New England Power

New England Power Company
Salem Harbor Station
Salem, Massachusetts 01970

July 10, 1985

MS 16
P8

U. S. Nuclear Regulatory Commission
Region 1
Nuclear Material Section B
631 Park Avenue
King of Prussia, PA 19406

Dear Ms. Jodustra

Subject: New England Power Co.
Salem Harbor Station
24 Fort Ave., Salem, MA
License No. 20-20635-01
Control Number 03548

Enclosed please find the material which was requested from Kay-Ray pertaining to on site training. Also enclosed is a copy of the Customer Responsibilities, item 5, which is included in the Kay-Ray instruction manual as mentioned in Cameron Burns' letter.

The Customer Responsibilities were reviewed by the Service Engineer and myself at the time of installation of the first set of sources and detectors.

Very truly yours,

H. C Ekstrand

H. C. Ekstrand
Supervisor of TEchnical Services

cc: file

03548

KAY-RAY® INC.
INDUSTRIAL PROCESS CONTROL EQUIPMENT
516 West Campus Drive • Arlington Heights, Illinois 60004 • (312) 259-5600 • TELEX: 281-085 • CABLE: KAYRAY

June 26, 1985

New England Power Company
24 Fort Avenue
Salem, Massachusetts 01970

Attn: Mr. Howard Ekstrand

Dear Mr. Ekstrand:

Enclosed please find a copy of our standard form entitled "Start-up Information". This form pertains to the following items that were covered at the time of start-up.

1. Leak tests
2. Shutter operation and radiation tags
3. Radiation surveys
4. Personnel exposure
5. Customer responsibilities

Should you require any other information, please feel free to contact me at your convenience.

Sincerely,

Cameron Burns
Field Engineering Services

CTB/tb

enc.

KAY-RAY INC.
INDUSTRIAL PROCESS CONTROL EQUIPMENT
516 West Campus Drive Arlington Heights, Illinois 60004
Phone (312)259-5600 Cable Address KAYRAY Telex 281-085

START-UP INFORMATION

User New England Power Co. Kay-Ray No. 4097

Location Salem MA Date 5-15-84

License Type: Specific ____ General ____ Serial Nos. 15685-15700
(15685-15692 + 15 A - only)

1. Perform LEAK TEST on SOURCE UNIT; follow procedure with kit.

2. Check SHUTTER OPERATION and RADIATION TAGS.

3. Conduct RADIATION SURVEY using appropriate survey form.

4. If applicable, evaluate potential personnel exposure inside the vessel at source location with the source in the STORE position. Calculate worse case radiation level ____mR/hr. Calculate worse case radiation exposure ____Rems/yr.

5. Evaluate potential personnel exposure in area at installation. Under ordinary circumstances, this exposure must not exceed 0.5 Rems/yr. To determine exposure, measure radiation level at normal operator location, multiply this reading by hours per week times 52 weeks. Assumptions: a) nearest operator location in feet; b) number of hours per week at this location; c) radiation level in mR/hr at this location. 0.02 Rems/yr.

6. Discuss with Customer the responsibilities involved with the specific licensing arrangement of his application, if applicable. Review the handout or instruction manual section regarding the Customer responsibilities under the general licensing arrangement.

Kay-Ray Rep. Cameron T. Burns

Customer Rep. Hans JC Ebitsch

Customer Phone 617-744-5540

Customer - White
FES - Yellow

"OFFICIAL RECORD COPY"

Jul80 ML10

SECTION F: RESPONSIBILITIES OF POSSESSION OF KAY-RAY EQUIPMENT UNDER A CUSTOMER'S SPECIFIC LICENSE

The following section is a summary of the current NRC regulations 10CFR parts 20 & 30. The regulations define the user's responsibility when equipment such as that manufactured by Kay-Ray is possessed. The specific license granted to the user normally refers to these regulations and it is a requirement that the user be aware of and comply with them. If the equipment is to be possessed in an agreement state that state will issue its' own regulations which are normally very similar to the NRC counterpart.

The paragraphs below will describe the major requirements for possession of Kay-Ray equipment. The applicable sections of 10CFR parts 20 & 30 will be referenced and the user is urged to refer to the appropriate section for a more detailed description of the requirements.

1. User Requirements

When an application for a byproduct material license is submitted to the NRC or appropriate state agency an "individual user" or users must be named. The name of this individual (or individuals) will appear on the specific license and this person will be responsible for the use of the radioactive material. This person is responsible for record keeping, personnel monitoring and all other duties as outlined in subsequent paragraphs. If the person named as user on the specific license is transferred, terminated or in any manner ceases to have responsibility for the radioactive material the license must be amended prior to the assignment of a new user. It is recommended that more than one name appear as a designated user of the equipment.

(30.32, 30.33, 30.34, 30.38)

2. Amendment Procedures

NRC regulations define the procedure to be followed in applying for a license amendment. An amendment must be applied for anytime a condition, as listed on the user license, is to be changed, modified or expanded. Examples of changes requiring a license amendment would include the purchase of additional radioactive sources, relocation of a particular device or reassignment of an individual user. Application for an amendment is filed on an NRC form 313A. This form was also used for the original license application. Any additional or corrected information may be included at this time. The action requiring the amendment must not be undertaken until approval is received from the NRC or appropriate state agency. An approved amendment will normally be in the form of an added condition added to the original license.

(30.38)

3. Renewal of License

The specific license granted to possess the Kay-Ray equipment usually extends for a three year period. At the end of this three year period the license expires unless the NRC or the appropriate state agreements office has been notified to renew it. At this time, an additional renewal fee is required and another application must be submitted. If no changes have occurred with the equipment nor additional functions required in the use of the equipment, the same application can be re-submitted to the NRC or agreement state office for their approval. It is important to apply at least 30 days prior to the expiration of this license.

(30.37)

4. Records

Records must be kept in an orderly manner by the licensee of all receipts, transfers, disposals, source wipes, and radiation surveys of all nuclear equipment covered under the individual's license. These records can be reviewed at spot inspections by any regulatory agency. The state of New York requires in addition to the above records semi-annual maintenance checks of the on/off shutter mechanism of the source housing. These checks should be documented everytime they occur.

(30.51)

A. Periodic Leak Tests

Records of the periodic leak testing must be maintained. These records include the initial leak test certificate supplied by Kay-Ray. This certificate is supplied before the source material is shipped from Kay-Ray. Subsequent source wipes include the test performed on the device at start-up, and the tests performed at the recommended source wiping intervals. The source wipe interval is normally three years for Kay-Ray equipment. It is recommended that source wipe certificates be filed by device serial number.

(20.401D)

B. Records of Initial Radiation Survey

A record of the initial radiation survey must be kept for reference. This survey usually encompasses the format of a Kay-Ray start-up form. This start-up form contains surface radiation readings on the source head and readings at 12" from the surface of the source head. Also included on the start-up form is a worst case radiation calculation.

This calculation determines the worst case operator location radiation exposure as a function of his relationship to the gauge location and his working environment. This calculation is very important because it determines whether a personnel monitoring device (film badge) is required by this individual. It is important that the customer or the licensee be cognizant of the worst case assumptions used in his calculations and understand how the calculation was determined. It is the licensees' responsibility to determine if film badges are required at an operator location. A Kay-Ray survey form, properly completed, along with an understanding of the radiation calculation will fulfill the above requirements.

(20.401)

5. Inspections

Part of the responsibilities of possessing nuclear equipment under a specific license is that the user must make available his operation and application of his nuclear equipment to periodic and random inspections by the NRC or appropriate state agreement office. At the time of this inspection the records that are kept by the licensee are usually reviewed by the appropriate regulatory agency.

(30.52)

6. Posting of Notices, Instructions, and Reports to Workers

Depending on the regulatory body granting the specific license certain documents may have to be posted. These documents usually include Parts 19 and 20 of the NRC regulations or similarily worded documents. These documents concerning notices to workers and standards for protection against radiation. The licensee should carefully review these documents for specific posting information of these documents and other documents.

7. Posting of Radiation Areas

The area in the vicinity of the source head must be posted with a radiation warning sign if the radiation field is greater than 5mR/hr at a distance of 12 inches from the surface of the gauge. This posting is usually not required on Kay-Ray equipment because of the small amounts of radioactive material normally used. When large sources (greater than 1 Curie) are used on thick walled vessels scattering of the radiation from the vessel wall may increase the 12 inch readings

from the source holder to greater than 5mR/hr when the source is in the 'Measure' position. This posting requirement is not required if additional shielding is placed around the source holder to limit the 12 inch reading from the shielding to 5mR/hr or less.

(20.203 & 20.204A)

A. Definition of Unrestricted Area

An unrestricted area per the regulation means any area accessible to personnel which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials. Radiation in this area must not cause the individual to receive a dose of greater than 2 millirems in any one hour period or greater than 100 millirems in any 7 consecutive days. If these two radiation constraints are exceeded the area must be posted as a Restricted Area and access to this area must be controlled. The application of Kay-Ray equipment usually does not require a restricted area because of the low radiation levels emitted from the source holder.

20.3 (17)

B. Definition of High Radiation Area

A High Radiation Area is defined as any area accessible to personnel in which a whole body exposure of greater than 100 millirem in any one hour period could be received. This situation may apply to Kay-Ray Level System applications using large sources on thick walled vessels. The radiation in this case, with the source in the 'Measure' position, may exceed 100 millirem per hour inside the vessel. This situation is evaluated by Kay-Ray personnel at the time of start-up. If this condition is found, the following steps must be taken:

1. All vessels entrances must be posted with high radiation warning signs.

2. All entrances to the vessel must be restricted. The two most practical ways of restricting vessel entrances are the following:

   a. All entrances to the vessel should be locked.

   b. The source heads should be locked out via an interlock scheme with the entrance locations.

8. Reports of Overexposure

If a person receives a total exposure of more than 1250 millirems in any one calendar quarter he must be notified in writing of the exposure and the NRC or appropriate Agreement State Office must be notified within 30 days. This type of exposure would be a very abnormal occurrance with Kay-Ray equipment. A man working inside of a large vessel for extended periods of time with the source shutter in the 'Measure' position could approach the exposure rate above. If an exposure of this magnitude if suspected Kay-Ray should be notified immediately. Experienced Kay-Ray personnel will aid the user in determining whether the exposure could have actually occurred and if notification of the appropriate regulatory body is necessary.

(20.405)

9. Emergency Notification Procedure

In the event of suspected damage to the source housing, such as a fire or explosion in the area of the equipment, the nearest regional office of the NRC must be notified of the incident. The listing of the Regional Offices is given in this Kay-Ray Instruction Manual and also given in Appendix D of Part 20 of the Regulations. This type of event requires immediate notification. Kay-Ray is available, as a 24 hour service to your company, to provide assistance in an event of this type. Detailed emergency procedures for the particular system used will be found in this instruction manual. Immediate action should be taken to rope off the area with 30 feet of the suspected damage. Once the area is secured both Kay-Ray and the NRC should be notified.

(20.403)

10. Use of Personnel Monitoring (Film Badges)

Personnel monitoring is required when personnel are apt to receive a dose in excess of 312 millirems per quarter, or when they enter a radiation field greater than 100mR/hr. This is not usually required when the licensee is using Kay-Ray equipment because the radiation at the nearest operator location is usually less than 500mR/yr which is less than the film badge requirement.

(20.202A)

11. Maintenance of Source Head

Unless specifically mentioned in the customers license maintenance on the source head cannot be performed. This includes maintenance on any operation internal to the head, for example: Shutters, pneumatic operators, limit switches, etc.

12. Installation, Start-up, Relocation of Kay-Ray Equipment

Unless specifically indicated as an amendment or condition on a customers license, the above work cannot be performed by the licensee. This work can only be performed by Kay-Ray or an individual or agency licensed to perform this work on Kay-Ray equipment. Kay-Ray is certified to provide formal training which allows the customer to apply for an amendment to his license to perform this work.

13. Source Wiping by the Licensee

Kay-Ray equipment usually requires a three year source wiping interval. This means that after the equipemnt receives its initial source wipe at the time of installation a source wiping test must be performed on the source head at three year intervals. Unless specifically indicated in a users license the licensee cannot perform this source wipe on a Kay-Ray source head. Source wiping can only be performed by Kay-Ray or by another individual or agency licensed to perform this test on Kay-Ray equipment. Training can be received from Kay-Ray for Kay-Ray equipment. After training is received from Kay-Ray, a simple amendment application can be filed on the customers part to request an added amendment to his license to perform this test on the Kay-Ray equipment. A specific procedure for the particular source head used must be supplied along with the application. Testing kits are available from Kay-Ray which have been recognized by the NRC as performing a valid leak test on source holders containing Cesium.

14. Labeling of Device

A metal label is attached to each Kay-Ray source holder stating the type and quantity of radioactive material supplied and the date it was inserted into the source holder. This label bears the conventional radiation symbol as defined in 20.203. The label is considered integral with the device and should never be removed. A periodic check of the integrity of this label should be made by the licensee. This check must also insure that the label is clearly visible.

15. Reciprocity Considerations

Part 150 of the regulations define the relationship between agreement and non-agreement states'licensed activities. A general section called reciprocity within these regulations defines the agreements between these two bodies. The individual user is usually not concerned with the ramifications of reciprocity. Kay-Ray is licensed by the NRC to perform certain functions on Kay-Ray supplied equipment. These functions include start-up, installation, relocation, and some maintenance in the field. Kay-Ray is called upon to perform these services in agreement states and non-agreement states. When a Kay-Ray Representative goes into an agreement state to perform licensed activities he is subject to some of the reciprocity considerations of that particular non-agreement states' rules and regulations. The major implication involved in these considerations is that some agreement states require Kay-Ray to give advance notification to that states' office before performing certain licensed activities. The customer in these particular agreement states should be aware of this advance notification constraint before contacting Kay-Ray for service on their equipment. This advance notification constraint usually requires Kay-Ray to notify the individual states' agreements branch office 3 to 5 days before performing licensed activity within that state. Since Kay-Ray provides the service, Kay-Ray is responsible for notifying the agreement state office before entering the state.

UNITED STATES NUCLEAR REGULATORY COMMISSION
INSPECTION AND ENFORCEMENT REGIONAL OFFICES

REGION	ADDRESS	Telephone	
		Daytime	Nights and Holidays
I Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont	Region I, USNRC, Office of Inspection and Enforcement, 631 Park Avenue, King of Prussia, Pennsylvania 19406	(215) 337-5000	(215) 337-5000
II Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, Puerto Rico, South Carolina, Tennessee, Virginia, Virgin Islands, and West Virginia	Region II, USNRC, Office of Inspection and Enforcement, 101 Marietta Street, Suite 3100, Atlanta, Georgia 30303	(404) 221-4503	(404) 221-4503
III Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin	Region III, USNRC, Office of Inspection and Enforcement, 799 Roosevelt Road, Glen Ellyn, Illinois 60137	(312) 932-2500	(312) 932-2500
IV Arkansas, Colorado, Idaho, Kansas, Louisiana, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming	Region IV, USNRC, Office of Inspection and Enforcement, 611 Ryan Plaza Drive, Suite 1000, Arlington, Texas 76012	(817) 465-8100	(817) 465-8100
V Alaska, Arizona, California, Hawaii, Nevada, Oregon, Washington, and U.S. territories and possessions in the Pacific	Region V, USNRC, Office of Inspection and Enforcement, 1450 Maria Lane, Suite 210, Walnut Creek, California 94596	(415) 943-3700	(415) 943-3700

NRC FORM 218 (4-76) NRCM 0240

U.S. NUCLEAR REGULATORY COMMISSION

DATE

TELEPHONE OR VERBAL CONVERSATION RECORD

TIME ☐ A.M. ☐ P.M.

☐ INCOMING CALL ☒ OUTGOING CALL ☐ VISIT

PERSON CALLING	OFFICE/ADDRESS	PHONE NUMBER	EXTENSION
J. A. Joustra	Region I		

PERSON CALLED	OFFICE/ADDRESS	PHONE NUMBER	EXTENSION
NRC - Bailey	New England Power	617 744-5540	234

CONVERSATION

SUBJECT

SUMMARY

requested verification of training for two people to be added to license.

Mr. Bailey will forward info.

Awaiting material from Kay-Ray. 7/3/85.

"OFFICIAL RECORD COPY" ML10

REFERRED TO:

☐ ADVISE ME OF ACTION TAKEN.

ACTION REQUESTED

INITIALS

DATE

ACTION TAKEN

INITIALS

DATE

NRC FORM 218 (4-76)

NRC FORM 218 (4-76) NRCM 0240

U.S. NUCLEAR REGULATORY COMMISSION

TELEPHONE OR VERBAL CONVERSATION RECORD

DATE: 6/11/85

TIME: 8:20 ☒ A.M. ☐ P.M.

☐ INCOMING CALL ☒ OUTGOING CALL ☐ VISIT

PERSON CALLING	OFFICE/ADDRESS	PHONE NUMBER / EXTENSION
J. A. Joustra	Region I	5257

PERSON CALLED	OFFICE/ADDRESS	PHONE NUMBER / EXTENSION
Mr. Ekstrand	New England Power	617 744-5540

CONVERSATION

SUBJECT

SUMMARY

Need clarification that gauge installer + manufacture agree that no training need be given when gauge is installed. Mr. Ekstrand will call Kay-Ray and then will determine whether his course outline submitted on may 31, 1985 is equivalent to manufactures course.

Mr. Ekstrand will call back.

"OFFICIAL RECORD COPY"
ML18

REFERRED TO:

☐ ADVISE ME OF ACTION TAKEN.

ACTION REQUESTED

INITIALS

DATE

ACTION TAKEN

INITIALS

DATE