



IMS Systems, Inc.
10521 Perry Highway
Suite 310, 3rd Floor
Wexford, PA 15090
Main: (724) 940-7160
Fax: (724) 940-7179

June 22, 2000

Mr. John Jankovich
Team Leader, Sealed Source Devices
United States Nuclear Regulatory Commission
1 White Flint Building
11555 Rockville Pike
Rockville, MD 20552

Dear John:

IMS Systems Inc. hereby applies to become a distributor of gauges from IMS Germany. Currently, there are the following device registrations for these systems:

NR-375-D-102-S	Device 5245
NR-375-D-101-B	Device 5221*
NR-375-D-104-S	Device 5321

* This device registration still shows that it is available for both general and specific distribution in the United States. There are two customers who possess their gauges under general license. No further gauges will be sold without the customer having a specific license. A general distribution license has not been applied for through the regional office.

As per our discussion in your office on 8 June 2000, we are providing you with a document that shows the organizational chart for IMS Systems, Inc. and the commitment letter from IMS Germany supporting the operations in the USA. The responsibilities of each of the personnel on the organizational chart are described in detail (see attachment). Note: For USA operations, John Buckman is the highest authority. The letter from Germany guarantees this authority.

IMS Systems, Inc. has a quality assurance program that augments the ISO 9000 status of IMS Germany. We have attached this document for your review. In addition, an audit program has been established between IMS Germany and IMS Systems, Inc. IMS Germany will send a qualified representative to the USA to assist with audits of IMS Systems operations from both a QA and radiation safety standpoint. IMS Systems, Inc. will send qualified representatives to Germany at least once per year to perform the same sort of audit. The ISO certificate from IMS Germany is included for your review.

Also, as you requested, IMS Systems, Inc. commits to abiding by all terms and conditions set forth in the device registrations. In addition, all of the labels will be changed at the current customer sites to reflect the new name, address and phone numbers for the distributor. The service manuals and emergency procedures will also

be changed to reflect these changes. A copy of the new label is attached for your review.

IMS Systems, Inc. urgently needs the approval of the 5245 device, as we have a mill waiting on the system at this time.

Thank you for your help and for taking the time to meet with us. Please call if you have questions. You may also feel free to call our consultant, Susan J. Engelhardt, President of Engelhardt & Associates, Inc. at 1-800-525-3078.

Sincerely,

Frank Festa
Project Coordinator
IMS Systems Inc.

Enclosures:

Quality Assurance And Control Program
Radiation Safety Checklist
Radiation Protection Program
Excerpt, Employment Contract, John Buckman
Letter confirming John's authority
Organizational Chart
Eight-Hour Training Course For Service Personnel
Test Equipment List
Training Letter for John Buckman
Training Letter for Frank Festa



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To Whom It May Concern

This letter is an affirmation of radiation training of a "hands on" nature to confirm John M. Buckman's qualification as Radiation Safety Officer for the company IMS Systems, Inc. located in Wexford, Pennsylvania.

- April 1998: Received training at IMS Germany on a scanning profile gauge for Nucor Steel in Hickman, Arkansas. This gauge has a single 55 curie Cesium source.
- June 1998: Installation of the above gauge at Nucor. Assisted customer on site with correct installation, definition of controlled access area, and necessary shielding.
- September 1998: Received training at IMS Germany on an IMS model XRSSMC X-ray profile gauge for the steel company SDI in Fort Wayne, Indiana. This system has four 160kv X-ray sources.
- November/December 1998: Installation of the above gauge at SDI. This included verification of the radiation safety access area and assisting the customer with radiation shielding to eliminate scatter radiation. Also performed radiation safety training.
- February 1999: Received training at IMS Germany on an IMS model XRSSMC X-ray profile gauge for the steel company Dofasco in Hamilton, Ontario, Canada. This gauge also has four 160kv X-ray sources.
- June 1999: Installation of the above gauge at Dofasco. This included verification of the controlled access area. Also helped customer determine acceptable shielding techniques.
- September 1999: Received training at IMS Germany on an IMS profile gauge for the steel company Nucor Steel in Hertford, North Carolina. This gauge has three each 55 curie sources. Installation is expected in August of the year 2000.
- September 1999: Received training at IMS Germany on an aluminum profile gauge for the aluminum company Alcoa in Warrick, Indiana. This gauge has 8 each 43kv X-ray sources. Installation is expected in the fall of the year 2000.
- November 1999: Received training at IMS Germany on an IMS profile gauge for the steel company Granite City Steel (National Steel) in Granite City, Illinois. This gauge has four 160kv X-ray sources. Installation is expected in August of the year 2000.
- February 2000: Received training at IMS Germany on an IMS profile gauge for the steel company US Steel in Gary, Indiana. This gauge has four 160kv X-ray sources. Installation is expected in the fall of the year 2000.

Mr. Buckman received additional Radiation Safety Training in March 1999 in Ft. Lauderdale, Florida and participated in the 40-hour Radiation Safety Officer Training Course in May 2000 in Madison, Wisconsin. Both courses were conducted by Engelhardt & Associates, Radiation Consultants, Madison, Wisconsin.



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June 22, 2000

To Whom It May Concern:

This letter is an affirmation of radiation training and work experience of a "hands on" nature to confirm Frank A. Festa's qualification as alternate RSO by Frank A. Festa. Mr. Festa is the alternate RSO for the company IMS Systems, Inc. located in Wexford, Pennsylvania.

- December 1998: Received training by IMS GmbH technician; commissioning engineer and IMS Inc. Project Manager on IMS model XRSSMC X-ray profile gauge being installed for the steel company Steel Dynamics, Inc. located in Butler, Indiana. This gauge has four (4) 160kv X-ray sources.
- February and March 1999 at IMS GmbH, located in Heiligenhaus, Germany: Received training on IMS model XRSSMC X-ray profile gauge for the steel company Dofasco in Hamilton Ontario, Canada. This gauge has four (4) 160kv X-ray sources.
- March 1999, Armco Sawhill Tube, Sharon, Pennsylvania: Service on IMS tube gauge. This gauge has two (2) CS-137, 5-curie sources.
- May 1999, Gulf States Tube Rosenberg, Texas: Installation of IMS Tube gauge. This gauge has two (2) CS-137, 5-curie sources.
- July 1999, Nucor Steel, Crawfordsville, Indiana: Service on IMS Profile gauge. This gauge has two (2) CS-137, 55-curie sources.
- September 1999, Hylsa Steel, Monterrey Mexico: Service on IMS Profile gauge. This gauge has one (1) CS-137, 55-curie source.
- April 2000: Installation and calibration of eight (8) IMS Profile gauges. Three (3) were Isotope gauges and five (5) X-ray gauges at Bethlehem Steel Company, Sparrows Point, Maryland.

In addition to the above, Mr. Festa has received radiation safety training by Engelhardt & Associates, Inc. in February 1999 at Gulf States Tube in Rosenberg, Texas, in March 1999 at Fort Lauderdale, Florida and in February 2000 in Las Vegas, Nevada.

Employment Agreement
John Buckman

EMPLOYMENT AGREEMENT

This AGREEMENT, made, 5/8/2000, 2000 between IMS Systems Inc.
("Employer") and John Buckman, ("Employee"):

1. EMPLOYMENT

Employer hereby employs and Employee hereby accepts employment subject to the terms and conditions stated in this Agreement.

2. TERM

Subject to Section 16 of this Agreement, Employee's employment will begin on May 1, 2000 for a ONE (1) year period until April 30, 2001 ("Initial Term"). Thereafter this Agreement will renew automatically for consecutive ONE (1) year terms unless either party gives the other written notice of its intent not to renew this Agreement, said notice to be delivered to the other not less than 60 days prior to the end of the Initial Term or any subsequent renewal thereof.

3. SCOPE OF EMPLOYMENT

Employer hereby employs Employee as Manager. Employee shall perform his duties in accordance with instructions received from the President and from the Board of Directors of Employer from time to time. He shall be primarily responsible for sales and marketing, project management and administrative or other duties as determined by the Employer from time to time. In addition, Employee shall serve as Radiation Safety Officer, and in that capacity is responsible for the daily administration of and strictest compliance with all federal, state and local radiological health and safety rules affecting Employer's products and Employees. The Employer hereby grants absolute authority for any and all decisions regarding Radiation Safety, Customer Service with respect to Radiation Safety, and complete authority for all aspects of Regulation Compliance. This Authority will be in the form of fiscal as well as all decision making powers. He shall coordinate his efforts with Employer's parent company in Germany, IMS Messsysteme GmbH. If the Employee is elected a director or officer of the Employer, the Employee will fulfill his duties as such officer or director without additional compensation. Employee will devote his entire business time, attention, skill and energy to the business of Employer, will use his best efforts to promote the success of Employer and will cooperate fully with the Board of Directors of Employer and Employer's parent company IMS Messsysteme GmbH. Nothing in this section, however, will prevent Employee from engaging in additional activities in connection with personal investment and community affairs that are not inconsistent with the Employee's duties under this Agreement. Employee agrees to relocate

Employment Agreement
John Buckman

20. GOVERNING LAW

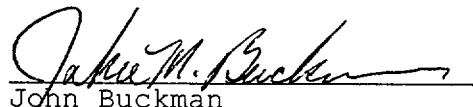
The law of the Commonwealth of Pennsylvania shall govern this Agreement. If the Employer relocate the company the law of the State of relocation shall be applicable.

21. ENTIRE AGREEMENT; AMENDMENTS

This Agreement represents the entire understanding of the parties regarding Employee's employment. No amendment or modification hereof will be effective unless made in writing and signed by the party to be charged.

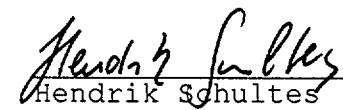
IN WITNESS WHEREOF, each of the parties hereto has caused this Agreement to be duly executed the day and year as first above written.

EMPLOYEE


John Buckman

IMS _____

BY:


Hendrik Schultes

ITS: _____

IMS SYSTEMS, Inc.

RADIATION

PROTECTION

(ALARA)

PROGRAM

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I. PURPOSE

The use of radioactive materials must be controlled to ensure that all workers are not exposed to unnecessary radiation, and that radioactive materials are not lost or released to the environment creating a potential radiation hazard to workers or the general public. **"ALARA" As Low as Reasonably Achievable. Complies with Nuclear Regulatory Commission (NRC) CFR parts 19-170. and all Agreement State regulations.**

II. SCOPE

This radiation protection program is to apply to the procurement of all radioactive materials, excluding all smoke detecting devices. This includes all nuclear gauges. It is to apply to all areas and workers where radioactive materials are used or stored. Smoke detectors using ionizing radiation sources are manufactured as an exempt item.

III. ACCOUNTABILITY

The Upper Management, Company Officers and General Manager has ultimate responsibility for compliance with the NRC/Agreement State regulations; as well as assuring the following policies and procedures for ionizing radiation are met.

The Radiation Safety Officer (RSO) is responsible for overseeing the radiation protection program and retaining all records concerning nuclear gauges and inspections.

Employees working within the vicinity of radioactive materials are responsible for compliance with the procedures.

Employees who specify acquisition of radioactive material are responsible for obtaining the necessary approval from the Radiation Safety Officer.

Employees are responsible for following all guidelines when working around nuclear gauges. Only properly trained employees will be allowed to handle, install, service or relocate any nuclear gauges under the supervision of the Radiation Safety Officer.

IV. SUPPORT

A. Radiation Safety Officer

1. Primary – John Buckman
2. Secondary – Frank Festa

B. RSO Assists In:

1. Identifying monitoring techniques and strategies to evaluate health hazards.
2. Reviewing programs for training in maintenance and emergency handling procedures.
3. Interpreting NRC/Agreement State regulations.
4. NRC/Agreement State inspections and responding to citations.
5. Developing training on ionizing radiation.

V. TRAINING

1. All employees annually receive training on health hazards, safe work procedures and emergency procedures.
2. The Radiation Safety Officer and the Alternate Radiation Safety Officer must have training on administrative requirements.
3. The Radiation Safety Officer and the Alternate Radiation Safety Officer should receive training from an approved trainer in:
 - a. General gauge maintenance.
 - b. Emergency response.
 - c. Management of sources.

VI. RECORDS AND TESTS

A. Baseline Radiation Survey Records

1. Specific information must be included in nuclear gauge records. A base line radiation survey is performed around each new gauge installation by the IMS Engineer installing the gauge. The survey documents show the radiation levels measured twelve (12) inches from each surface of the gauge. These records are kept by the RSO.

B. Physical Inventory Records

1. Records of these inventories must be kept for the functional life of the radioactive source plus five years after its decommission and removal. The basic nuclear gauge record structure is found in Appendix 1.
2. These records are kept by the RSO.

C. Nuclear Gauge Maintenance Tests

1. Nuclear gauge maintenance tests include performance of a wipe test, which is only conducted by authorized personnel.
2. This test is required to be performed every six months unless specified by the manufacturer or by licensure. Some gauges have been authorized by the Agreement State/NRC for the wipe test to be performed every three years. These gauges are tested at three-year intervals.
3. The RSO is responsible for assuring this test is completed.

D. Shutter Operation Test

1. A test to assure the proper operation of the shutter "on-off" mechanism and indicator will be performed by IMS Installation Engineer.

VII. HANDLING OF NUCLEAR GAUGES

A. Procurement of Radioactive Materials, Nuclear Gauges and Services

1. It is the duty of the RSO to inform the buyer to obtain the license or regulatory agency approval.

B. Installation, Relocation or Removal of Devices Containing Radioactive Material
(this only applies when IMS is responsible for the relocation or removal)

1. Installation, relocation, maintenance, repair, and initial radiation survey of devices containing radioactive material including replacement or disposal of any radioactive device shall be performed only by the manufacturer or persons authorized by the NRC/Agreement State. Trained employees on record with the NRC are authorized to perform these functions under the direction of IMS.
3. Upon receipt of a nuclear gauge, the employee in charge of the project will contact the plant RSO for safe storage requirements before installation. The RSO is responsible for assuring safe storage of the radioactive source, including a source inspection to insure the shutter is locked in the closed or off position.
4. After installation or relocation, an initial radiation survey will be performed by the IMS Engineer installing the gauge. Radiation levels will be measured at the source holder surface and twelve (12) inches from the source holder in representative directions. These measurements are kept in the RSO radiation files.

C. Removal of Nuclear Gauges

1. Prior to the removal of a radioactive gauge or transfer from storage, the RSO or contractor will insure the radioactive source is properly shielded and secured or locked in the off or closed position by conducting a physical radiation survey. The individual in charge will send a copy of the shutter closure and physical radiation survey to the RSO radiation files.

D. Lockout/Tagout procedures

1. The source holder shall be locked in the "off" or "closed" position. As the primary power source to open the source shutter assembly is by pneumatic means (air operated), a lockable, bleedable ball valve shall be used to disable the shutter power source and locked in the "open" position. The keys will be locked up in accordance with the lockout/tagout procedures of the mill. The radioactive material license states that nuclear device must be locked in the "off" or "closed" position:
 - a. When individuals are working within one foot of a radiation gauge during periods of shutdown.
 - b. When the device is not in normal operation.
2. A Survey Meter can be used to verify the radiation device shutter is in the "off" or "closed" position and no radiation is leaking.

E. Storage of Radioactive materials

1. TEMPORARY STORAGE

- a. Devices containing radioactive materials may be temporarily stored in any secured location within the plant provided the source is secured or locked within the device and the device is appropriately labeled with "Caution - Radioactive Material."

2. STORAGE DOCUMENTATION

- a. The employee in charge of the project should document receiving the source and its storage by memo to the RSO. The RSO is responsible for a safe and secure storage area, proper storage of the source, and the appropriate posting requirements.

VIII. PERSONAL MONITORING

A. Routine Personnel Monitoring

1. UNRESTRICTED AREAS - Routine personnel monitoring is not required during normal usage of radioactive gauges in the mill complex. In normal use, no one will receive a dose of **100 mrem (0.1 rem) or 2 mrem/hr** or greater during a **year**. All radiation areas are clearly posted and are located in areas that do not require frequent access by employees. Initial installation surveys verify these radiation levels.

During the initial radiation survey, (this includes initial survey of gauge relocation or installation), an occupational exposure assessment will be conducted to determine radiation exposure of employees' that work in unrestricted areas. Exposure levels will be determined for employees with the greatest potential for exposure under normal operating conditions. Exposure levels will be determined for the following employees:

- a. employees performing gauge maintenance
 - b. employees performing adjustments to the gauge or detector
 - c. employees involved in gauge installation, relocation, and/or removal
 - d. employees who spend more than one hour per day in close proximity to nuclear gauges (closer than two feet).
2. RESTRICTED AREAS - If the RSO determines on the initial radiation survey and the anticipated working conditions that an employee is likely to receive a radiation dose of 2 mrem/hr or 500 mrem in a calendar year, a restricted area will be established.
 3. MONITORING FOR POSSIBLE EXPOSURE - If employees are in a possible exposure area during installation, relocation, or removal of a radioactive source, they must carry a dosimeter to measure exposure levels.

Before source installation, relocation, or removal, physical surveys must verify the shutter has been closed and locked out. This is the responsibility of the employee in charge of the project. Dosimeters are available from the Radiation Safety Officer.

X. POSTING AND LABELING

A. Radiation Device Labeling

1. A label must either be affixed to each nuclear source, or be located in close proximity to the gauge.
2. The manufacturer's tags on source holders supply information such as: manufacturer, source holder model number, source holder serial number, source capsule model number and source capsule serial number.

B. Radiation Area Posting

1. Any area which, under normal conditions, would be occupied for a period greater than one hour and where the radiation level at twelve (12) inches from an accessible surface or barrier is 2 mrem/hr or greater will be posted with "Caution-Radioactive Area" sign.

2. MINIMUM POSTING REQUIREMENTS

- a. Both the NRC/Agreement State require the posting of particular information. Documents, notices, violations, or forms posted pursuant to these regulations must appear in a sufficient number of places to permit employees involved in ionizing radiation activities to observe them on the way to or from the activity. The notices must be conspicuous and must be replaced if the sign becomes defaced or altered.

XI. NUCLEAR MAINTENANCE AND HANDLING CONTRACTORS

A. Contractor Services

1. Contractors may be hired to perform the following services:
 - a. Gauge maintenance tests
 - b. Gauge installation, relocation, and removal
 - c. Gauge handling in emergency situations
2. These contractors must hold an applicable specific license from either the NRC or Agreement State to perform such services.

B. Safety Precautions

1. All nuclear maintenance contractors must take the necessary precautions to protect all workers against exposure to ionizing radiation in excess of 2 mrem/hr.
2. The supervisor in charge must be advised of the proper rope off/exclusion area.

C. Policy Familiarity

1. Nuclear contractors must be familiar with the NRC/Agreement State regulating posting and secured access procedures.

D. Radiography Permit

1. The area supervisor will assist the contractor in completing the permit and inspection of the working area.
2. The RSO must be informed that radiography is being performed on site.

XII. EMERGENCIES

A. Emergency Guidelines Involving: Damage or Dislodgment of a Nuclear Device from a Gauge or Source Holder.

1. Immediately inform the area supervisor and Radiation Safety Officer, or call in order:

Name	Extension	Home
<u>John Buckman</u>	<u>IMS Systems, Inc. (724) 940-7160</u>	<u>(724) 452-5453</u>
<u>Frank Festa</u>	<u>IMS Systems, Inc. (724) 940-7163</u>	<u>(724) 776-8008</u>

2. Until the RSO has visually inspected the gauge, personnel should not enter the area except to save a life. If saving a life, DO NOT REMAIN IN THE EXCLUSION AREA FOR LONGER THAN IS ABSOLUTELY NECESSARY.
3. An emergency rope off area of sixty (80) feet will be maintained until the appropriate rope off distance can be determined. Rope off distance may be reduced to a minimum distance for specific isotope activity. The maximum radiation level at the rope must be verified with a survey meter not to exceed 2 mrem/hr.
4. The RSO will verify radiation levels with a portable survey meter and recommend minimum rope-off (exclusion) distances specified below:

<u>Isotope Activity</u>	<u>Rope-Off Distance</u>
55 Ci	80 Feet
5 Ci	45 Feet
500 mCi	30 Feet
200 mCi	20 Feet
100 mCi	15 Feet
10 mCi	5 Feet

5. The radioactive source manufacturer can be notified of the incident. They can advise the proper method of inspection until their technician is on site to verify the gauge is not operational, to make the necessary repairs prior to reinstallation, or to dispose of the source.

IMS Systems, Inc. (724) 940-7160

Amersham, Inc. (781) 272-2000

B. Emergency Guidelines Involving: Fire, Explosion or Radioactive Source Pellet is Dispersed into the Area.

1. The supervisor at the scene will make an assessment of whether a nuclear device has been exposed in making possible personnel contamination. If no damage is present, extinguish fires using normal procedures.
2. If radioactive pellet is dispersed:
 - i. If possible contamination is involved, the area of the release will be restricted. All personnel must be evacuated from the area. Do not open, examine, or clean up contained radioactive materials, debris or material involved in the accident until a properly trained and equipped individual gives approval. Do not handle suspected radioactive material until it has been monitored and released by personnel specifically licensed by the NRC/Agreement State to handle pellet dispersments. This includes clothes and tools used to fight fires.
 - ii. Fires must be extinguished avoiding radioactive smoke, fumes or dust. If the actual radioactive pellet is dispersed, radioactive particles can become lodged in clothes or skin. A list of all personnel entering the area must be kept by the individual in charge of the emergency response to access such exposure. Any person possibly contaminated should be quarantined until a complete examination by a physician can be completed.
 - iii. As soon as possible, monitor the area and determine if the area is safe for re-entry.

C. Gauge Shutter Malfunction

1. If the shutter can not be secured in the off or closed position, or if levels can not be reduced to 2 mrem/hr at one foot, an appropriate exclusion area will

be maintained until assistance in securing and moving the gauge is obtained from the manufacturer, other authorized services agent, or licensed individual.

XIII. RADIOACTIVE INCIDENT REPORTING

A. NRC/Agreement State Reporting

1. The RSO will notify the NRC/Agreement State as soon as possible, but not later than 4 hours, after discovering an event that prevents immediate protective actions necessary to avoid exposure that could exceed regulatory limits (events including fires, explosions).
2. Report within 24 hours:
 - a. An unplanned contamination event that:
 - i. requires access to the contaminated area, by workers or the public, to be restricted for more than 24 hours by imposing additional controls or restricting access.
 - ii. involves a quantity of material greater than five times the lowest annual limit on intake in 10 CFR 20 for the material.
 - iii. has access to the area restricted for a reason other than to allow isotopes with a half-life of less than 24 hours to decay prior to decontamination.
 - a. An event in which equipment is disabled or fails to function as designed when:
 - iv. the equipment is required, by regulation or license, to prevent a release,
 - v. the equipment is required to be available and operable when it is disabled or fails to function, and
 - vi. no redundant equipment is available to perform the required safety function.
 - a. An event that requires unplanned medical treatment at a medical facility of an individual with a spreadable radioactive contamination on the individual's clothing or body.
 - b. An unplanned fire or explosion damaging any licensed material or any device, container, or equipment containing licensed material when:
 - vii. the quantity of material involved is greater than five times the lowest annual limit on intake specified in CRF, and

viii. the damage affects the integrity of the licensed material or its container.

3. Reports must be submitted by phone to the NRC Operations Center (708-829-9500), or Agreement State (404) 362-2675 and must provide to the extent that the information is available:
 - a. the caller's name and call back telephone number.
 - b. a description of the event, including date and time.
 - c. the exact location of the event.
 - d. the isotopes, quantities, and chemical and physical form of the licensed material involved.
 - e. any personal radiation exposure data available.
4. Written reports must be submitted within 30 days of the telephone report, and must include:
 - a. a description of the event, including probable cause and the manufacturer and model number (if applicable) of any equipment that failed or malfunctioned.
 - b. the exact location of the event.
 - c. the isotopes, quantities, and chemical and physical form of the licensed material involved.
 - d. date and time of the event.
 - e. corrective actions taken or planned and the results of any evaluations or assessments.
 - f. the extent of exposure of individuals to radiation or to radioactive materials without identification of individuals by name.
5. Licenses are no longer required to report releases of radioactive materials resulting in:
 - a. a loss of one working week or more of the operation of any facilities affected.
 - b. damage to property in excess of \$200,000.

B. State Reporting

1. The RSO will contact the State Department of Health to phone report the incident.
2. The RSO will be responsible for any follow-up reporting.

C. Internal Reporting

1. The RSO will notify Industrial Hygiene within 24 hours of the incident and the precautionary procedures that are being implemented.

XIV. AUDIT

- A. Annual review of procedures and program will be conducted by the Radiation Safety Officer.
 1. RSO will audit this program annually and any deficiencies will be corrected.
 2. Due to the nature of the gauging business, an independent outside authorized firm will additionally perform an annual audit of the program.

XV. RECORD KEEPING

- A. Keep licenses and amendment of license until superseded.
- B. Employee exposure records must be maintained for 30 years.
- C. Gauge maintenance records must be maintained for the life of the gauge.
- D. Keep employee training records until superseded.
- E. Customer license will be maintained on file.
- F. All shipping, wipe test and survey data will be maintained on file.

IMS Systems, Inc. Gauge Installation

Radiation Safety Checklist

This checklist does not assign responsibility, but is designed to allow a uniform approach to reviewing each installation prior to system startup. This list consists of two parts.

Part One: is to be completed before the sources are installed in to the gauge. **Part Two:** is to be completed before the gauge is turned over to the customer for production. Both parts are to be signed by representatives of the customer and IMS Systems, Inc. to verify that the items listed below are completed.

Part One: To be completed before the radiation sources are installed in the gauge.

- ☐ **Copy of customers site license:** The customer has obtained the appropriate license to possess and operate the gauge. A copy of the license has been forwarded to IMS Systems, Inc.
- ☐ **10 CFR Part 19 Training Requirements:** Required training of personnel working on or around the gauge is complete. This includes customer's employees and contractors.
- ☐ **Required Postings in Place:** The necessary radiation safety signs are in place around the controlled access area. (Check the appropriate box below)
- ☐ **"RADIATION AREA"**
- ☐ **"HIGH RADIATION AREA"**
- ☐ **Required Shielding in Place:** The shielding or barriers needed to limit radiation flux to 0.25 mR/hr at the controlled access area boundary is in place.

IMS Systems, Inc. Gauge Installation

Radiation Safety Checklist

- ☐ **Interlocks in Place and Operational:** Required source shutter interlocks are operational.

- ☐ **Warning Lights Operational:** The power on, shutter open, and shutter closed lamps are operational and can be readily observed by individuals approaching or working near the gauge installation.

- ☐ **Radiation Survey:** A radiation survey to determine background radiation levels around the gauge has been complete.

- ☐ **Survey Meter on Site:** An appropriate, calibrated radiation survey meter is available on site.

- ☐ **Personal Dosimetry:** Personal dosimetry (e.g., film badges, TLD badges, etc.) have been provided for individuals working inside the controlled access area when the shutters are open.

- ☐ **Gauge Safety Procedures Including lockout Valve Instructions:** Customers employees and contractors working on the gauge and/or in the controlled access area are aware of the gauge lockout/tagout procedure. The lockout valve is operational.

IMS Representative: Date:

Customer Representative: Date:

IMS Systems, Inc. Gauge Installation

Radiation Safety Checklist

Part Two: To be completed before the gauges is turned over to the customer for production

- ☐ **Radiation Safety Training:** Verify customers personnel that will be operating the gauge or working in the controlled access area have the proper radiation safety training. Also verify the content of the training and the credentials of the individual has given the training.

- ☐ **Radiation Survey Complete:** Both open shutter and closed shutter radiation surveys have been completed. The perimeter of the 0.25mR/hr controlled access area has been verified.

- ☐ **Operational Procedures Training of Customer Personnel:** Operators and support personnel trained in the safe usage of the gauge.

- ☐ **Leak Test Requirements:** A leak test (wipe test) has been performed and recorded on each source holder.

IMS Representative: Date:

Customer Representative: Date:



IMS Systems, Inc.
10521 Perry Highway
Suite 310, 3rd Floor
Wexford, PA 15090
Main: (724) 940-7160
Fax: (724) 940-7179

QUALITY ASSURANCE AND CONTROL PROGRAM

Manufacturer's Program Outline

1. Introduction

a. Purpose

The Quality Assurance and Control Program is drawn up in accordance with the requirements of the AECB INFO-0338-1 "Guidelines for Approval of Nuclear Gauging Devices", Section 3, paragraph a, "quality assurance standard for design and construction", and ANSI N538 Classification of Industrial Ionizing Radiation Gauging Devices, Appendix B, (Quality Assurance and Control).

b. Scope

The Quality Assurance and Control Program applies to all activities concerned with the design, purchase, fabrication, handling, assembly, inspection, testing, operation, maintenance, repair and modification of gauge components which are significant to safety.

2. Organization

The overall responsibility for the Quality Assurance Program is retained and exercised by IMS. The responsibility for the Quality Assurance Program is shared by a number of departments within the company. The responsible departments, by function, include:

3. Engineering

The responsibility for design control, instructions, procedures and drawings in support of the design, assuring that all parts and components are manufactured to specifications, evaluation of the capability of a supplier to provide an acceptable service, all testing requirements, receiving inspections, and the control of measuring and test equipment, rests with the Engineering Department.

4. Purchasing

The responsibility for communicating to the manufacturers, via procurement documents, all applicable regulator requirements rests with the Purchasing Department.

5. Health Physics & Safety

The responsibility for overall coordination and monitoring of the handling, assembly, construction and shipping of the gauge related to the containment of activity and operator safety rests with the Quality Assurance/Health Physics Department. The Quality Assurance/Health Physics Department also has responsibility for advising other departments on regulatory requirements and reviewing the program to see that the requirements are being met.

6. Manufacturing

The responsibility for proper construction, testing and dispatch of gauges rests with the Manufacturing Department.

7. Quality Assurance

The responsibility for auditing the gauge quality assurance program to ensure that it has been properly established and implemented rests with the Quality Assurance Department.

An organizational chart is attached.

8. The key positions involved in the administration of the Quality Assurance Program, and included in the departments outlined above, are listed below with a brief description of the responsibilities of each.

- Director of Quality Assurance (and Radiation Safety Officer)

Overall responsibility and authority of the Quality Assurance Program, engineering and technical management, and research and development of new projects.

- Project Manager – Technical

Responsible for the successful coordination and implementation of all engineering aspects of the Quality Assurance Program for each project for which gauges are manufactured, assuring that specifications are met and regulatory requirements are satisfied.

- Purchasing Manager

Responsible for directing purchasing activities and communicating to participating organizations that Quality Assurance Program requirements which must be met as advised by the Projects Manager

Technical, and the Director, Quality Assurance (Health Physics and Safety Officer)

- Health Physics and Safety Officer (Director, Quality Assurance)

Responsible for reviewing the activities of the other departments with regard to operation safety and the containment of radioactive material and for ensuring that all departments are advised of regulatory requirements which must be met in the design, manufacture and use of the gauge.

- Manufacturing Manager

Responsible for construction, testing and dispatch of the gauge; responsible to the Director of Operations.

- Operations Manager – Services

Responsible for the shipping and routine inspection of gauges.

- Director, Operations

Responsible for the overall operation of technical project management, operations (services) management and manufacturing. This position also liaises with the Research and Development Department with regard to new products.

- Director, Commercial

Responsible for all duties performed by the Purchasing and Commercial project managers. This position also carries out periodic examinations of the Quality Audit plan drawn up by the Director of Quality Assurance

9. The duties of the Director of Quality Assurance, who maintains overall responsibility and authority of the gauge Quality Assurance Program, include reviewing and approving procurement documents, and ensuring that any deficiencies found in the program are noted and corrected.

The Directors of Quality Assurance and Operations are both technically-degreed, with sufficient professional experience to judge that the safety-related issues involved in the manufacture and use of the gauge are addressed in the Quality Assurance Program.

It is the responsibility of all individuals listed in 8 to ensure that quality products are produced. Therefore, each person listed has been delegated the necessary authority to stop unsatisfactory work and control further processing, delivery or disposition of non-conforming material until proper disposition of the material is made.

Quality Assurance Program

1. The Director, Quality Assurance, regularly assesses the scope, status, implementation, and effectiveness of the overall corporate Quality Assurance Program to assure that the

program is adequate and complies with the requirements of the AECB INFO-0338-1 "Guidelines for Approval of Nuclear Gauging Devices", and Appendix B, ANSI 538.

2. Provisions are established to control the distribution of gauge quality assurance manuals and revisions thereto. This is the responsibility of the Health Physics and Safety Officer.
3. The Director of Quality Assurance communicates to all responsible organizations and individuals that quality policies and procedures are mandatory requirements which must be implemented and enforced.
4. IMS will ensure that all safety related systems, structures, and components are identified and reviewed. These systems will be subject to the Quality Assurance fabrication and inspection programs.
5. The Director of Quality Assurance has the responsibility and the authority to resolve disputes involving quality arising from a difference of opinion between personnel having Quality Assurance responsibilities and personnel from other departments.
6. Indoctrination and training programs are established, such that personnel responsible for performing quality-related activities are instructed as to the purpose, scope and implementation of the Quality assurance instructions and procedures. They are trained and qualified in the principles and techniques of the activity being performed, and their proficiency is maintained by re-training, re-examining and re-certifying.
7. All quality-related activities are to be performed with proper equipment under suitable environmental conditions, and all prerequisites will have been satisfied prior to inspection and testing.

Design Control

1. Measures are established to carry out design activities in a planned, controlled and orderly manner.
2. Measures are established to correctly translate the applicable regulatory requirements and design bases into the specifications drawings, written procedures and instruction.
3. Quality Standards are specified in the design documents, and deviations or changes from the quality standards are controlled.

Designs are reviewed to ensure that:

- a. The design characteristics can be controlled, inspected and tested;
and
- b. Inspection and testing criteria have been identified and requirements for handling, storage, cleaning and maintenance are addressed.

4. Proper selection and accomplishment of design verification or checking processes such as design reviews, alternate calculations, or qualification testing are performed. When a test program is used to verify the adequacy of a design, the prototype is subjected to the most adverse design conditions.
5. Design verification will be conducted by a person other than the original designer.
6. All design and specification changes are subject other same design controls and approvals as the original design.
7. The authority and responsibility of persons performing design reviews and other design verification activities are identified and controlled by written procedures.

Procurement Document Control

1. Procedures are established that clearly delineated the sequence of actions to be accomplished in the preparation, review, approval and control of procurement documents.
2. The procurement documents contain or reference the design technical requirements including the applicable regulatory requirements, and any applicable material and component identifications, drawings, specifications, codes and industrial standards, test and inspection requirements and special process instructions.
3. The procurement documents identify the documentation to be prepared, maintained, and submitted to the purchaser of review and approval.
4. The procurement documentation identifies those supporting records to be retained, controlled, and maintained by the supplier, and those delivered to the purchaser prior to the use of the hardware.
5. Procurement documents contain the procuring agency's right of access to a supplier's facilities and records for source inspection and audit.
6. All changes and revisions to the procurement documents are subject to the same review as the original document.

Instructions, Procedures and Drawings

1. Activities affecting quality are prescribed and accomplished in accordance with documented instructions, procedures or drawings.

2. Procedures are established which delineated the sequence of actions to be accomplished in the preparation, review, approval, and control of instructions, procedures and drawings.
3. The Quality Assurance organization outlined in 2b reviews and concurs with the inspection plans; calibration and special process procedures; drawings and specifications; and changes thereto or acceptable alternatives.

Document Control

1. The review, approval and issue of documents and changes thereto, prior to release, are procedurally controlled to assure that they are adequate and that quality requirements are stated.
2. Changes to documents, including instruction, procedures, and drawings are reviewed by the same organization that performed the original review and approval, or by other qualified, responsible organizations as delegated by IMS.
3. Approved changes are included in instruction, procedures, drawings and other documents simultaneously with implementation of the change.
4. Current issues of applicable documents will be available at the location where an activity is being performed. This will preclude the change.
5. A master list, or equivalent, is established to identify the current revision number of instructions, procedures, specifications, drawings and procurement documents.

Control of Purchased Materials, Parts and Components

1. Qualified personnel evaluate the supplier's capability to provide acceptable quality services and products.
2. The evaluation of a supplier will be based on one or more of the following:
 - a. The supplier's capability to comply with the elements of AECB that are applicable to the type of material, equipment or service being procured.
 - b. A review of previous records and performance of the supplier on similar articles of the type being procured.
 - c. A survey of the supplier's facilities and Quality Assurance procedures to determine his capability to supply a product which meets the design, manufacturing and quality requirements.

3. The results of the supplier evaluations are documented and filed.
4. Surveillance, if required, of suppliers during fabrication, inspection, testing, and shipment of materials, equipment and components is planned and performed in accordance with written procedures to assure conformance to the purchase order requirements.
5. A receiving inspection of the supplier-furnished material, equipment and services is performed to assure:
 - a. The material, component or equipment is properly identified and corresponds with the identification on receiving documentation.
 - b. Materials, components, equipment and acceptance records are inspected and judged acceptable in accordance with predetermined inspection procedures, prior to installation or use.
 - c. Inspection records or certificates of conformance attesting to the acceptance of material and components are available prior to installation or use.
 - d. Items accepted and released for use are identified as to their inspection and judged acceptable in accordance with predetermined inspection procedures, prior to installation or use.

Identification & Control of Materials, Parts & Components

1. Procedures are established to identify and control materials parts and components, including partially fabricated sub-assemblies.
2. Procedures are established to ensure that identification of an item is maintained by part number, serial number, or other appropriate means, either on the item or on records traceable to the item to preclude use of incorrect or defective items.
3. Identification of materials and parts important to the function of safety-related systems and components will be traceable to the appropriate documentation, such as drawings, specifications, purchase orders, manufacturing and inspection documentation, deviation reports, and physical and chemical test reports.
4. The location and method of identification will not affect the fit, function, or quality of the item being identified.
5. Correct identification of materials, parts and components is verified and documented prior to release for fabrication, assembling and installation.

Control of Special Processes

1. All special processes, such as welding, are procedurally controlled.
2. All procedures, equipment, and personnel connected with special processes are qualified in accordance with applicable codes, standards and specifications.
3. The qualification records of procedures, equipment, and personnel associated with special processes are established, filed and kept current.

Inspection

1. An inspection program which verifies conformance of quality affecting activities with requirements is established, documented and accomplished in accordance with written and controlled procedures.
2. The inspection personnel is independent from the individuals performing the activity being inspected.
3. The inspectors are qualified in accordance with applicable standards and company training programs. Their qualifications are kept current through continued retraining on revised procedures.
4. Modifications, repairs and replacements are inspected in accordance with the original design and inspection requirements or acceptable alternatives.
5. Provisions are established that identify mandatory inspection hold points for witness by an inspector.

Test Control

1. A test program to demonstrate that the item or component will perform satisfactorily in service is established, documented and accomplished in accordance with written, controlled procedures.
2. Modification, repairs and replacements are tested in accordance with the original design and testing requirements or acceptable alternatives.
3. Test results are documented, evaluated, and their acceptability determined by a qualified, responsible individual or group.

Control of Measuring & Test Equipment

1. Measuring and test instruments are calibrated at appropriate intervals based on the required accuracy, purpose, degree of usage, stability characteristics and other conditions affecting the measurement.
2. Test equipment is identified and traceable to the calibration test data.
3. Measures are taken and documented to determine the validity of previous inspections performed when measuring and test equipment is found to be out of calibration.
4. Reference and transfer standards are traceable to recognized standards; or, where recognized standards do not exist, provisions are established to document the basis for calibration.

Inspection, Test and Operation Status

1. The appropriate identification of packages as to the status of inspections and testing and therefore the overall operating status of the unit is known by affected organizations.
2. The application and removal of inspection and welding stamps, and status indicators such as tags, markings, labels and stamps are procedurally controlled.
3. The bypassing of required inspections, tests and other critical operations is procedurally controlled.
4. The status of non-conforming, in-operative, or malfunctioning packages or components is clearly indicated in such a manner to prevent their unauthorized use.

Non-Conforming Material, Parts or Components

1. The identification, documentation, segregation, disposition, review and notification to affected organizations, on non-conforming materials, parts components or services are procedurally controlled.
2. Documentation identifies a non-conforming item, describes the non-conformance, the disposition of the non-conformance and the inspection requirements; and includes the appropriate approval signature related to the disposition.
3. Non-conforming items are clearly segregated from acceptable items and identified as discrepant until properly dispositioned.

4. All rework or repair of materials, parts, components and systems is verified by reinspecting and retesting the item as it was originally inspected and tested or as verified by a method which is at least equal to the original inspection and testing method.

Corrective Action

1. The evaluation of conditions detrimental to quality (such as non-conformances, deficiencies, failures, malfunctions, deviations and defective material and equipment) is conducted to determine the need for corrective action in accordance with established procedures.
2. Corrective action is initiated following the determination of a condition adverse to quality to preclude recurrence.
3. Follow-up reviews are conducted to verify proper implementation of corrective actions and to formally close out the corrective action documentation.

Quality Assurance Record

1. Sufficient records are maintained to provide documentary evidence of the quality and safety of items, and the activities affecting quality and safety.
2. The Quality Assurance records maintained for the gauge includes qualification of personnel; procedures and equipment; list of non-conformances; corrective action reports for non-conformance, results of reviews, inspections, test, audits and material analysis; other documentation such as drawings, specifications, procurement documents and calibration procedures.
3. Records are identifiable and retrievable.
4. A list of the required records and their storage locations will be maintained.
5. All design related records (e.g. drawings, calculations, etc.) are maintained for the life of the gauge and all other records are maintained for a minimum of two years.
6. The inspection and test records contain the following where applicable:
 - a. A description of the type of observation.
 - b. Evidence of completing and verifying a manufacturing, inspection, or test operation.
 - c. The date and results of the inspection or test.
 - d. Inspector or data recorder identification.

- e. Evidence as to the acceptability of the results.

Audits

1. Audits are performed in accordance with pre-established written procedures or check lists and conducted by personnel not having direct responsibilities in the area being audited.
2. The results of audits are documented and reviewed with responsible management of areas audited.
3. The responsible management takes the necessary action to correct deficiencies revealed by the audit on a timely basis.
4. Deficient areas will be re-audited on a timely basis to verify implementation of corrective actions to minimize recurrence of deficiencies.
5. Audits of the Quality Assurance Program are performed at least annually, based on the safety significance of the activity audited.
6. The audit plan includes:
 - a. Purpose or objective of audit.
 - b. Scope.
 - c. Specific organizations to be audited.
 - d. Names of team members and team leaders.
 - e. Approximate schedule.
 - f. Written notification to audited organization.
 - g. Post audit conferences.
 - h. Method of reporting and evaluating findings.

Certificate of Completion

awarded to

John Buckman

for participation in

Radiation Safety Officer Course

May 8-12, 2000 - Madison, WI

presented by Engelhardt & Associates, Inc .

Susan J. Engelhardt
Susan J. Engelhardt, M.S.

Ralph Grunewald
Ralph Grunewald, Ph.D.

Joshua Walkowicz
Joshua Walkowicz, M.S.

Dee Ann Kaiser
Dee Ann Kaiser, M.S.

Judith Grunewald
Judith Grunewald, R.N., M.S.

James Hoey, Jr.
James Hoey, Jr., Health Physics

Certificate of Completion

awarded to

John Buckman

for participation in

Radiation Safety Seminar

March 29-31, 1999 - Ft. Lauderdale

presented by Engelhardt & Associates, Inc.

Susan Engelhardt
Susan J. Engelhardt, M.S.

Dee Kaiser
Dee Ann Kaiser, M.S.

Ralph Grunewald
Ralph Grunewald, Ph.D.

Judith Grunewald
Judith Grunewald, R.N., M.S.

Susan Langhorst
Susan Langhorst, Ph.D., CHP

Certificate of Completion

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Frank Festa

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Radiation Safety Seminar

March 29-31, 1999 - Ft. Lauderdale

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Susan J. Engelhardt for
Susan Langhorst, Ph.D., CHP

Certificate of Completion

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Frank Festa

for participation in

Radiation Safety Seminar

February 1-3, 2000 - Las Vegas

presented by Engelhardt & Associates, Inc.

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Ralph Grunewald, Ph.D.

Judith Grunewald

Judith Grunewald, R.N., M.S.

Joshua Walkowicz

Joshua Walkowicz, M.S.

THE ATTACHED PAGES ARE SAMPLES OF OUR NEW LABELS TO BE INSTALLED ON ALL IMS GAUGES IN THE USA, UPON NRC APPROVAL.

THE FOLLOWING PAGES REPRESENT THE FULL SIZE NAME PLATES. THEY WILL BE ENGRAVED STAINLESS STEEL AND ATTACHED TO THE GAUGES BY STAINLESS STEEL SCREWS.

**THE FOLLOWING RADIOACTIVE SOURCES ARE CONTAINED
WITHIN THIS PROFILE THICKNESS GAUGE.**

1 x AM241, I.D. 7656LQ, ACTIVITY: 5 CURIE (185 Gbq)

**EACH SOURCE MUST BE LEAK TESTED ONCE PER SIX (6)
MONTHS. THE SOURCE SHUTTER OPERATION
(OPEN/CLOSED) MUST BE CHECKED EVERY SIX (6) MONTHS.**

REMOVAL OF THIS LABEL IS PROHIBITED.

The receipt, possession, use and transfer of this device, model profile thickness gauge serial No. 5221 are subject to a specific license or the equivalent and the regulations of The U.S. NRC or of a state with which the NRC has entered into an agreement for the exercise of regulatory authority.

This label shall be maintained on the device in a legible condition.

REMOVAL OF THIS LABEL IS PROHIBITED.

**Please refer to the profile thickness gauge
Operating/maintenance manual for installation, operation, and
service instructions.**

Service Agent: **IMS Systems, Inc.**
 10521 Perry Highway
 Suite 310
 Wexford, PA. 15090

ANSI Classification:

REMOVAL OF THIS LABEL IS PROHIBITED.

MODEL 14C SURVEY METER

COMPATIBLE DETECTORS: G-M, scintillation

METER DIAL: Typically 0 - 2 mR/hr and cpm, BAT TEST (*others available*)

MULTIPLIERS: X0.1, X1, X10, X100, X1000

LINEARITY: Reading within plus or minus 10% of true value with detector connected

CONNECTOR: Series "C" (*others available*)

INTERNAL DETECTOR: Energy compensated G-M (used with X1000 scale only)

ENERGY RESPONSE: Within plus or minus 15% of true value between 60 keV - 3 MeV (*internal detector only*)

THRESHOLD: 30 mV plus or minus 10 mV

AUDIO: Built in unimorph speaker with ON/OFF switch (*greater than 60 dB at 2 feet*)

CALIBRATION CONTROLS: Accessible from front of instrument (*protective cover provided*)

HIGH VOLTAGE: 900 volts

THRESHOLD: 30 mV plus or minus 10 mV

RESPONSE: Toggle switch for FAST (4 seconds) or SLOW (22 seconds) from 10% to 90% of final reading

RESET: Push-button to zero meter

POWER: 2 each "D" cell batteries (*housed in sealed compartment that is externally accessible*)

BATTERY LIFE: Typically 600 hours with alkaline batteries (*battery condition can be checked on meter*)

METER: 2.5" (6.4 cm) arc, 1 mA analog type

CONSTRUCTION: Cast and drawn aluminum with beige polyurethane enamel paint

TEMPERATURE RANGE: -4 degrees F(-20 degrees C) to 122 degrees F(50 degrees C)

May be certified for operation from -40 degrees F(-40 degrees C) to 150 degrees F(65 degrees C)

SIZE: 6.5" (16.5 cm)H X 3.5" (8.9 cm)W X 8.5" (21.6 cm)L

WEIGHT: 3.5 lbs (1.6 kg) including batteries

COMMONLY USED DETECTORS

MODEL 44-6 - Geiger-Muller Detector

MODEL 44-7 - End Window Geiger-Muller Detector

MODEL 44-9 - Pancake Geiger-Muller Detector

MODEL 44-38 - Energy Compensated Geiger-Muller Detector

**MODEL 2401-EC
LOW RANGE ENERGY COMPENSATED
POCKET SURVEY METER**

DETECTOR: Energy compensated G-M

SENSITIVITY: Typically 1050 cpm/mR/hr (Cs-137 gamma)

ENERGY RESPONSE: Reading within plus or minus 20% of true value

METER DIAL: 0 - 2 mR/hr; 0 - 2.1k cpm, BAT OK

MULTIPLIERS: X1, X10, X100

LINEARITY: Reading within plus or minus 10% of true value

AUDIO: Built in unimorph speaker (*select quiet position on main switch to silence the audio*)

CALIBRATION CONTROLS: Accessible from front of instrument

RESPONSE: Typically 5 seconds from 10% to 90% of final reading

POWER: 1 ea. 9 volt

BATTERY LIFE: Typically 250 hours with alkaline batteries (*battery condition can be checked on meter*)

METER: 2.5" (6.4 cm) arc, 1 mA analog type

CONSTRUCTION: Aluminum housing with beige polyurethane enamel paint, and a recessed subsurface printed membrane front panel

TEMPERATURE RANGE: -4 degrees F(-20 degrees C) to 122 degrees F(50 degrees C)

May be certified for operation from -40 degrees F(-40 degrees C) to 150 degrees F(65 degrees C)

SIZE: 1.8" (4.6 cm)H X 3.3" (8.4 cm)W X 5.3" (13.5 cm)L

WEIGHT: 0.9 lbs (0.4 kg) including batteries

POCKET DOSIMETERS AND CHARGERS

MODEL NUMBER	PART NUMBER	RANGE
AT138	51-2936	0-200 mR
AT138-S	51-2937	0-2 mSv
AT725	51-2939	0-5 R

SPECIFICATIONS

RADIATION DETECTED: Gamma and X-Ray from 16 keV - 2 MeV

ENERGY RESPONSE: See response curve below

DETECTOR: Fiber electrometer mounted in an electrically conducting plastic ion chamber

DETECTOR HOUSING: Very low permeability plastics - hermetically sealed

ACCURACY: Within plus or minus 10% of actual exposure

RATE RESPONSE: Dose rate independent for gamma and x-radiation

ELECTRICAL LEAKAGE: Less than 0.5% of full scale for 24 hours at 50 degrees C

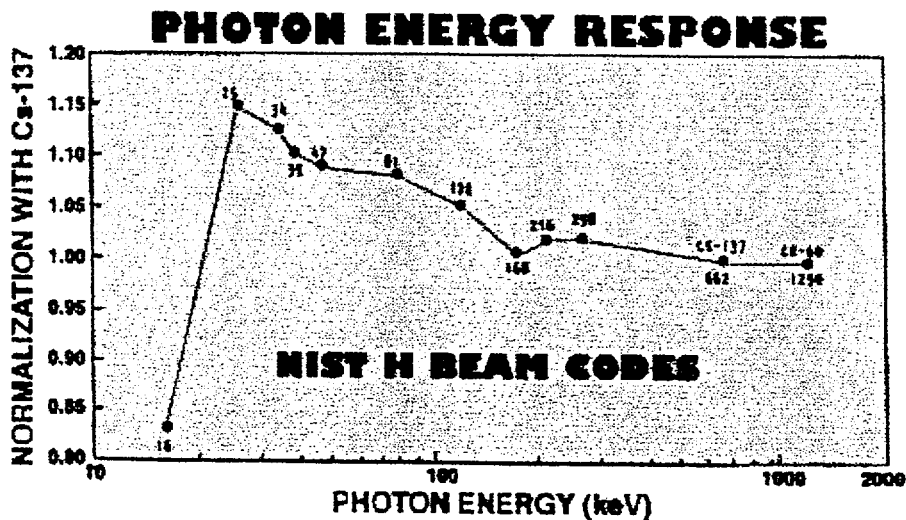
TEMPERATURE RANGE: -20 degrees C to +50 degrees C

RELATIVE HUMIDITY: Up to 90%

SIZE: 4.5"(12.4cm)L X 0.6"(1.5cm) Diameter

WEIGHT: 1.0 oz (25g)

FINISH: Barrel and end caps: Natural matte black



EIGHT HOUR TRAINING COURSE, IN 10 CFR 19,
PRESENTED TO SERVICE PERSONNEL
FROM GERMANY

COURSE OUTLINE FOR 8 HR TRAINING FOR TECHNICIANS WORKING FOR IMS
THAT ARE NOT FROM THE UNITED STATES

10CFR19 INFORMATION

- I. Jurisdiction and Regulatory Function of the United States Nuclear Regulatory Commission and Agreement States
 - A. Definition of the NRC
 - 1. Scope of regulatory control: Byproduct material
 - 2. Congressional mandate: can impose civil penalties to assure compliance with Federal regulations
 - 3. What is the Code of Federal Regulations
 - B. Definition of an Agreement State
 - 1. Scope of regulatory control: byproduct material as well as machine produced radiation/radioactive materials
 - 2. How a State becomes an Agreement State
 - 3. Which States are in Agreement status
 - 4. Explanation of how each Agreement State may have slightly different rules and regulations
 - C. Objective (purpose) of the regulatory agencies
- II. Description of the Pertinent Sections of the Code of Federal Regulations
 - A. 10CFR20: Standards for Protection Against Radiation
 - 1. Discuss in detail; this is the most important section
 - B. 10CFR30: Rules of General Applicability to Domestic Licensing of Byproduct Material
 - 1. Discuss types of licenses and requirements for obtaining a license
 - 2. Discuss enforcement and violations
 - C. 10CFR31: General Domestic Licenses for Byproduct Material
 - 1. Discuss 31.5: Measuring and gauging devices
 - 2. Discuss 31.6: General License to install devices generally licensed in 31.5
 - D. 10CFR32: Specific Domestic Licenses to Manufacture or Transfer Certain Items Containin Byproduct Material
 - 1. Discuss in general
 - E. 10CFR33: Specific Domestic Licenses of Broad Scope for Byproduct Material
 - 1. Discuss the types of licenses briefly
 - F. 10CFR34: Licenses for Radiography and Radiation Safety Requirements for Radiographic Operations
 - 1. Discuss all sections in great detail; this is the most important section for the techs to understand.

III. Description of NRC Forms/Reg Guides

- A. NRC-3
- B. NRC-4
- C. Form 313
- D. Regulatory Guide 8.13

IV. Regulatory Philosophies in the United States

- A. Atomic Energy Act: Gave the Federal Government control of byproduct material
 - 1. This is contrary to the "States Rights" philosophy in the United States, so this control is somewhat unique
 - 2. This control was exerted for largely security reasons
- B. Agreement State Program: First relaxing of the Atomic Energy Act
 - 1. States are now encouraged to become Agreement States

