Conway and/or W. F. Conway will stringently observe Radiographers performance of these surveys.

If you have any questions concerning this letter or the addended documents, please contact.

Sincerely,

George W. Johnson
Radiation Safety Officer

GWJ:nr
Attachments

P.S. In today's mail, I received your signed NRC Form 591-Safety Inspection Form, whereby the notice of violation concerning physical radiation surveys of the source guide tube was registered.

The inspection form was posted for review this date.

Capital X-Ray
Services, Inc.

September 5, 1989

NOTICE TO RADIOGRAPHER; 9/5/89

Read this notice thoroughly and when completed, affix your dated signature at the proper location on the signature sheet. If you have any personal comments concerning the text of this notice, please discuss with the RSO.

This is to notify you that an inspection of this Firm's Radiation Safety Programs and Practices was conducted by the USNRC August 31, 1989.

Linda L. Kasner, the USNRC Inspector, audited Capital X-Ray Services, Inc's By-Product Material License Program Records and performed on-site surveillance inspections at two (2) temporary job site locations.

At one of the two job site locations, certain physical radiation surveys were not performed in strict accordance with (a) 10 CFR Part 34; Para. 34.43 (b) Capital X-Ray Services' O&E Procedures; Section 2.7 (a10) and (c) your previous Radiation Safety Training.

The Radiographer of Record did not perform adequate radiation surveys of the exposure device source guide tube following each exposure.

The performed radiation surveys of the circumference of the floor level positioned exposure device, following each exposure, were adequate. The flexible 7' 0", mini-collimator equipped guide tube which was positioned from floor level to waist height and "draped" across the piping being radiographed, **was not adequately surveyed.**

When questioned about the adequacy of this required radiation survey, the Radiographer's basic comments were, "My radiation surveys at the front of the exposure device (guide tube connection location) would tell me if the sealed source is fully shielded. If the source is out in the guide tube, the survey instrument would register a high reading as I approach the exposure device following each exposure."

Assumptions of this type instead of adequate radiation surveys of the guide tube following each exposure can lead to radiation over exposures!

Seldom are source guide tubes positioned where the Radiographer and the radiation survey instrument ionization chamber can "see" the full length of the guide tube. Guide tubes are frequently positioned:

1. Internally within a pressure vessel or pipe; full guide tube length or partial guide tube length obscured from view.

2. Beyond a shielding structure such as a piping heater; full guide tube length or partial guide tube length obscured from view.

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"First exposure, connector non-connects"; "connector disconnects"; "connector breakage"; "source assembly hang-up"; "drive cable breakage"; or "source capsule weld ruptures" can and have occurred. This results in the source capsule assembly or individual source wafers being randomly positioned within the guide tube, following retraction of the drive cable. This random positioning of the sealed source or wafers may occur at the source guide tube stop end, within an attached collimator or anywhere within the length of the guide tube. "Hang-ups" normally occur at the source guide tube/exposure device connector where the slight misalignment of the exit fitting and S tube are mated.

Quickly measured radiation levels obtained adjacent to exposure devices can definitely be erroneous if a sealed source assembly or a low curie strength source wafer(s) remains positioned in the guide tube or partially retracted into the exposure device, following a mechanically normal retraction of the drive cable.

Mechanical failures of exposure device components or sealed source assembly components have been cited by the USNRC as occuring in approximately 40% of all Radiography radiation over-exposure incidents.

Adequate physical radiation surveys of the source guide tube (and the full circumference of the exposure device) must and shall be performed following each exposure to determine if the sealed source has been retracted to the fully shielded position within the exposure device:

1. *Source guide tube positioned "in the open": Physically survey the entire circumference of the exposure device* ***and the full length of the guide tube, beginning the survey of the guide tube at the exposure device connector end.***

2. *Source guide tube positioned internally within a pressure vessel or pipe: Physically survey the entire circumference of the exposure device* ***and***

   a. ***the full length of the guide tube, beginning the survey at the exposure device connector end*** *- when the survey instrument can be physically positioned in close proximity to the entire length of the guide tube.*

   b. ***as much of the full length of the guide tube as physically possible, beginning the survey of the guide tube at the exposure device connector end and progressing towards the stop end*** *- when the survey instrument cannot be physcally positioned in close proximity to the entire length of the guide tube.*

3. *Source guide tube positioned beyond a shielding structure: Physically survey the entire circumference of the exposure device* ***and the full length of the guide tube, beginning the survey of the guide tube at the exposure device connector end.***

Demonstrations of the proper procedures for the Physical Radiation Surveys of the source guide tube (and the exposure device) following each exposure will be conducted by the RSO:

1. *8:00 A.M. - 4:00 P.M. work shift and 4:00 P.M. - 12:00 Midnight work shift: September 7, 1989 - 4:00 P.M.*

2. *11:30 P.M. - 7:30 A.M. work shift: September 8, 1989 - 7:30 A.M.*

Following the demonstrations of the Physical Radiation Surveys, affix your dated signature at the proper location on the signature page. If you have personal comments concerning the demonstrations or your ability as a Radiographer to perform the proper Radiation Surveys, please notify the RSO.

In addition to the preceding text, the following information is submitted to you concerning additional Radiation Safety Practices which I as RSO observed during the on-site surveillance inspections at the two temporary job site locations of August 31, 1989 and two additional on-site surveillance inspections which I conducted September 1, 1989.

1. **Restricted Area barricading (Yellow and Magenta Ribboning) and Caution Radiation Area placards were being employed. Due to the large physical sizes and structures cluttering of the Restricted Areas at some job site locations, an insufficient number of Caution - Radiation Area placards were, in my opinion, employed.**

   As you are aware, a large stock of Caution placards are available for your use. It is your responsibility as a Radiographer to personally assure, prior to exiting this facility daily for a job site location(s) that your transportation vehicle is stocked with sufficient Caution placards. As you are aware, various Radiographers employ various transportation vehicles and you can not assume that the number of Caution placards which were stored in the vehicle during your previous use, remain.

2. **Caution - High Radiation Area placards were being employed. On some job sites however, the placards were only posted in very close proximity to the Sealed Source Exposure Device/Radiographic Location. Additional Caution High Radiation Area placards shall be posted away from the Sealed Source Exposure Device/Radiographic Location to assure that any Individual possibly approaching the High Radiation Area from a structures cluttered location, is visually notified of the High Radiation Area.**

3. **Constant visual surveillance of the entrances to High Radiation Areas was being performed. Continue to assure that your physical position (shielded if at all possible) during each exposure, even very short exposures of less than one minute duration, is such that you can observe the entrances to the High Radiation Area.**

4. **Restricted Area barricading ribboning was being employed.**

5. **Radiation Survey Instruments were being employed for surveying and monitoring purposes.**

6. **Physical Radiation Surveys of the entire circumference of the Exposure Device following each exposure were performed, however some surveys of the source guide tube, as discussed in the previous text, were inadequate.**

7. **Securing of the Sealed Source Assembly with the cable lock following each exposure was properly performed.**

8. **Dosimeters were being "read" frequently.**

9. **Job Site Radiation Survey Reports were being documented properly.**

10. **Exposure Device components were being disassembled prior to moving from one radiographic location to another.**

As you are aware from your Radiation Safety training, ***ASSUMPTIONS*** *can lead to the inadequate performance of Radiation Safety practices and therefore to excessive radiation doseages or over-exposures to yourself as a Radiographer or to members of the general public. Do not* ***ASSUME*** *anything! Perform your Radiation Safety practices continuously and adequately.*

RSO

Posted for review 9-05-89

NOTICE TO RADIOGRAPHERS; 9/5/89 - SIGNATURES SECTION

I. *I have thoroughly read and understand the 9/5/89 Notice to Radiographers concerning the 8/31/89 USNRC Inspection and the Inspector's observation at a job site, of inadequate Physical Radiation Surveys of the Exposure Device Source Guide Tube following each exposure. I also understand the complete text of the notice which primarily details the proper methods for performing adequate surveys of the* ***Source Guide Tube*** *(and Exposure Device) following each exposure. Affix dated signature to Column I.*

II. *I have attended and understand the demonstrations by the Radiation Safety Officer detailing the proper methods for conducting adequate Physical Radiation Surveys of the entire circumference of the Exposure Device and* ***Source Guide Tube*** *following each exposure. Affix signature to Column II.*

RADIOGRAPHERS

I - 9/5/89 Notice		***II - Radiation Surveys Demo***	
R W Cox	9-6-89	Bryan J. Kirk	9-7-89
William F. Conway	9-6-89	Jack A Duncan	9-7-89
M.D. Long	9-6-89	[illegible]	9-07-89
Joseph B. James	9-6-89	R.B. Cammack	9-7-89
M A. McKinney	9-6-89	M A. McKinney	9-7-89
Wayne F. Conway	9-6-89	M.D. Long	9-7-89
Bryan J. Kirk	9-6-89	J B James	9-7-89
Jack A Duncan	9-6-89	Rick Walker	9-7-89
[illegible]	9-06-89	William F. Conway	9-7-89
T.B. [illegible]	9-06-89	T.B. [illegible]	9-8-89

RADIOGRAPHERS

I - 9/5/89 Notice		II - Radiation Surveys Demo	
Ron Stark	9-6-89	R W Cook	9-8-89
Kevin R Cannaday	9-6-89	Wayne F Cerney	9-8-89
Rick Nelson	9-6-89	Ron Stark	9-8-89
Chris McKinney	9-6-89	John Simon	9-8-89
John Simon	9-7-89	Tony R. Bullard	9-8-89
Tony R. Bullard	9-7-89	Chris McKinney	9-8-89

NRC Form 591
(12-81)
10 CFR 2.201

U.S. NUCLEAR REGULATORY COMMISSION

SAFETY INSPECTION

1. LICENSEE	2. REGIONAL OFFICE
Capital X-Ray Services, Inc. 2133 South 49th West Avenue Tulsa, Oklahoma 74107	United States Nuclear Regulatory Commission Region IV 611 Ryan Plaza Drive, Suite 1000 Arlington, Texas 76011

3. DOCKET NUMBER(S)	4. LICENSE NUMBER(S)	5. DATE OF INSPECTION
30-05933	35-11114-01	August 30,1989

Licensee:

The inspection was an examination of the activities conducted under your license as they relate to radiation safety and to compliance with the Nuclear Regulatory Commission's (NRC) rules and regulations and the conditions of your license. The inspection consisted of selective examinations of procedures and representative records, interviews, with personnel, and observations by the inspector. The findings as a result of this inspection are as follows:

[ ] 1. Within the scope of this inspection, no violations were observed.

[ ] 2. The inspector also verified the steps you have taken to correct the violations identified during the last inspection. We have no further questions on those actions at this time.

[X] 3. During this inspection certain of your activities, as checked below, were in violation of NRC requirements. **THIS IS A NOTICE OF VIOLATION** which is required to be posted in accordance with 10 CFR 19.11.

[ ] A. _____ was not properly posted to indicate the presence of a _____. 10 CFR 20.203(b), (c), (d), (e) or 34.42.

[ ] B. Containers located in _____ were not properly labeled to indicate the presence of radioactive material. 10 CFR 20.203(f)(1), or (f)(2).

[ ] C. _____ of sealed sources were not performed at the proper frequencies. 10 CFR _____ License Condition Number _____.

[ ] D. Records of _____ were not properly maintained 10 CFR _____ or License Condition Number _____.

[ ] E. Documents were not properly posted or otherwise made available. 10 CFR 19.11.

[ ] F. Reports or notifications of _____ were not made in accordance with 10 CFR _____ or License Condition Number _____.

[X] H. ~~Contrary to 10CFR 34.43(b), during radiography operations observed on August 30,1989,~~ surveys performed following radiographic exposures did not include the source guide tube as required.

C

[ ] I. _____

[ ] J. _____

[ ] K. _____

I hereby state that within 30 days the actions described by me to the inspector will be taken to correct the violations identified in the items checked above. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201. No further response will be submitted unless required by the NRC.

SIGNATURE - LICENSEE	DATE	SIGNATURE - NRC INSPECTOR	DATE
[signature]	9-13-89	[signature]	9/5/89

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