

MS-16  
Q-1



March 30, 1993

U.S. Nuclear Regulatory Commission  
Region I.  
475 Allendale Road  
King of Prussia, PA. 19406

Attn: Mr. Thor Oberg  
Mail Control Number: 117116

Dear Mr. Oberg,

We are writing to clarify our request for amendment to our license. The individuals who will be involved in the requested activity are from our service department.

Employment by our company, as a service technician requires a minimum 2 years of engineering school. New technicians are trained, on our systems, under the supervision of our Service Manager, Paul Young (who is listed on our license). This combination of in-house and field training typically lasts for 1 year.

Our basic radiation training (class room) for our technicians takes 8 hours. The subjects covered are Basic Radiation, ALARA, Site Survey, Leakage Testing and Shutter Mechanism repair. Our intention is to give basic service to our customers. Basic radiation and ALARA are covered by using the U.S.N.R.C. booklet "Working Safely with Nuclear Gauges". Special emphasis is placed on personal safety and creating a safe work environment for others. The concept of Time-Distance-Shielding and ALARA as a method of work are repeatedly emphasized. A copy of our company's formal ALARA statement is enclosed.

With previous amendments we have submitted our written Site Survey and Leakage test procedures (additional copies included). These procedures are reviewed with our technicians and the use of the associated electronic meters is also explained. The technician must demonstrate these procedures to complete the training.

117116

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The shutter mechanism is a simple electro-mechanical device with 2 replaceable devices. A solenoid and a limit switch. Both of these devices can be replaced with-out disturbing the source holder or shield.

Our company is currently enjoying a rapidly expanding customer base, by allowing our service technician the ability to perform these services it will enable us to properly support our customers. We should also like to mention that any service, beyond those described here, will continue to be performed only by those individuals listed on our license.

Thank you, for your time and consideration regarding this matter. As always, if I can be of further assistance please contact me at (203) 265-5684.

~~Respectfully your,~~

Randy S. Stevens  
Technical Director  
Radiation Program

RSS:alh  
enclosures

## I<sup>2</sup>S ALARA STATEMENT

The term, ALARA, is an acronym. It's meaning is:

As  
Low  
As  
Reasonably  
Achievable

In the past, ALARA was a guideline for conduct, when working with radioactive material. With the implementation of the new 10CFR20, a formal approach to ALARA is now a requirement.

"The NRC is looking for process and procedures to keep doses ALARA, not that doses are ALARA."

- Harold Peterson, Jr.  
U.S.N.R.C.

It must be emphasized that ALARA is not a dose limit, it is a method of work. It is the responsibility of management and the individual worker to continuously strive to lower exposure levels. This joint commitment to a continued safe work environment cannot be over emphasized.

To achieve this goal, workers will receive a basic radiation training with emphasis on the use of time-distance-shielding to limit exposure. Job specific, hands on, training will also be provided.

To insure continued regulatory compliance and deal with current issues, management has formed the Radiation Safety Committee. This committee meets monthly. The committee has the responsibility to conduct monthly in-house inspections, review safety concerns, implement safety practices, investigate recorded exposures, review regulatory changes, and implement appropriate changes to our current program.

The Radiation Safety Committee has established the exposure level that will generate an investigation. From our dosimetry history, we have determined that under normal circumstances we can expect that 100% of our personnel will have no measured dose. Therefore, if a measured dose is listed on a dosimetry report, an investigation will occur.

The investigation will begin with an interview of the person involved.

The following questions will be asked:

1. Have you been involved with radioactive material?
2. What were you doing?
3. How did you do it?

Once the cause for exposure has been determined appropriate corrective action will be taken. This may include additional training or redistribution of the workload.

The U.S.N.R.C. has strongly urged all licensees to self diagnose problems and take corrective action. It is the right and the responsibility of all employees to bring to the attention of the committee all safety concerns and areas of noncompliance with established procedures. The management of this company wished to emphatically assure all employees that this process will be conducted in a strictly non-adversarial manner. At no time should the employee be concerned about their employment status while participating in the betterment of our radiation program.

All items brought before the committee are listed on the monthly agenda. The agenda and the minutes of the meeting are kept on record in the radiation program office.

It should be remembered that the proper use of the ALARA method of work not only creates a safe work environment for yourself but is also a courtesy to your co-workers. Your full participation is expected and encouraged.

PROCEDURE FOR RADIATION  
SITE SURVEY

Site survey of radiation gauges shall be performed upon installation at the customer site. Replacement of the radiation source also requires a site survey.

1. When performing a site survey, a film badge must be worn.
2. The standard instrument for performing the site survey is the air ionization chamber survey meter. Window thickness shall not exceed 7 milligrams per square centimeter. A Beta shield shall be available. The total thickness of the window plus the Beta shield shall not exceed 300 milligrams per square centimeter.
3. Distances shall be measured from the geometric center of the ion chamber of the survey meter to the nearest accessible surface of the device being surveyed.
4. Radiation measurements shall be made in locations accessible to personnel at distances of 1,2,3,5 and 10 feet from the device. At a distance of 10 feet from an I<sup>2</sup>S device there should be no measurable radiation. If a reading is obtained, there is an interfering effect which must be located and eliminated. It is recommended that the measurements at 10 feet be taken first to avoid repetition of all measurements.

Measurements shall be made with the shutter open and no product in the measuring gap. The first set of measurements shall be made without the beta shield in place. These measurements shall be recorded as skin exposure. A second set of measurements shall be made with the beta shield in place. These measurements shall be recorded as whole body exposure.

PROCEDURE FOR RADIATION  
SITE SURVEY

5. Determine the occupancy time of customer personnel in the vicinity of the gauging device. Multiply radiation exposure in millirems per hour by the occupancy time in hours to determine personnel exposure. The results shall be expressed in millirems.
6. If the customer is a general licensee, the results of Paragraph 5 shall not exceed the following on a quarterly (13 week) basis:  
  
Skin --- 750 millirems  
Whole Body --- 125 millirems

If either of the above values are exceeded, the customer shall not be permitted to use the gauging device. Personnel exposure shall be reduced to the above limits by decreasing occupancy time, by increasing distance from the device, by providing shielding, or by a combination of time, distance, shielding.

7. If the customer is a specific licensee, the following limits apply on a quarterly basis:  
  
Skin --- 7500 millirems  
Whole Body --- 1250 millirems

If these limits are exceeded, the customer shall not be permitted to use the gauge. Radiation exposure shall be reduced by some combination of time, distance, and shielding until personnel exposure is within the limits shown above. If the whole body exceeds 312 millirems or skin exposure exceeds 1875 millirems per quarter, the customer shall be advised of the requirement to provide personnel monitoring per paragraph 20.1502 of 10CFR or the equivalent regulations of an Agreement State.

PROCEDURE FOR RADIATION  
SITE SURVEY

8. The need for posting shall be determined. Since I<sup>2</sup>S radiation gauges consist only of sealed sources mounted within housings, the provision of Paragraph 20.1903 (c) or equivalent regulations of an Agreement State apply. If the radiation level at a distance of 30 cm from the surface of the housing does not exceed 5 millirems per hour, posting is not required. Radiation measurement shall be made with the beta shield in place. If radiation level exceeds 5 millirems per hour, the area shall be posted with caution signs which are visible to all personnel approaching the area.

NOTE: An example of this procedure follows.

EXAMPLE OF SITE SURVEY

This example follows the sample form on the next page.

The readings at the various distances are recorded on the form.

By observation, it was found that the most time anyone spent near the gage was the helper.

1/2 hour per shift at 1 foot from the gage  
1 hour per shift at 2 feet from the gage  
2 hours per shift at 3 feet from the gage

Multiplying these by 65 shifts per quarter gives:

32.5 hours/quarter at 1 foot  
65 hours/quarter at 2 feet  
130 hours/quarter at 3 feet

Multiplying these by the mrems/hr for the skin at each distance gives:

32.5 hours/quarter x 1.0 mrems/hr = 32.5 mrems/quarter  
65 hours/quarter x .4 mrems/hr = 26 mrems/quarter  
130 hours/quarter x .1 mrems/hr = 12 mrems/quarter

Adding all of these gives a total of 71.5 mrems/quarter, which is less than the allowable limit.

The same procedure is followed for the whole body exposure.

PROCEDURE FOR  
LEAK TESTING OF DEVICES  
CONTAINING SEALED SOURCES

All devices containing sealed sources except those devices containing only Krypton-85 shall be tested for leakage of radioactive material at intervals not to exceed six months. The following procedure shall be used:

1. When performing leak testing, a film badge shall be worn. Device shutter shall be closed.
2. The standard method of performing the leak test shall be the wipe test.
3. The standard instrument for analyzing the wipe shall be the geiger tube survey meter or scaler or ratemeter using a geiger tube detector. The instrument shall be capable of detecting .005 microcuries of the material of the sealed source.
4. To perform the wipe, a moistened cotton swab shall be used. The device seals shall be wiped with the swab. The swab shall be placed in a plastic bag taking care not to touch the seal with the hands or any other part of the body.
5. The swab shall be sent to the I<sup>2</sup>S facility in Wallingford, Connecticut for analysis.
6. The standard instrument shall be calibrated with a known source of material which is the same material as the material of the sealed source under test. The radioactive content of the wipe shall be measured and expressed in microcuries.
7. If the radioactive contents exceeds .005 microcuries, the device shall be removed from the service and corrective action must be taken. If the radioactive content does not exceed .005 microcuries, the source is considered to be not leaking.