

05 OCT 1984

License No. 29-14171-01
Docket No. 030-08048
Control No. 12765

Advanced Radiation Service, Inc.
ATTN: Anton S. Kurtz, President
271 Plainfield Road
Edison, New Jersey 08820

SUBJECT: APPLICATION FOR MATERIAL LICENSE RENEWAL DATED MARCH 31, 1983,
AND OUR REQUEST FOR ADDITIONAL INFORMATION DATED AUGUST 6, 1984

Gentlemen:

This refers to your request for renewal of your license. A check of our files indicates that we have not received a response from you to date. If we do not receive a reply within 30 days, it may be necessary to deny your application and terminate your license. Such action would require that you divest yourself of all licensed material.

Sincerely,

Original Signed By
Jenny M. Johansen

John E. Glenn, Ph.D., Chief
Nuclear Materials Section B
Division of Engineering and
Technical Programs

Enclosure: Letter dated August 6, 1984

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License No. 29-14171-01
Docket No. 030-08048
Control No. 12765

Advanced Radiation Service, Inc.
271 Plainfield Road
Edison, New Jersey 08820

Gentlemen:

This is in reference to your application dated March 31, 1983 to renew License No. 29-14171-01. In order to continue our review, we need the following additional information:

1. Please clarify, how you disposed of the cobalt-60 Model 571 rod source which you used for calibration of instruments which is currently listed as Subitem 6D on your license.
2. The purpose of operating and emergency procedures is to provide radiography personnel with clear and specific guidance and instruction for all operations which they will perform. Regarding your Operating and Emergency Procedures;
 - A. Please amend, your Operating and Emergency Procedures (Ops and Em Proc.), IV., iii Pocket dosimeters, paragraph 3 page 7, sentence 2 which reads, "If the dosimeter is discovered to not be fully discharged, the wearer should stop work immediately and notify Mr. Kurtz" to read "If the dosimeter is discovered to be fully discharged, the wearer shall stop work immediately and notify Mr. Kurtz"

Additionally please add, the requirement that the pocket dosimeter reading shall be recorded at the beginning and at the end of the work shift (daily) in accordance with 10 CFR 34.33.(b) and please indicate, on what record these readings will be recorded.

- B. Please indicate, the strength of the Cesium 137 source in your Dosimetry Corporation of America Model 3060 calibrator. If this source exceeds 10 microcuries it must be listed on your license. (See Ops and Em Proc. IV, iv, page 7)
 - C. Please amend, your Ops and Em Proc. V, i, sentence 2, page 8 which reads "Surveys should also be used to confirm that exterior surfaces of transportation vehicles....." to "Surveys shall....."
 - D. Please amend, your Ops and Em Proc. V, iii, f) page 9, which reads ..
..... "and three feet from the outside surfaces of vehicles" to "and not more than 18 inches from any external surface of the vehicles"

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to comply with 10 CFR 20.105(b) radiation level regulations for unrestricted areas.

- E. Please delete, from your Ops and Em Proc VI, i, page 10, and VI, viii 2 c) page 11, references to "and 500 mr during a calendar year to persons continually present", and five hundred millirem per calendar year, as these limits apply only if you have fulfilled the requirements in 10 CFR 20.105(a). Your operations are regulated by the limits in the unrestricted area stated in 10 CFR 20.105(b).
- F. Please reconcile, your definition of Radiation Area as stated in Ops and Em Proc. II, (e), page 2, and VI, ii, page 10; in the former you indicate a 2 mR/hr limit and in the latter a 5mR/hr limit is used.
- G. The manufacturers operating manual which you have submitted while they provide step by step procedures on attaching the guide tubes cranking out and returning the source etc. do not fully indicate points at which to do surveys. We therefore suggest you modify the following instruction for a crank out device to reflect the operation of the model 533, 660, and 680 exposure devices. As step by step operating procedure should include instructions as to when to establish restricted area and perform surveys.
 - a. Locate the source shield at the desired distance from the object to be radiographed.
 - b. Mount the source tip firmly, using jigs or other attachments, with the tip in the exact exposure position.
 - c. Locate the control unit at the maximum distance (25 ft.) from the source shield with control tubes laid out as straight as possible.
 - d. Join the control cable to the unit.
 - e. Establish and post restricted area and high radiation area.
 - f. Unlock device.
 - g. Turn the head crank steadily to move the source out of the source shield to the exposure position.
 - h. Survey the perimeter of the restricted area to assure that radiation levels do not exceed 2 mf/hr.
 - i. Maintain continuous surveillance over the restricted area, keeping all person from entering.
 - j. After completion of exposure, retract the source by turning the crank clockwise until "SAFE" storage position is indicated.

k. Make a survey of the device and guide tube to determine that the source is in a safe position.

l. Lock device and remove key.

Additionally your operation manuals are of 1970 vintage and refer to AEC or ICC regulations which may no longer be correct in comparison to current NRC and DOT regulations. You should update all your operating manuals.

H. Please submit, your step by step procedure for the Model 414 and 650 source changers. These were not included in your application.

I. Please clarify, your statement on page 17a "See original for remaining page of instruction..."

J. Please clarify, your submittal of Model 771 source changer procedures as you indicate on page 17 that Cobalt 60 sources can only be changed by Technical Operations not by Advanced Radiation Service.

K. Please clarify, your submittal of T/O-571 Meter Calibration Kit Operating Instructions as Item 11 of your application indicates your survey meters will be calibrated by a service company.

L. Please amend, your emergency procedure IX, i, 2., page 18 to include requirements of 10 CFR 34.43(b).

M. Please amend, your emergency procedure IX, ii, 4.e., page 19 to reflect the correct telephone number of the NRC, King of Prussia, Pennsylvania, which is (215) 337-5000.

N. Please amend, your emergency procedure X,V., page 22 to reflect "Radiation levels not more than 18 inches from the external surface shall not exceed 2 mR/hr (See question 2D. of this letter).

O. Please amend, your Receipt of Radioactive Materials, procedure 2, page 25a, to reflect current NRC/DOT regulations for a survey 1 meter from the package surface to assure radiation levels do not exceed 10 mR/hr.

P. Please amend, your references to DOT regulations in "Shipping of Radioactive Material" Part II and III 1. through 10., pages 25b to 25j to reflect current regulations in Title 49 (Nov. 1983) as stated in 10 CFR 71.5 (enclosed). The references you indicate for each step do not necessarily refer to current regulations covering the subject.

Q. Please confirm, that the survey referred to in (Ops and Em Proc. XI, 5) is recorded since this is not indicated in the procedure or on the

Daily Maintenance and Inspection Report, Form 2, page 31 of your Administrative manual..

- R. Please clarify, why you have submitted your own survey meter certificate, Form 6a, page 43, as your application indicates that this will be performed by outside service company.

3. Regarding your Administrative Manual;

- A. Please reconcile, your definition of Radiation Area in your Administrative Manual (Ad. Man.) 3), G., page 2 with that stated in Ops and Em Proc. II, (e), page 2, and VI, ii, page 10 (see question 2.F. of this letter).
- B. It is not necessary to submit procedures for Instrument Calibration since you have indicated the service companies which will calibrated your instruments. These companies are required to have licenses issued from the NRC or an Agreement State and have their calibration procedures reviewed as part of their license. Since XID Corporation or the survey meter manufactures may not use the Tech Ops Model 773 source for calibration you should delete this procedure from your Administrative Manual.
- C. Please explain, the instruction in your Administrative Manual, Item 7, Dosimeter Calibrator, 3rd paragraph, 2nd sentence, page 7. "If found to be offscale or show a reading in excess of 10 mR/hr...", as dosimeters have scales of 0 to 200 mR and do not read in mR/hr. Are you requiring that your radiographers receive no more than 10 mR in one hour ?
- D. Your Training Program for Assistant Radiographer's does not include a training session for instruction in the use of equipment. Since the NRC does not find it exceptable for a potential radiographer's assistant to receive training, and instruction in use of the equipment during actual radiographic operations, you should add a training session on use of equipment as part of your Initial Classroom Instruction as stated in your Administrative Manual, 8, B., i.
- E. Regarding the answers to the test questions submitted in Item 8E of your Administrative Manual.
- a. Question 1 - The answer does not quite conform to requirements in 10 CFR 34.43(b)
- b. Question 18 - Your answer is not quite correct as current radiation exposure limits in 20.101 are those limits at which radiation exposure may be received by an occupationally employed person for a work lifetime of 50 years without any

detrimental effects. Two mR/hr for 40 hours in a week for 13 weeks of a calendar quarter would be 1,040 millirem, which is under the 1,250 millirem allowed in 10 CFR 20,101.

- c. Question 35 - For the answer to this question, what HVL are you assuming for high density concrete? If 1.7 inches is the H.V.L. then answer should more correctly be (2) about 4" rather than (3).
- d. Question 39 - Please provide a reference to the derivation of this answer, what is the HVL layer of sand, and what nuclide in the composition sand has a density great enough to provide the mass absorption coefficient to reduce the radiation intensity of Co^{60} which is usually 14.4 R/hr at 1 ft per curie of cobalt-60 to 1/13 as stated in the answer. If the H.V.L. of concrete of 2.44 inches is used the answer would be 1/128 and then the answer given is wrong.
- e. Question 41 - The answer is wrong it take approximately 50 feet of air to attenuate 1 curie of Co-60 having a gamma ray factor of 14.4 R/hr at 1 foot.
- f. Question 42 - The answer is wrong; your chart page 13 Part VI of your Ops and Em Proc. indicates at least 169 feet are necessary for the 5 mR/hr radiation level to be obtained.

Please submit, the above questions with the correct answers.

- F. Please clarified, how previously trained individuals will be qualified as radiographers and assistant radiographers at your facility
- G. On page 24 of your Administrative Manual, Item 9A indicates that, the R.S.O. will...conduct the job inspections. We understand this to mean each individual radiographer and assistant radiographer will be inspected separately. Additionally, there may be situations where a particular radiographer or assistant radiographer will not participate in radiographic operations for a period exceeding 3 months. Please indicate, when such an individual would be inspected.
- H. Please remove, all the NRC regulations submitted as part of your Administrative Manual in your application as they are out-of-date. We recommend that you indicate that current copies of 10 CFR 19, 20, 21, 30, 34 and 71 are maintained and available to all workers. We suggest you obtain current copies of the regulations by purchasing a subscription to Title 10 from the Superintendent of Document, U. S. Government Printing Office, Washington, D.C. 20402.

We will continue our review upon receipt of this information. Please reply in duplicate to my attention at the Region I office and refer to Mail Control No. 12765.

Sincerely,

Original Signed By:
John E. Glenn

John E. Glenn, Ph.D., Chief
Nuclear Materials Section B
Division of Engineering and
Technical Programs

Enclosures:

1. 10 CFR Parts 19, 20, 30, 34, 71, and 170
2. Form NRC-3

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CONVERSATION RECORD

TIME

DATE

3/2/83

TYPE

☐ VISIT

☐ CONFERENCE

☒ TELEPHONE

☐ INCOMING

☒ OUTGOING

ROUTING

NAME/SYMBOL

INT

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU

Mr. Newton

ORGANIZATION (Office, dept., bureau, etc.)

Univ. Testing Lab

TELEPHONE NO.

201 239-9073

SUBJECT

Lic. Renewal application for
Advanced Radiation Service

SUMMARY

- He called to say that he was acting as a consultant for Advanced in preparing the license Renewal and that he was not going to be able to meet the 30 day dead line, but would get the renewal info in ~~marked~~ by March 31

Bruce Connel

ML10

ACTION REQUIRED

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NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

DATE

ACTION TAKEN

SIGNATURE

TITLE

DATE

50271-101

GPO : 1981 O - 361-526 (7227)

CONVERSATION RECORD

OPTIONAL FORM 271 (12-76)
DEPARTMENT OF DEFENSE