



October 3, 1994

U.S. Nuclear Regulatory Commission
ATTN: Mr. John W. Lubinski, M.E.
Sealed Source Safety Section
Source Containment and Devices Branch
Division of Industrial and Medical
Nuclear Safety, NMSS

Mail Stop T8F5
11545 Rockville Pike
Washington, D.C. 20555

RE: Assignment Number 94-21

Dear Mr. Lubinski:

This letter is in response to your letter dated July 20, 1994, requesting additional information pertaining to the registration of the Model RSS-06 thickness gauge. We have provided the following information in order to continue your evaluation. Each item is presented in the order it appears in your letter of July 20.

1. Intergrated Industrial Systems, Inc. (I²S) intends to distribute the device to specific as well as general licensees. Copies of the labeling that will be included on the specifically licensed devices are included as attachment 1 of this letter. The warning label shall contain the following wording:

"REMOVAL OF THIS LABEL IS PROHIBITED!"

"THIS LABEL SHALL BE MAINTAINED ON THE DEVICE IN LEGIBLE CONDITION"

"Abandonment or disposal prohibited unless transferred to persons specifically licensed by the NRC or an Agreement State. Operation is prohibited if there is indication of failure or damage to shielding, source containment or on/off mechanism. Only persons specifically licensed by the USNRC or an Agreement State may install, dismantle, relocate, repair or test this device. Device shall be tested for radioactive leakage and proper functioning of on/of mechanism and indicators at installation, at source replacement and thereafter at no longer than six (6) month intervals. Loss, theft or transfer of this device to another licensee and failure or damage to shielding, source containment or on/off mechanism must be reported to the USNRC or Agreement State".

2. The labels printed in Appendix C of our application are the actual size of the labels.
3. The misspellings in Warning Label #3 have been corrected. A copy of the corrected label is included as Attachment 2. Please note, our company name is correctly spelled "Intergrated Industrial Systems, Inc.".

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4. The isotope, activity, model number and serial number are permanently riveted at each corner by means of a drive pin stud. This single use, unidirectional fastener is identical to those used on the LFE gauges we are currently authorized to redistribute.
5. All warning labels provided on the RSS-06 are permanently attached to the device by means of the drive pin stud, described above.
6. The Model RSS-06 device has been constructed to withstand the rigors of use in the sheet metal industry. Should the device be subjected to extremes of environmental and operating conditions, such as a fire, the multiconductor cable in the power supply would fail (its melting point is rated at 60°C), resulting in termination of power to the device, automatically closing the spring loaded shutter.
7. The source housing is sealed by means of viton gaskets (Ref. Item #028, DWG. NO. 300-660; also DWG. NO. 300-663, Sheet 2 of 2) with locktight sealant, thus providing an airtight seal. In addition, the source head is maintained under constant positive air pressure (18 lbs. psi). The operation of the shutter mechanism, the integrity of the sealed source, and the working life of the device will not be affected by foreign objects such as dirt or moisture.
8. A prototype of the device was DOT tested per DOT 7A criteria by I'S personnel to verify the device as Type A package. This testing has been documented by video, photographs and eye witnesses. The source housing has been strengthened above that of the LFE device currently licensed for redistribution; our device utilizes an area disk source sandwiched between steel plates tightly screwed together.
9. The Model 'RSS-06 gamma gauge is mounted on a rigid steel track; typical operation moves the device from the back (i.e. inaccessible) of the milling machine to the center of the metal strip, where it remains during operation. The device then moves along the track back to the lockout position at the end of the process run.

The device is used to measure strips of metal whose maximum thickness is 250 thousandths of an inch (typically 150 thousandths of an inch). The impact of such a thin metal strip on the device is negligible.
10. The target is held in place by the pressure of a stainless steel window that is secured by a clamp (Item No. 006, DWG. NO. 300-664).

11. I'S would like to amend Item 3.2 (page 7 of our original application) to reflect our desire to upgrade materials from low carbon steel to stainless steel (Items: subhousing; source plug; source cover; top cover). Following this amendment we will not make any changes or substitutions to the device without prior approval from the NRC.
12. The source locking bolt (Item No. 025, DWG NO. 300-660) is installed only by persons trained by the I'S Radiation Safety Officer in the proper procedure. The locking bolt is tightened to eight (8) inch pounds with the aid of a calibrated torque wrench. This provides enough force to flatten the wave spring washer (Item No. 004, DWG. NO. 300-660) and secure the source in place. The locking nut ("Jam nut", Item No. 014, DWG. NO. 300-660), also tightened to eight (8) inch pounds, secures the position of the locking bolt.
13. The Model RSS-06 device will automatically close the shutter when no material is present within the air gap. In the unlikely event the C-frame is knocked off the track, either the power would be lost - automatically closing the shutter, or the shutter would close automatically when no material is present in the air gap.
14. Under ordinary conditions of handling, storage, and use the Model RSS-06 device will not be exposed to a fire hazard (i.e. high temperature, flammable liquids, etc.). The radioactive source (americium-241) is contained within a cast steel housing; the source housing is sealed by means of viton gaskets with locktight sealant, thus providing an airtight seal. Internal shielding of the source is provided. The design of the LFE device, currently authorized for manufacture and redistribution to persons generally licensed, has been improved upon in the Model RSS-06 device. It is unlikely that any person will receive in one year a dose in excess of 10 percent of the annual limits specified in 10 CFR 20.1201 (a).

Under accident conditions, such as fire and/or explosion, associated with handling, storage, and use of the device, it is unlikely that any person would receive an external radiation dose or dose commitment in excess of the dose to the appropriate organ as specified in Column IV of the table in 10 CFR 32.24. The C-frame is constructed of low carbon steel, critical components of the source housing and subhousing are constructed of stainless steel. The melting point of steel is approximately 2500 degrees fahrenheit, well above the temperature of the average fire. Under accident conditions of fire or explosion, the steel components of the C-frame might deform slightly while maintaining structural integrity of the source and source housing.

15. The radiation profiles submitted with the original application were performed with material in the measuring gap (copper, maximum thickness). The isodose contour diagrams submitted as Appendix E of the original application are accurate radiation profiles of the Model RSS-06 gamma gauging device with material present in the measuring gap.
16. The measurement gap utilized in the Model RSS-06 device is variable up to a maximum of 10 cm (3.94"). The C-frame with a 10 cm (3.94") air gap provides the highest radiation levels around the device and the corresponding air gap.
17. The minimum dimensions of the C-frame are as follows:

Length	18.000 inches
Height	15.000 inches
Width	9.000 inches

No changes are made in the source housing between the minimum and maximum sizes of the C-frame, only the frame itself. Each device (maximum and minimum size) contains the same shielding around the source housing and therefore exhibits identical radiation profiles.

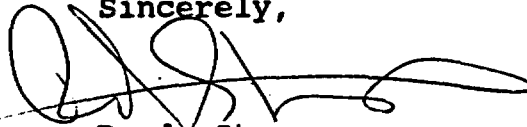
18. The following changes have been made in the documentation provided to our customers:
 - a. A section has been added listing Agreement State agencies (refer to Attachment).
 - b. Section 3) U.S.N.R.C. Regulations has been amended to include a discussion of the use of the device under a general license (refer to Attachment).
 - c. Guidance has been provided for Agreement State general licensees (refer to Attachment).
 - d. Maintenance and replacement of the receiver head may be performed safely by the general licensee. The Maintenance Section of the manual provides detailed procedures for this procedure; in addition, training provided by I'S personnel will cover this procedure in detail. The manual contains stern wording warning the gauge user to REMOVE GAUGE SYSTEM POWER AND LOCKOUT. With no power to the system the device cannot be operated in the ON position. This is done to protect the user from unnecessary exposure to radiation in addition to protection from the electric shock hazard.
 - e. The Maintenance Section of the manual has been amended to

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clearly indicate that servicing of the device not specifically addressed by the Maintenance Section is restricted and no customer maintenance is allowed for these areas. All maintenance not specifically identified in this section must be performed by persons specifically licensed by the NRC or an Agreement State.

The above information has been provided to you to further your review of our application to register the Model RSS-06 gamma radiation thickness gauge. If you have any questions, please contact me at (203) 265-5684 or Mr. Robert L. Gallagher at (413) 339-4870.

Sincerely,

A handwritten signature in black ink, appearing to read 'Randy Stevens', with a large, stylized flourish extending to the right.

Randy Stevens,
Project Coordinator
Intergrated Industrial Systems, Inc.