

(8-1999)  
10 CFR 30, 32, 33  
34, 35, 36, 39 and 40

**APPLICATION FOR MATERIAL LICENSE**

Estimated burden per response to comply with this mandatory information collection request 7.4 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records Management Branch (7-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

**INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.**

**APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:**

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY  
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS  
U.S. NUCLEAR REGULATORY COMMISSION  
WASHINGTON, DC 20555-0001

**ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:**

**IF YOU ARE LOCATED IN:**

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

LICENSING ASSISTANT SECTION  
NUCLEAR MATERIALS SAFETY BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406-1415

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

SAM NUNN ATLANTA FEDERAL CENTER  
U. S. NUCLEAR REGULATORY COMMISSION, REGION II  
81 FORSYTH STREET, S.W., SUITE 23T85  
ATLANTA, GEORGIA 30303-8831

**IF YOU ARE LOCATED IN:**

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION III  
801 WARRENVILLE RD.  
LISLE, IL 60532-4351

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV  
811 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TX 76011-8064

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

**1. THIS IS AN APPLICATION FOR (Check appropriate item)**

- A NEW LICENSE
- B AMENDMENT TO LICENSE NUMBER \_\_\_\_\_
- C RENEWAL OF LICENSE NUMBER \_\_\_\_\_

**2. NAME AND MAILING ADDRESS OF APPLICANT (include Zip code)**

Industrial Control Optimization Network  
9322 Willedee Circle North  
Semmes, AL 36575

**3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED**

See Attachment

**4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION**

James A. Lee, Sr.

TELEPHONE NUMBER  
(334) 661-3185

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

**5. RADIOACTIVE MATERIAL.**  
a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

**6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED**

**7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.**

**8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS**

**9. FACILITIES AND EQUIPMENT.**

**10. RADIATION SAFETY PROGRAM.**

**11. WASTE MANAGEMENT**

**12. LICENSEE FEES (See 10 CFR 170 and Section 170.31)**  
FEE CATEGORY 3P AMOUNT ENCLOSED \$1,300.00

**13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.**

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39 AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 82 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE

James A. Lee, Sr. President

SIGNATURE

DATE

February 7, 2001

**FOR NRC USE ONLY**

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		
APPROVED BY				DATE	

**U.S. Nuclear Regulatory Commission**  
**Application for Material License**  
**Submission of Items 3, and 5-11**  
Industrial Control Optimization Network – Semmes, AL  
January 2001

**Item 3. Location of Use**

Industrial Control Optimization Network (ICON) will not own or possess gauges for its own use. ICON will only possess sources incident to performing services on fixed gauges at customer locations where customer is licensed to possess sources.

**Item 5. Radioactive Material**

**Radioisotope**

Strontium 90 (Sealed Source)  
Krypton 85 (Sealed Source)  
Americium 241 (Sealed Source)  
Cobalt 60 (Sealed Source)  
Cesium 137 (Sealed Source)  
Promethium 147 (Sealed Source)

**Manufacturer / Model**

ABB Process Automation gauging systems devices, and other gauging devices of the same basic design as ABB devices manufactured by the following companies: Accuray, Honeywell, Measurex, Impact, Voith, GE, Lipke, Valmet, Texas Nuclear, KayRay, Sensall, Ohmart, Yokagawa, NDC Systems, FAG, and Betacontrol.

**Quantity**

Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet.

**Item 6. Purposes for which licensed materials will be used.**

Possession incident to performing services on sealed sources and/or devices will be used for the purpose of performing commercial:

Installation  
Radiation surveys  
Removal  
Relocation  
Repair  
Source exchange  
Maintenance  
Source retrieval  
Leak test sample acquisition  
Safety inspection  
Customer training in the proper use of device(s) and for conducting routine, and in some situations, non-routine maintenance of device(s)

**Item 7. Individuals responsible for radiation safety program and their experience**

**Radiation Safety Officer**

The Radiation Officer for this license is James A. Lee, Sr.  
James Lee is the president of the company.  
Certified Radiation Safety Officer by CSI Radiation Safety Training  
including DOT Requirements for shipping & receiving radioactive  
materials November 13-17, 2000  
AccuRay Radiation Safety Training for Field Service Engineers January 1982  
AccuRay Gauging System Service Training February 1982  
19 years experience servicing gauge systems for AccuRay, CE, ABB, and PSG.

**U.S. Nuclear Regulatory Commission**  
**Application for Material License**  
**Submission of Items 3, and 5-11**  
Industrial Control Optimization Network – Semmes, AL  
January 2001

Before being named as the RSO, future RSOs will have successfully completed the training described in Criteria in the section entitled "Radiation Safety Officer," in NUREG-1556, Vol. 4, dated October 1998, and a gauge service course from a gauge manufacturer or documented equivalent experience. Within 30 days of naming a new RSO, we will submit the new RSO's name to NRC to include in our license.

**Authorized Users**

Before using licensed materials, authorized users will be certified as a 'Radiological Gauge Service Technician'. ICON will issue this certificate after employees meet the requirements specified in 'Training: Radiological Gauge Service Technician' in ICON's Radiological Protection Program.

**Item 8. Training for individuals working in or frequenting restricted areas**

Before being allowed access to customer facilities where licensed materials may be used, employees will receive training as specified in 'Training: General Employee Radiation Training (GERT)' in ICON's Radiological Protection Program.

**Item 9. Facilities and Equipment**

ICON will not own or possess gauges for its own use; however, ICON will evaluate the location of customer gauges that it services using the Criteria in the section entitled 'Facilities and Equipment' in NUREG-1556, Vol. 4, dated October 1998. Customers whose gauges do not meet these criteria will be notified in writing so that they may take appropriate action to achieve compliance. This notification will be delivered to the customer's RSO, and a copy will be maintained on file at the ICON company office for a period of 3 years.

**Item 10. Radiation Safety Program**

The following procedures are detailed in ICON's manual titled 'Radiation Protection Program, Industrial Control Optimization Network

Radiation Policy Statement	Installation
RSO Responsibilities	Removal and Relocation
Employee Information Notice	General Maintenance
Training: General Employee Radiation Training	Non-Routine Maintenance
Training: Radiological Gauge Service Technician	Leak Testing and Safety Inspection
Instructor Certification	Quality Assurance and RPP Checklist
Customer training	Dose Limits and Calculations
Normal Operations	Personnel Monitoring
Lock-out / Tag-out Procedures	Survey Instrumentation
Receipt of Devices	Waste Management
Emergency Procedure	Record Keeping

# Radiation Safety Officer

## Certificate

Awarded to

*James A. Lee, Sr.*

recognizing completion of 40 hours of specialized instruction

**November 13-17, 2000**

Presented By

***CSI-Radiation Safety Training***  
481 North Frederick Avenue, Suite 302  
Gaithersburg, Maryland 20877

AAHP has awarded this course 32 Continuing Education Credits, 99-00-011  
ABIIH has awarded this course 4.5 CM Points, CM Approval #13421

*Ray Johnson*

Raymond Johnson, CHP, PE, RSO  
Training Director



# Certificate of Training

This Certifies That

*James A. Lee, Sr.*

has successfully completed the

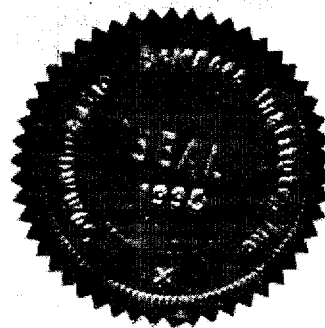
## DOT Requirements for Shipping & Receiving Radioactive Materials

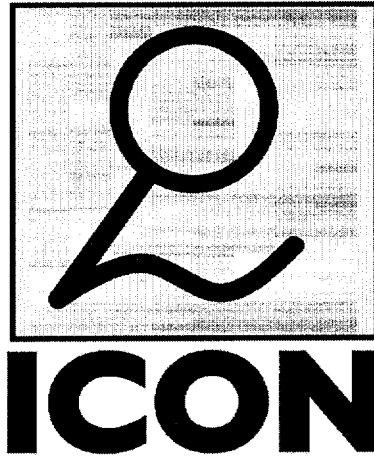
Presented By

*CSI-Radiation Safety Training*  
481 North Frederick Avenue, Suite 302  
Gaithersburg, Maryland 20877

*Ray Johnson*

Raymond Johnson, CHP, PE, RSO  
Training Director





# **Radiation Protection Program**

**Industrial Control Optimization Network**

**Semmes, AL**

**January 2001**

ICON Radiation Protection Program	<b>Purpose</b>
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### **Purpose**

This Radiation Protection Program is designed primarily for use by ICON field personnel performing radiological services for customers at the customers' facilities. All services provided will be subject to the conditions of the customers' materials license and will be governed by requirements of the NRC or Agreement State having jurisdiction over the customers' facility.

Radiation Protection Program (RPP) plans serve several purposes. Not only do they meet the intent of regulatory requirements, more importantly, they establish a system for safe management of radioactive materials in order to minimize potential exposures.

This detailed, written program clearly describes the actions to be taken and the equipment to be used by ICON personnel in the event of an emergency. The provisions of this program shall be carried out in the event of a fire, explosion, or any other unplanned release of radioactive materials. In addition, this plan shall serve as an aid to customers in coordinating the activities of outside agencies and facilities that may also respond to such an event at their site.

### **Program Location**

Official copies of this Radiation Protection Program can be found in the following locations:

1. Local ICON service sites
2. ICON Company Headquarters

### **Program Revision**

This RPP must be reviewed annually and amended, if necessary, whenever:

1. ICON revises its service operations or maintenance procedures in a manner that may increase the potential for the release of radioactive material
2. Applicable regulations are revised

All amendments of this program are subject to the authorization of the RSO and the Nuclear Regulatory Commission.

## **Industrial Control Optimization Network Radiation Policy Statement**

### **ALARA**

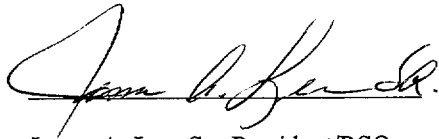
Personal radiation exposure shall be maintained As-Low-As-Reasonably-Achievable. Radiation exposure of the work force and public shall be controlled such that radiation exposures are well below regulatory limits and that there is no radiation exposure without commensurate benefit.

### **OWNERSHIP**

Each person involved in radiological work is expected to demonstrate responsibility and accountability through an informed, disciplined and cautious attitude toward radiation and radioactivity.

### **EXCELLENCE**

Excellent performance is evident when radiation exposures are maintained well below regulatory limits, contamination is minimal, radioactivity is well controlled and radiological spills or uncontrolled releases are prevented. Continuing improvement is essential to excellence in radiological control.



James A. Lee, Sr., President/RSO



ICON Radiation Protection Program	<b>Radiation Safety Officer Responsibilities</b>
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- Develop, document and implement a Radiation Protection Program (i.e., operating safety, emergency procedures etc.) An "As Low As Reasonably Achievable" (ALARA) policy and position statement, and to review the procedure annually to ensure they are current and conform to these rules.
- Oversee and approve all phases of the training program for personnel so that appropriate and effective radiation protection principles are taught.
- Ensure that required radiation surveys and leak test sample acquisitions are performed and documented in accordance with these rules, including any corrective measures if levels of radiation exceed established limits.
- Ensure that personnel monitoring, if required, is used properly by occupationally-exposed personnel, that records of the monitoring results are maintained; and that timely notifications are made as required.
  1. Ensure unnecessary personnel are shielded from the work area and out of the path taken to move the source from its stowage to its final destination.
  2. Ensure a minimal number of employees and contract workers are utilized to conduct installation, repair, maintenance and removal of radioactive materials.
  3. Ensure the work area is roped off with caution tape.
- Investigate and submit a report to the regulatory agency for each known or suspected case of release of radioactive material(s) to the environment in excess of limits established in 10 CFR Part 20.
- Have a thorough knowledge of management policies and licensing procedures.
- Assume control and have the authority to institute corrective actions, including shutdown of operations when necessary in emergency situations or unsafe conditions.
- Ensure that records are maintained current and available as required.
- Ensure proper labeling, transport and use of radiation, storage and/or transport containers.
- Ensure that personnel are complying with license commitments and associated operating, safety and emergency procedures of the licensee.

<b>ICON</b> Radiation Protection Program	<b>Employee Information Notice</b>
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ICON provides services for industrial manufacturing firms that utilize radioactive sources in measuring certain aspects of their production process. Most devices are installed in lead filled assemblies which contain the radioactive material and direct it only into the material being measured. Each source housing has a shutter mechanism, which can be locked closed in the event it is necessary to work in or around the equipment or vessel.

The radiation emitted by the sources may be alpha, beta, gamma or x-ray radiation. There is no radon gas or other radioactive byproduct produced in the decay of the sources. Material exposed to the radiation does not become radioactive.

A number of ICON personnel have been trained in radiation safety. Every effort is made to use these devices in a safe, conscientious manner and to keep personnel exposures As Low As Reasonably Achievable (ALARA). If there are questions concerning the application of these devices, our license, regulations, procedures; or if anything unusual is observed, the following personnel should be contacted:

Name*	Office Phone	Home Phone
<b>Jim Lee, ICON RSO</b>	<b>(334) 661-3185</b>	<b>(334) 649-5687</b>

\*ICON engineers working within customer sites will be provided additional contact information to include the Customer RSO and telephone number, and local emergency response numbers.

If after contacting the persons listed above, any employee is concerned that the matter is not being properly handled may contact:

**Regulatory Agency - Nuclear Regulatory Commission (NRC)**  
**Safety Hotline**  
**Telephone Number 1 800 695-7403**

ICON Radiation Protection Program	<b>Training: General Employee Radiation Training</b>
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### **Purpose**

ICON employs personnel whose normal duties require them to perform both routine and non-routine maintenance on devices that contain radioactive sealed sources. When used improperly or serviced by personnel with insufficient training, these devices can pose a significant risk of radiation exposure to employees and the public. To keep exposure to radiation As Low As Reasonably Achievable (ALARA) and ensure compliance with NRC regulations and our license requirements, ICON will only allow Certified Radiological Gauge Service Technicians (RGST) to perform services on gauges containing radioactive sources.

ICON employees who have not been certified as Radiological Gauge Service Technicians are strictly forbidden to perform any services on gauges containing radioactive sources. The only exception to this rule is during the course of training under the direct supervision of a certified RGST.

Employees whose duties do not require them to service devices containing radioactive sources may still have the potential for radiation exposure when visiting customer facilities. Before being allowed access to customer facilities where licensed materials may be used, employees will receive General Employee Radiation Training (GERT).

### **Guidance**

This course of instruction is a condition of our materials license. Any changes must meet the requirements described in Criteria in the section entitled "Training for individuals who in the course of employment are likely to receive occupational doses of radiation in excess of 1mSv (100 mrem) in a year (occupationally exposed workers) and ancillary personnel" in NUREG-1556, Vol. 4, dated October 1998 including revisions.

### **Certification**

Successful completion of GERT will be documented in an appropriate training file. No certificate is issued.

### **Requirements**

Employees must successfully complete the classroom training as evidenced by a score of 80% or higher on a written exam containing at least one question from each subject area covered (employees with prior radiation training will be allowed to skip the classroom if they pass the written exam)

ICON Radiation Protection Program	<b>Training:</b> <b>General Employee Radiation Training</b>
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## **Curriculum**

### **Classroom Instruction**

The following instruction will be provided in a classroom environment using any or all of: tapes, books, videos, overheads, handouts, computer based training, lectures, and discussions. The RSO or an ICON Certified Radiation Safety Instructor will give this instruction.

### **Radiation Safety**

1. Radiation vs. contamination
2. Internal vs. external exposure
3. Biological effects of radiation
4. Types and relative hazards of radioactive material used in gauges
5. ALARA concept
6. Use of time, distance, and shielding to minimize exposure
7. Locations of sealed sources within gauges
8. Recognizing shutter indicators
9. ICON's Radiation Protection Program
10. Recognizing and complying with radiation warning signs

### **Regulatory Requirements**

1. Applicable regulations
2. License conditions, amendments, and renewals
3. Potential locations of use and storage of radioactive materials at customer facilities
4. Material control and accountability
5. Annual audit of radiation safety program
6. Transfer and disposal
7. Record keeping
8. Prior events involving fixed gauges
9. Handling incidents
10. Licensing and inspection by regulatory agency
11. Need for complete and accurate information
12. Employee protection
13. Deliberate misconduct

ICON Radiation Protection Program	<b>Training: Radiological Gauge Service Technician</b>
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### **Purpose**

ICON employs personnel whose normal duties require them to perform both routine and non-routine maintenance on devices that contain radioactive sealed sources. When used improperly or serviced by personnel with insufficient training, these devices can pose a significant risk of radiation exposure to employees and the public. To keep exposure to radiation As Low As Reasonably Achievable (ALARA) and ensure compliance with NRC regulations and our license requirements, ICON will only allow Certified Radiological Gauge Service Technicians (RGST) to perform services on gauges containing radioactive sources.

ICON employees who have not been certified as Radiological Gauge Service Technicians are strictly forbidden to perform any services on gauges containing radioactive sources. The only exception to this rule is during the course of training under the direct supervision of a certified RGST.

### **Guidance**

This course of instruction is a condition of our materials license. Any changes must meet the requirements described in Criteria in the section entitled "Authorized Users," and appendix N "Information Needed to Support Applicant's Request to Perform Non-Routine Operations" in NUREG-1556, Vol. 4, dated October 1998 including revisions.

### **Certification**

Employees will be issued a certificate signed by the RSO after the RSO has determined that they have successfully completed all of the requirements for certification.

### **Requirements**

Candidates must meet the following minimum requirements for certification as Radiological Gauge Service Technicians:

1. Successful completion of the classroom training portion of the course as evidenced by a score of 80% or higher on a written exam containing at least one question from each subject area covered (employees with prior radiation training will be allowed to skip the classroom training portion of the course if they pass the written exam)
2. Demonstrating practical knowledge of subjects covered in the 'Hands-On' training portion of the course
3. Successful completion of a manufacturers gauge maintenance course or equivalent field experience (equivalent field experience shall be not less than three months maintaining and repairing fixed gauge systems under the direct supervision of a certified RGST or manufacturer trained representative)

ICON Radiation Protection Program	<b>Training:</b> <b>Radiological Gauge Service Technician</b>
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## Curriculum

### Classroom Instruction

The following instruction will be provided in a classroom environment using any or all of: tapes, books, videos, overheads, handouts, computer based training, lectures, and discussions. The RSO or an ICON Certified Radiation Safety Instructor will give this instruction.

### Radiation Safety

1. Radiation vs. contamination
2. Internal vs. external exposure
3. Biological effects of radiation
4. Types and relative hazards of radioactive material used in gauges
5. ALARA concept
6. Use of time, distance, and shielding to minimize exposure
7. Locations of sealed sources within gauges
8. Use of survey meters and personal dosimetry
9. Recognizing shutter indicators
10. Information contained in SSD registry
11. Obtaining SSD information
12. Importance of following manufacturer's recommended procedures
13. Obtaining manufacturer's procedures
14. Routine vs. non-routine maintenance
15. ICON's Radiation Protection Program
16. Coordination with customer RSO and customer license requirements

### Regulatory Requirements

1. Applicable regulations
2. License conditions, amendments, and renewals
3. Potential locations of use and storage of radioactive materials at customer facilities
4. Material control and accountability
5. Annual audit of radiation safety program
6. Transfer and disposal
7. Record keeping
8. Prior events involving fixed gauges
9. Handling incidents
10. Recognizing and ensuring that radiation warning signs are visible and legible
11. Licensing and inspection by regulatory agency
12. Need for complete and accurate information
13. Employee protection
14. Deliberate misconduct

ICON Radiation Protection Program	<b>Training:</b> <b>Radiological Gauge Service Technician</b>
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### Practical Application

The following instruction will be provided in a classroom environment using any or all of: tapes, books, videos, overheads, handouts, computer based training, lectures, and discussions. The RSO or an ICON Certified Radiation Safety Instructor will give this instruction. Hands on training will be given in the field by an ICON Certified Radiological Gauge Service Technician. Before undertaking any practical exercises involving live sources, employees must be issued personal dosimetry and instructed in it's proper use.

### Practical Explanation of the Theory and Operation of the Types of Gauges Serviced

1. Operating and emergency procedures
2. Routine maintenance
3. Non-routine maintenance
4. Alignment and physical security
5. Lock-out procedures
6. Shutter mechanisms
7. Electrical and mechanical interlocks
8. Leak test sample acquisition
9. Source removal and installation
10. Dislocated source retrieval
11. Packaging for storage and transportation
12. Radiation surveys
13. Placing a gauge in service and ensuring proper operation

### Supervised "Hands-On" Experience Performing

1. Operating procedures
2. Test runs of emergency procedures
3. Routine maintenance
4. Non-routine maintenance
5. Lock-out procedures
6. Inspection of shutter mechanisms
7. Leak test sample acquisition
8. Source removal and installation
9. Radiation surveys
10. Placing a gauge in service and ensuring proper operation

ICON Radiation Protection Program	<b>Training: Radiation Safety Instructor Certification</b>
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### **Purpose**

ICON trains employees and customers to perform both routine and non-routine maintenance on devices that contain radioactive sealed sources. To ensure that this training is performed by qualified personnel, ICON has instituted the Radiation Safety Instructor Certification program.

### **Guidance**

A Certified Radiation Safety Instructor will be authorized to perform any training that would normally be given by the RSO. RSI certification will only be granted to candidates who have fully demonstrated their ability to serve as RSO.

This certification program is a condition of our materials license. Any changes must meet the requirements described in Criteria in the section entitled "Radiation Safety Officer," and appendix N "Information Needed to Support Applicant's Request to Perform Non-Routine Operations" in NUREG-1556, Vol. 4, dated October 1998 including revisions.

### **Certification**

Employees will be issued a certificate signed by the RSO after the RSO has determined that they have successfully completed all of the requirements for certification.

### **Requirements**

Candidates must meet the following minimum requirements for certification as Radiological Safety Instructors:

1. Achieve ICON Radiation Gauge Service Technician certification
2. Not less than five years of direct field experience maintaining and repairing fixed gauges containing radioactive sealed sources
3. Score 100% on a written exam containing at least one question from each subject area covered in the classroom instruction portion of RGST training. (This test will be administered 'open-book' with any materials the candidate chooses except for the exam key)
4. Demonstrate the ability to teach the following curriculum including remediation



<b>ICON</b> Radiation Protection Program	<b>Training:</b> <b>Radiation Safety Instructor Certification</b>
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## **Curriculum**

### **Classroom Instruction**

Radiation Safety Instructor candidates will demonstrate the ability to provide the following instruction in a classroom environment using any or all of: tapes, books, videos, overheads, handouts, computer based training, lectures, and discussions.

### **Radiation Safety**

1. Radiation vs. contamination
2. Internal vs. external exposure
3. Biological effects of radiation
4. Types and relative hazards of radioactive material used in gauges
5. ALARA concept
6. Use of time, distance, and shielding to minimize exposure
7. Locations of sealed sources within gauges
8. Use of survey meters and personal dosimetry
9. Recognizing shutter indicators
10. Information contained in SSD registry
11. Obtaining SSD information
12. Importance of following manufacturer's recommended procedures
13. Obtaining manufacturer's procedures
14. Routine vs. non-routine maintenance
15. ICON's Radiation Protection Program
16. Coordination with customer RSO and customer license requirements

### **Regulatory Requirements**

1. Applicable regulations
2. License conditions, amendments, and renewals
3. Potential locations of use and storage of radioactive materials at customer facilities
4. Material control and accountability
5. Annual audit of radiation safety program
6. Transfer and disposal
7. Record keeping
8. Prior events involving fixed gauges
9. Handling incidents
10. Recognizing and ensuring that radiation warning signs are visible and legible
11. Licensing and inspection by regulatory agency
12. Need for complete and accurate information
13. Employee protection
14. Deliberate misconduct

ICON Radiation Protection Program	<b>Training:</b> <b>Radiation Safety Instructor Certification</b>
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### Practical Application

Radiation Safety Instructor candidates will demonstrate the ability to provide the following instruction in a classroom environment using any or all of: tapes, books, videos, overheads, handouts, computer based training, lectures, and discussions. Candidates will demonstrate ability to provide 'hands-on' training by instructing the RSO or a Certified RSI. Before undertaking any practical exercises involving live sources, employees must be issued personal dosimetry and instructed in it's proper use.

### Practical Explanation of the Theory and Operation of the Types of Gauges Serviced

1. Operating and emergency procedures
2. Routine maintenance
3. Non-routine maintenance
4. Alignment and physical security
5. Lock-out procedures
6. Shutter mechanisms
7. Electrical and mechanical interlocks
8. Leak test sample acquisition
9. Source removal and installation
10. Dislocated source retrieval
11. Packaging for storage and transportation
12. Radiation surveys
13. Placing a gauge in service and ensuring proper operation

### "Hands-On" Experience Performing

1. Operating procedures
2. Test runs of emergency procedures
3. Routine maintenance
4. Non-routine maintenance
5. Lock-out procedures
6. Inspection of shutter mechanisms
7. Leak test sample acquisition
8. Source removal and installation
9. Radiation surveys
10. Placing a gauge in service and ensuring proper operation

ICON Radiation Protection Program	<b>Training:</b> <b>ICON Customer Training</b>
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**Purpose**

ICON employs personnel whose normal duties require them to perform both routine and non-routine maintenance on devices that contain radioactive sealed sources. When used improperly or serviced by personnel with insufficient training, these devices can pose a significant risk of radiation exposure to employees and the public. ICON has instituted a training program to ensure that employees are qualified to perform these tasks. Upon request this training may be provided for the customer's employees. All customer training must be approved by the RSO.

**Guidance**

Customer training will be provided under the same strict guidelines that govern ICON employee training. Additionally customers must be made aware that their license and Radiation Protection Program may differ significantly from that of ICON. Customer RSOs should review their license and policies with their employees before allowing them to perform work involving radioactive sources. In certain circumstances an ICON instructor may provide this training after a thorough review with the customer RSO.

**Certification**

If requested by the customer, the instructor will issue a certificate of completion listing the topics covered and competency level. Customer employees will not be certified as Radiological Gauge Service Technicians or Radiation Safety Instructors unless they have fully met all of the requirements for certification.

ICON Radiation Protection Program	<b>Normal Operations</b>
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ICON will not use or own radioactive material. ICON's possession is incident to the installation, removal, relocation, packaging, testing for proper operation of the on-off mechanism and indicator (if any), leak test sample acquisition, repair, maintenance, source retrieval, transportation, and performing radiation surveys for sealed sources within the specified isotope and activity ranges as defined by this license in Sub-item 6 only at customers' facilities.

These fixed gauge devices are used by our customers to accurately measure weight, density, levels, flows or other physical properties of their manufacturing process. Although similarities exist between different manufacturers of these type devices, manufacturers' procedures for each model number will be made available and followed while performing the tasks outlined above. All tasks must be performed by or under the direct supervision of a certified ICON Radiological Gauge Service Technician.

ICON Radiation Protection Program	<b>Lock-out / Tag-out</b>
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### **Lock-out/Tag-out Procedures for the Nuclear Shutter**

ICON employees are responsible for taking appropriate protective measures to ensure against inadvertent radiation exposure. Radiological Gauge Service Technicians (RGST) will follow customer lock-out/ tag-out procedures. These procedures will also be utilized when the air gap between the detector permits entry of all or a portion of a person's body into the primary radiation beam.

When necessary, shutter mechanisms will be locked on the "Off" or "Closed" position and shutter controls will be de-energized and tagged to indicate that the gauge is locked out. RGST's will post warning signs around areas where beam exposure is possible. Contact information and safety instructions will be provided on each sign. When work in the area is complete, the RGST will remove the lock and tag; and return the gauging device to its operable condition.

While ICON does not receive radioactive material for its own purpose or use, its customers may request qualified ICON personnel to visually inspect the outside shipping container for evidence of damage to packages containing radioactive material.

1. Damaged Shipping Containers

If the inspection indicates damage, the Customer RSO or authorized designee shall be notified immediately. The package will not be moved; and access to the immediate area will be limited to authorized personnel. This area shall be controlled to prevent potential exposure until the Customer RSO or designee arrives to assess the condition of the package.

The Customer RSO shall survey the package to determine radiation levels. ICON personnel will assist the Customer RSO per his request. If levels exceed permissible exposure limits the customer will implement emergency procedures for containment as directed in their material license.

2. Undamaged Shipping Containers

The Customer RSO will be notified of its arrival. If no damage is apparent, the package will be stored in accordance with the customers' materials license.

ICON Radiation Protection Program	<b>Emergency Procedures</b>
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Emergency incidents include but are not limited to a fire or explosion in the area where sources are located and the dislocation of a gauging device from its installed position.

The following procedure must be followed if there is any incident involving radioactive sources:

1. Notify all other persons in the area, and evacuate at once.
2. Notify the necessary emergency response agencies, i.e., fire department.
3. Notify the Customer Radiological Safety Officer.
4. Attempt to put out any fire by an approved means.
5. ICON Radiological Gauge Service Technicians will manage the scene until relieved by Customer RSO or competent emergency response personnel.
6. Assist the Customer RSO or other response personnel.
7. In the case of a dislocated source, close the shutter mechanism, if possible, and perform a visual inspection to determine physical damage to the device. If the shutter cannot be closed, the area will be surveyed to determine potential exposure levels around the device.
8. Non-essential personnel will be directed away from the scene. No one will be permitted to return to the area without approval from the Customer RSO. A list will be maintained of all personnel entries.
9. Notify and apprise ICON's Radiological Safety Officer of the emergency conditions. ICON RGST's are prohibited from attempting retrieval of a dislocated device without authorization from ICON's Radiological Safety Officer.
10. ICON's RSO will coordinate removal and storage operations with the Customer RSO and the gauge manufacturers RSO.
11. No attempt will be made to clean up any debris or material involved in the accident prior to the arrival of properly trained and equipped individuals.
12. Assist the RSO's in drafting a detailed written history of the emergency and subsequent actions taken.
13. Customer RSO shall be responsible for any notification required under the regulations.

## **Installation Procedure for Nuclear Gauge**

### **Introduction**

The following steps are performed with the shutter closed and locked.

1. The mounting brackets and associated non-radiological equipment will be installed as much as practical prior to moving the source head to its destination. The source head will remain at its designated storage specified by the Customer RSO and not moved unless this RSO authorizes it.
2. The source will be moved to its destination and installed with authorized ICON personnel present at all times. ICON Radiological Gauge Service Technicians (RGST) will be responsible for keeping unnecessary personnel out of the work area and out of the path taken to move the source from its stowage to its final destination. The work area will be roped off with caution tape and the ICON RGST will be responsible to keep the number of people in the area to a minimum necessary to complete the work. The RGST will also perform radiation checks during the installation to ensure personnel safety.
3. The actual mechanical installation and electrical procedure will be performed in accordance with the manufacturer provided Installation and Operation manual.

### **Installation and Reinstallation Procedures**

ICON employees will be informed that only individuals specifically trained as Radiological Gauge Service Technicians can install, remove, relocate and perform surveys of devices. This section addresses installation, relocation and reinstallation of devices containing radiological material which have been approved by the NRC or Agreement State.

1. Prior to the installation of any gauging device, the ICON RGST will determine if there are any other precautions that need to be taken due to such potential hazards as chemicals or flammable materials.
2. An inspection of the gauging device will be conducted prior to any work being performed to install and/or reinstall a gauging device.
3. On the date of installation and prior to removing the gauging device from storage, ensure that the shutter mechanism is closed and locked in the closed position.



ICON Radiation Protection Program	<b>Installation and Reinstallation (continued)</b>
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4. Perform a radiation survey of the gauging device, using an appropriate, operable and currently calibrated survey instrument. Original copies of this survey result will be given to the Customer RSO. ICON copies will be recorded and kept for a period of three years.
5. Upon arrival of the gauging device to the installation area, barricade tape will be used to restrict access. A designated person will maintain surveillance of the work area to prevent entry by non-essential personnel.
6. The gauging device will be positioned and affixed in its specified location in accordance with manufacturer instructions and engineering drawings.
7. Remove all non-essential employees from the restricted work area following the device mounting process.
8. Remove the locking device from the gauge shutter mechanism and move the shutter mechanism to the "Open" or "On" position.
9. Perform a radiation survey of the gauging device after the shutter mechanism has been opened. This survey will include each accessible area around the device, at the device surface, at a distance of one foot. This survey information will be recorded.

Once the device is properly installed and the radiation levels in the area are determined to be within regulatory limits, ropes guarding the area shall be removed and the area will be returned to normal use. The Customer RSO will determine the necessity for posting of the area based on the radiation levels that surround the gauging device. If posting of warning signs is required, the Customer RSO will post the area with the appropriate signs.

ICON Radiation Protection Program	<b>Removal and Relocation</b>
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### **Removal and Relocation of Gauging Devices**

During the removal and relocation process, the following procedures will be followed:

1. Close the shutter mechanism and secure it with a lock. After locking the shutter in the closed position, and prior to the removal of the device from installation, perform a radiation survey with the use of an appropriate, operable and currently calibrated survey instrument. This survey will be performed to ensure that the shutter mechanism is in the "Off" position and that it is safe for work to proceed.
2. The work area will be restricted (posted with barricade tape, if appropriate) and maintained as a restricted area during the removal process.
3. Following device removal, the ICON RGST will perform an additional survey at the gauge beam port location to ensure that the shutter has been properly closed.
4. Upon arrival at the storage location, the gauge will be removed from the vehicle and placed in the customers' storage location. The Customer RSO or designee will secure the gauge with a locking device and control access to the storage area in accordance to the sites material license.

A radiation survey will be performed in the unrestricted areas surrounding the storage location. This survey will be recorded. The exposure to members of the public will be determined and recorded. The records of survey and exposure assessment will be provided to the Customer RSO or designee. ICON will maintain copies of these surveys for a period of three years.

ICON Radiation Protection Program	<b>Maintenance:</b> <b>General</b>
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The following guidelines will be adhered to when performing any maintenance on gauges and sensors that contain radioactive sealed sources.

1. All maintenance will be performed in accordance with manufacturer guidelines and recommendations.
2. All activities will be coordinated with the customer RSO to ensure compliance with customer's license and procedures.
3. Routine electronic maintenance on carriages and control systems is generally permitted unless the geometry between the source head and the detector head must be broken.
4. Certain scanning sensors have been designed with inherent safety shutter mechanisms to allow the source and detector heads to be separated for routine cleaning and to allow access to other (non-radioactive) sensors mounted on the same carriage. These heads may be separated by someone other than an RGST as long as:
  - a. The shutter safety mechanism has been tested in the past six months
  - b. The person performing the maintenance has been trained in the procedure including potential hazards
  - c. The source head is locked to prevent unauthorized access
  - d. No safety interlocks are bypassed
5. Maintenance on the source head itself, or maintenance involving the safety or shutter mechanism will only be performed by or under the direct supervision of an RGST using approved procedures.
6. Only parts and lubricants approved by the manufacturer will be used.
7. Personal dosimetry will be issued and properly worn by occupationally exposed workers.
8. ALARA principles will be strictly adhered to.
  - a. All non-essential personnel will be kept clear of the work area.
  - b. Work will be planned to keep exposure time to a minimum.
  - c. No one will ever be exposed to the direct beam of a radioactive source.
  - d. Sources will be shielded
  - e. Sources will be removed to a secure storage area if extended maintenance is to be performed on the source head.
9. After performing any procedure that might potentially compromise the integrity of the source housing, shutter, or safety mechanism:
  - a. A general area survey will be performed including maximum levels at one foot, three feet, and places where people are likely to be; such as walkways, stairs, and access to plant equipment.
  - b. Safety and shutter mechanisms will be tested for proper operation.
  - c. Gauge will be checked for physical security and returned to operation.

ICON Radiation Protection Program	<b>Maintenance:          Non-Routine Maintenance</b>
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Non-routine maintenance or repair (beyond routine cleaning, lubrication, calibration, and electronic repairs) means any maintenance or repair that involves or potentially affects components, including electronics, related to the radiological safety of the gauge (e.g. the source, source holder, source drive mechanism, shutter, shutter control or shielding) and any other activities during which personnel could receive radiation doses exceeding NRC limits.

ICON is specifically licensed by the NRC to perform certain non-routine maintenance and repair on fixed gauges containing sealed sources. The gauges, sources, services, and qualifications of personnel are strictly regulated by NRC through the conditions of our license. The following guidelines will be adhered to when performing any non-routine maintenance on gauges and sensors that contain radioactive sealed sources.

**Any deviation from these procedures is a violation of our license, may violate the law, is considered grounds for immediate termination, and may subject you to personal civil and criminal liability.**

1. Services will only be performed by or under the direct supervision of an ICON certified Radiological Gauge Service Technician.
2. Services will only be performed on the sources and gauges specifically authorized on our license. If you are not certain that our license covers a particular gauge, contact the RSO for authorization.
3. Only services specifically authorized on our license will be performed. This currently includes:
  - a. Installation
  - b. Radiation surveys
  - c. Removal
  - d. Relocation
  - e. Repair
  - f. Source exchange
  - g. Maintenance
  - h. Source retrieval
  - i. Leak test sample acquisition
  - j. Customer training in the proper use of devices and for conducting routine and in some situations, non-routine maintenance of devices

**Our license does not authorize:**

  - k. Transportation
  - l. Source disposal
  - m. Leak test sample analysis
4. Non-routine maintenance or repair must be performed according to manufacturer's or distributor's written recommendations and instructions and approved procedures as specified in the ICON RPP.
5. ICON certified RGSTs may provide basic customer training in the proper use of devices and for conducting routine maintenance as part of their normal job duties. All other requests for customer training must be approved by the RSO and provided by the RSO or an ICON certified Radiation Safety Instructor.
6. Personal dosimetry will be issued and properly worn by any personnel performing non-routine services.

ICON Radiation Protection Program	<b>Maintenance:          Non-Routine Maintenance</b>
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7. Before performing non-routine operations RGSTs must have:
  - a. A copy of the SSD registration certificate
  - b. Written procedures applicable to the task being performed
  - c. An appropriate, operable, and currently calibrated survey instrument
  - d. Properly worn personal dosimetry for each person that will be working on or near the source
  - e. A current copy of the ICON RPP manual
  - f. A plan covering
    1. The tasks to be performed
    2. The protocol or procedures to be followed
    3. The radiation safety procedures
    4. ALARA considerations
    5. The qualification of parts, components, and other materials to be used in the gauge
    6. The training and experience of personnel performing the work
    7. The tests (to be performed before the gauge is returned to routine use) to ensure that it functions as designed

\* This plan does not necessarily need to be written, but should always be performed as a mental checklist to ensure that operations are carried out in a safe, efficient manner
  - g. Authorization from the customer RSO
  - h. Contact information for ICON RSO, Customer RSO, and local emergency response personnel
8. Radiation levels will be monitored during work on source housings to ensure that radiation exposure do not exceed 10 CFR 20.1301 limits. A record of the survey showing, who performed the survey, date of the survey, instrument used, and measured radiation levels will be submitted to the RSO. This record will be maintained for 3 years from the date of the survey.
9. ALARA principles will be strictly adhered to.
  - a. All non-essential personnel will be kept clear of the work area.
  - b. Work will be planned to keep exposure time to a minimum.
  - c. No one will ever be exposed to the direct beam of a radioactive source.
  - d. Sources will be shielded
  - e. Sources will be removed to a secure storage area if extended maintenance is to be performed on the source head.
10. After performing any procedure that might potentially compromise the integrity of the source housing, shutter, or safety mechanism:
  - a. A general area survey will be performed including maximum levels at one foot, three feet, and places where people are likely to be; such as walkways, stairs, and access to plant equipment. A record of the survey showing, who performed the survey, date of the survey, instrument used, and measured radiation levels will be submitted to the RSO. This record will be maintained for 3 years from the date of the survey. A copy will also be provided to the customer RSO.
  - b. Safety and shutter mechanisms will be tested for proper operation.
  - c. Gauge will be checked for physical security and returned to operation.

ICON Radiation Protection Program	<b>Maintenance:          Leak Testing and Safety Inspection</b>
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Sealed source gauges require source wipe testing and safety inspection every six months or at other intervals specified in the SSD or customer license. ICON RGST's will perform the safety inspection, and prepare wipe test samples using the procedure given below. Wipe test samples will be sent to an NVLAP certified facility for analysis.

**ICON personnel are not authorized to analyze wipe test samples.**

1. Krypton gas sources do not require leak test samples. If testing a Krypton gas source skip to step 10.
2. Obtain a wipe test kit from Radiation Detection Company or another lab licensed to perform wipe test analysis.
3. If the lab will accept kits other than their own, a wipe test kit can be made from the following materials:
  - a. Sterile disposable cotton tipped applicators. (one pkg. per kit)
  - b. Sterile latex gloves. (one pair per kit)
  - c. Zip lock type bag. (one per kit)
  - d. Label. (one per kit) Verify that the label contains all the information necessary to properly identify the source sample by copying one supplied in a kit purchased from the lab performing the analysis.
4. Wear latex gloves to avoid skin contamination.
5. Wipe the source with a cotton swab, using caution to not touch the source with anything other than the swab. Shield the source as much as possible. Use caution not to become contaminated with the swab or source or to allow swabs to become cross contaminated.
6. Perform a gross contamination survey of the sample.
  - a. If no contamination is detected: Place the swab in the zip lock bag, fill out the label and send the sample to the lab via US Mail.
  - b. **If contamination is detected: Take the gauge out of service, initiate emergency procedures, and immediately notify ICON's RSO and the customer RSO.**
7. Test the ON/OFF mechanism and indicator for proper operation.
8. Ensure source information and safety tags are properly posted and legible.
9. Ensure that the gauge is in good physical condition.
10. Perform any additional checks required by the SSD or customer license.
11. Record the inspection on a form containing the following information.
  - a. Name of person performing the inspection
  - b. Date the inspection was performed
  - c. Serial number of gauge
  - d. Model/type of gauge
  - e. Yes / No indication of
    - i. ON/OFF mechanism and indicator operating properly
    - ii. Source information and safety tags properly posted and legible
    - iii. Gauge in good physical condition
    - iv. Lab used for sample analysis and date sent
    - v. Any unusual circumstances noted during the inspection
12. Provide a the original inspection record to the customer RSO and send a copy to the ICON RSO. ICON will maintain this copy in an appropriate file for a period of three years from the date of the next required inspection.

ICON Radiation Protection Program	<b>Quality Assurance</b>
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### Program Revisions

This RPP must be reviewed annually and amended, if necessary, whenever:

1. ICON revises its service operations or maintenance procedures in a manner that may increase the potential for the release of radioactive material.
2. Applicable regulations are revised.

All amendments of this program are subject to the authorization of the RSO and the Nuclear Regulatory Commission.

### Radiation Protection Program Checklist

1. Operating, Safety and Emergency Procedures
  - Have the Radiation Protection Program procedures been reviewed to assure they are current and appropriate?
  - Any updates and/or revisions?
2. Personnel Monitoring
  - Types of PM devices (TLD, film badge), exchange frequency.
  - Use of control badges.
  - Describe use and handling instructions (where, when, and how personnel monitoring will be worn).
  - Procedures for meeting the total effective dose equivalent for workers, members of the public, and minors.
  - Procedures/documentation for declared pregnant women and dose to embryo/fetus.
3. Quality Assurance
  - Describe overall handling and use of radioactive material.
  - Who reviews these procedures and when?
4. Training
  - Employees (including documentation of successful completion).
  - Contract workers and members of public entering restricted areas.
5. Posting
  - Identifying areas needed to be posted (i.e., RADIATION AREA - 5 mrem/hr at 30 cm).
  - Procedures for ensuring areas are posted and contain appropriate information.
  - Describe the radiation and restricted area signs, and device labeling.

ICON Radiation Protection Program	Quality Assurance (continued)
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**Radiation Protection Program Checklist (cont.)**

6. Compliance with Dose Limits
  - Procedures for calculating doses to: individual members of the public; occupational workers; minors and embryo/fetus including occupancy and workload factors.
  - Documentation of surveys or monitoring used.
  
7. Audits
  - Identify types of audits that need to be performed, including gauges, personnel, and procedures.
  - Responsible entity other audit.
  - Survey instrumentation used.
  
8. Record Keeping
  - Who is responsible for maintaining copies of regulations, etc.?
  - Where records are to be maintained?
  - How documents will be maintained current.
  
9. Survey Instrumentation
  - Description, types, and associated uses.
  - Calibration and interval.
  
10. 10 CFR Part 19 Employee Noticing Requirements
  - "Notice, Instructions, and Reports to Workers" posting worker instruction.



ICON Radiation Protection Program	<b>Dose Limits</b>
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### Occupational Workers

ICON designates Radiological Gauge Service Technicians as occupational workers. Exposure is calculated based on worse case scenarios as follows:

Sample Check time: 48 hours annually. This equates to four devices checked at a frequency of once per month at a duration of 1 hour per device. Exposure rate is 0.5 mRem/hr at a distance of 1 foot.

$$4 \text{ times/month} \times 12 \text{ months} \times 1 \text{ hour} = 48 \text{ hours/year} \times .5 \text{ mRem/hr} = 24 \text{ mRem/year}$$

Gauge Cleaning time: 144 hours annually. This equates to four devices cleaned at a frequency of 12 times per month at a duration of .25 hours per device. Exposure rate is 0.5 mRem/hr at a distance of 1 foot with shutter closed.

$$48 \text{ times/month} \times 12 \text{ months} \times .25 \text{ hours} = 144 \text{ hours/year} \times .5 \text{ mRem/hr} = 72 \text{ mRem/year}$$

Gauge Repair: 48 hours annually. This equates to four devices repaired at a frequency of once per month at a duration of 1 hour per device. Exposure rate is 0.5 mRem/hr at a distance of 1 foot with shutter closed.

$$4 \text{ times/month} \times 12 \text{ months} \times 1 \text{ hour} = 48 \text{ hours/year} \times .5 \text{ mRem/hr} = 24 \text{ mRem/year}$$

Wipe Test (shutter closed) time: 4 hours annually. This equates to four devices wiped at a frequency of 2 times per year for a duration of .50 hours per device. Exposure rate is 0.5 mRem/hr at a distance of 1 foot.

$$4 \text{ devices} \times 2 \text{ times/year} \times .50 \text{ hours} = 4 \text{ hours/year} \times .5 \text{ mRem/hr} = 2 \text{ mRem/year}$$

Wipe Test (shutter open) time: 42.2 minutes annually. This equates to four devices wiped at a frequency of 2 times per year for a duration of 5 minutes per device. Exposure rate is 150 mRem/hr at a distance of 1 foot with shutter open.

$$4 \text{ devices} \times 2 \text{ times/year} \times .083 \text{ hours} = .664 \text{ hours/year} \times 150 \text{ mRem/hr} = 99.6 \text{ mRem/year}$$

$$\text{Total Exposure: } 24 \text{ mRem} + 72 \text{ mRem} + 24 \text{ mRem} + 2 \text{ mRem} + 99.6 \text{ mRem} = 221.6 \text{ mRem/year.}$$

Employee exposure does not exceed 10% of the annual limit (5000 mRem/year). Although no further action is required, ICON will issue personal dosimetry badges to occupationally exposed workers.

### Members of the Public

Members of the public are not authorized to frequent the area within 5 feet of the nuclear device. ICON does not receive radioactive material for its own purpose or use. It is our customers responsibility to monitor and ensure protection of the public from radiation exposure under their license.

ICON Radiation Protection Program	<b>Individual Monitoring</b>
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### **Individual Monitoring Requirements**

ICON Radiological Gauge Service Technicians will be performing non-routine operations on fixed gauges containing sealed sources. As such, personnel monitoring will be necessary for the devices we will be handling. Radiation Detection Company currently provides our dosimetry service, but ICON reserves the right to use any NVLAP approved processor pending RSO approval. Quarterly thermoluminescent dosimeters (TLD's) and TLD finger rings will be utilized.

Prior occupational dose records for individuals will be obtained using United States Nuclear Regulatory Commission Form 5. Lifetime exposure history will be maintained on an annual basis for planning and ALARA budgeting purposes.

ICON will perform a prospective evaluation demonstrating that unmonitored individuals performing non-routine operations are not likely to receive, in one year, a radiation dose in excess of 10% of the allowable limits in 10 CFR Part 20. As specified in the rule, the location and use of personnel monitoring devices will be placed between the collar and the waist, at the location of highest potential exposure. Annual dose limits will be maintained below the following:

- 5,000 millirem Total effective dose equivalent (TEDE) whole body
- 50,000 millirem Total organ dose equivalent (TODE)
- 15,000 millirem Eye dose equivalent
- 50,000 millirem Shallow dose equivalent

Should any of the above limits be exceeded, the required NRC incident notification will be completed as specified in 10 CFR Part 20.

ICON Radiation Protection Program	<b>Survey Instrumentation</b>
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ICON will use instruments that meet the Criteria in the section entitled "Radiation Safety Program - Instruments," in NUREG-1556, Vol. 4, dated August 1998. Each survey meter will be calibrated by the manufacturer or other person authorized by the NRC or an Agreement State to perform survey meter calibrations.

The meters will be calibrated yearly. The RSO is responsible for shipping the meters for calibration. Meter operation will be in accordance with the applicable operation manual.

ICON Radiation Protection Program	<b>Waste Management</b>
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**Waste Management**

In the event that a gauge is damaged or the use of a gauge is discontinued, the customer RSO or designee will be responsible for notifying the device manufacturer or a company specifically licensed (by the NRC or Agreement State) for the return (for repair or disposal) of the Radioactive material.

Certified ICON Radiological Gauge Service Technicians (RGST) may remove discontinued sealed sources and package them using approved procedures.

ICON Radiation Protection Program	<b>Record Keeping Requirements</b>
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Type of Record	10CFR	Retention Time
Radiation Protection Program	20.2102 (a)(1)	Indefinitely
Program Audits	20.2102 (a)(2)	3 Years
Routine surveys, instrument calibration, and package surveys	20.2103 (a)	3 Years
Surveys used for dose calculations	20.2103 (b)	Indefinitely
Prior Exposure History NRC Form 4	20.2104 (f)	Indefinitely
Records used to prepare NRC Form 4	20.2104 (f)	3 Years
Planned Special Exposure	20.2105 (b)	Indefinitely
Occupational Exposure Records	20.2106	Update annually and maintain indefinitely
Embryo/Fetus	20.2106 (d)	Indefinitely
Members of the Public	20.2107 (b)	Indefinitely
Waste Transfer	20.2108	Indefinitely
Leak Test	31.5 (c)(4)(i)	3 Years after next required leak test or until device disposed
On-Off Mechanism	31.5 (c)(4)(ii)	3 Years after next required leak test or until device disposed