NRC FORM 313
(1-84)
10 CFR 30, 32, 33, 34, 35 and 40

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED BY OMB
3150-0120
Expires: 5-31-87

APPLICATION FOR MATERIAL LICENSE

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.

FEDERAL AGENCIES FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
WASHINGTON, DC 20555

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS, IF YOU ARE LOCATED IN:

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIAL SECTION B
631 PARK AVENUE
KING OF PRUSSIA, PA 19406

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
MATERIAL RADIATION PROTECTION SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION III
MATERIALS LICENSING SECTION
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
MATERIAL RADIATION PROTECTION SECTION
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
MATERIAL RADIATION PROTECTION SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

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 JURISDICTION.

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

- [ ] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER _____
- [XX] C. RENEWAL OF LICENSE NUMBER 47-23076-01

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include Zip Code)*

Huntington Testing, Inc.
PO Box 1618
Huntington, WV 25717

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

Huntington Testing, Inc.
1116 Rt. 52
Kenova, WV 25530

and at temporary job sites in States subject to NRC's Regulatory Authority.

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION
William G. Yeoman

TELEPHONE NUMBER
(304) 453-2109

SUBMIT ITEMS 5 THROUGH 11 ON 8½ 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 AND EXPERIENCE.

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

9. FACILITIES AND EQUIPMENT. storage vault only

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSEE FEES *(See 10 CFR 170 and Section 170.31)*
FEE CATEGORY
AMOUNT ENCLOSED $700.00

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, 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, 62 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.

SIGNATURE - CERTIFYING OFFICER	TYPED/PRINTED NAME	TITLE	DATE
William G. Yeoman	William G. Yeoman	President	11/25/85

14. VOLUNTARY ECONOMIC DATA

a. ANNUAL RECEIPTS

- [ ] < $250K
- [ ] $250K – 500K
- [ ] $500K – 750K
- [ ] $750K – 1M
- [ ] $1M – 3.5M
- [ ] $3.5M – 7M
- [ ] $7M – 10M
- [ ] > $10M

b. NUMBER OF EMPLOYEES *(Total for entire facility excluding outside contractors)*

c. NUMBER OF BEDS

d. WOULD YOU BE WILLING TO FURNISH COST INFORMATION *(Dollar and/or staff hours)* ON THE ECONOMIC IMPACT OF CURRENT NRC REGULATIONS OR ANY FUTURE PROPOSED NRC REGULATIONS THAT MAY AFFECT YOU? *(NRC regulations permit it to protect confidential commercial or financial—proprietary—information furnished to the agency in confidence)*

- [ ] YES
- [ ] NO

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS	APPROVED BY
REN	Rec. 2	30	10816	
AMOUNT RECEIVED	CHECK NUMBER			DATE
$700	3902			12/5/85

Received 11/27/85 PC Reg II

PRIVACY ACT STATEMENT ON THE REVERSE

8604070087 860110
REG2 LIC30
47-23076-01
PDR

HUNTINGTON TESTING, INC.

OFFICERS

William G. Yeoman President	48 Oakview Drive Kenova, WV 25530
Philip J. Wearden Vice-President	2 Hapgood Hill Huntington, WV 25705
Susan B. Adkins Sec/Treasurer	773 1st Street West Ceredo, WV 25507

DIRECTORS

William G. Yeoman	48 Oakview Drive Kenova, WV 25530
Philip J. Wearden	2 Hapgood Hill Huntington, WV 25705
Susan B. Adkins	773 1st Street West, Ceredo, WV 25507
Michael R. Adkins	773 1st Street West, Ceredo, WV 25507
Philip P. Yeoman	11505 Windy Willow Ct. Louisville, KY 40222
C. Ward	1535 Oakview Heights Kenova, WV 25530
S. Hall	13 Sunset Drive, Huntington, WV 25704

ITEM 5

HUNTINGTON TESTING, INC.

LICENSE RENEWAL APPLICATION
#47-23076-01

RADIOACTIVE MATERIAL

1. IRIDIUM-192	SEALED SOURCES (TECHNICAL OPERATIONS MODEL A-429-9)	NOT TO EXCEED 100 CURIES PER SOURCE.
2. IRIDIUM-192	SEALED SOURCES (TECHNICAL OPERATIONS MODEL ~~A-5801-8~~ (A-58101-8))	NOT EXCEED 200 CURIES PER SOURCE.
3. COBALT-60	SEALED SOURCES (TECHNICAL OPERATIONS MODEL A-424-14)	NOT TO EXCEED 100 CURIES PER SOURCE.
4. COBALT-60	SEALED SOURCES (TECHNICAL OPERATIONS MODEL A-424-15)	NOT TO EXCEED 10 CURIES PER SOURCE.
5. CESIUM-137	SEALED SOURCES (TECHNICAL OPERATIONS MODEL 77302 SOURCE ROD)	NOT TO EXCEED 165 MILLICURIES PER SOURCE.

1. For use in Technical Operation's Model 660 exposure device for industrial radiography and in Technical Operations Model 650 source changers for storage and replacement of sources.

2. For use in Technical Operations Model 616 exposure device for industrial radiography.

3. For use in Technical Operations Model 680 exposure device for industrial radiography and in Technical Operations Model 771 source changers for storage and replacement of sources.

4. For use in Technical Operations Model 684 exposure device for industrial radiography and in Technical Operations Model 416 source changers for storage and replacement of sources of 7 curies or less.

5. For use in Technical Operations Model 773 instrument calibrator. For calibration of survey meters.

HUNTINGTON TESTING, INC.
ITEM 6

LICENSE RENEWAL APPLICATION
#47-23076-01

Licensed material will be stored used at Huntington Testing facilities located at:

1116 Rt. 52
Kenova, West Virginia

and used at temporary job sites anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains regulatory authority. For the purpose of performing industrial radiography, source exchanges and instrument calibration.

HUNTINGTON TESTING, INC.

CORPORATE RADIATION AND ADMINISTRATIVE CONTROL

ITEM 7

HUNTINGTON TESTING, INC.

LICENSE RENEWAL APPLICATION
#47-23076-01

RESUME - RADIATION SAFETY

William G. Yeoman

4/12/85-Present President, Huntington Testing, Inc.

11/18/77-4/12/85 Huntington Testing, Division of Union Boiler Company.

Position: Corporate Radiation Safety Officer and General Manager.

Responsibilities: Training of personnel, maintenance of equipment, field auditing and all other functions pertaining to our by-product material license.

6/12/74-11/17/77 McCorkle Machine Shop

Responsibilities: as listed in item 2

9/71-6/11/74 Benjamin F. Shaw Co. Laurens, SC.

Position: Field Radiographer and Radiation Safety Officer on temporary job sites in N. Carolina, S. Carolina, Ohio, W. Virginia.

Responsibilities: Reported directly to Manager of Quality Control

9/1/68-9/71 Foster Wheeler Corp. 110 S. Orange Ave. Livingston, NJ.

Position: Field Radiographer and Radiation Safety Officer on temporary job sites in Pennsylvania, W. Virginia, New Jersey, Kentucky, Florida, and Mississippi.

HUNTINGTON TESTING, INC.

LICENSE RENEWAL APPLICATION
#47-23076-01

RESUME - RADIATION SAFETY

(Cont'd)

4/1/63-9/1/68 Foster Wheeler Energy Corp. Mountaintop, PA. Livingston, NJ.

Position: Radiographic Personnel Shift Supervisor reporting directly to the Manager Quality Control.

10/1/61-3/31/63 North American Inspection Services, Inc. Rt. 17, Hasbrouck Heights, NJ

Position: Manager of District Office and Radiation Safety Officer.

10/58-10/1/61 North American Inspection Services, Inc. Toronto, Ontario and Edmonton, Alberta, Canada.

Sources utilized during above assignments:

1.	Tech/Ops	Model #660	Ir-192	100 Ci
		Model #684	CO-60	10 Ci
2.	Tech/Ops	Model #660	Ir-192	100 Ci
		Model #684	CO-60	10 Ci
3.	Tech/Ops	Model #660	Ir-192	100 Ci
		Model #684	CO-60	10 Ci
4.	Tech/Ops	Model #660	Ir-192	100 Ci
		Model #684	CO-60	10 Ci
5.	Tech/Ops	Model #533	Ir-192	100 Ci
		Model #660	Ir-192	100 Ci
		Model #684	CO-60	10 Ci
	Budd	Model #10	Ir-192	10 Ci
6.	Tech/Ops	Model #533	Ir-192	100 Ci
		Model #660	Ir-192	100 Ci
		Model #684	CO-60	10 Ci
	Budd	Model #10	Ir-192	10 Ci
7.	Picker Cyclotron		CO-60	125 Ci
	Budd Model #10		Ir-192	50 Ci
8.	Picker		Ir-192	50 Ci

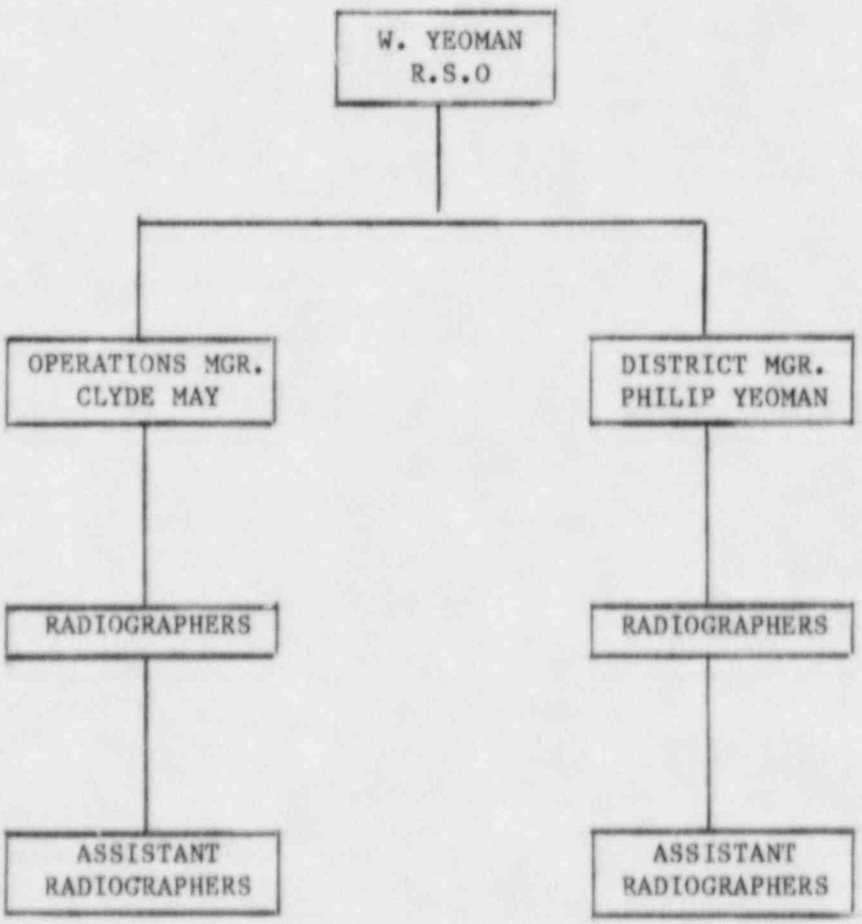
HUNTINGTON TESTING, INC.

ITEM 7

LICENSE RENEWAL APPLICATION
#47-23076-01

ORGANIZATIONAL CHART

RADIATION SAFETY



1.0 SCOPE:

1.1 The radiation controls and procedures set forth in this document are designed to protect not only the Radiographic Personnel who, by the nature of their work, may be exposed to radiation but to assure that all personnel at various field sites are also protected.

1.2 Radiation in common with toxic chemicals, combustible materials and high voltage electricity as well as other potential hazards are capable of inflicting bodily harm if used improperly and without due regard to safety. In some measure, radiation is more of a hazard in that it cannot be seen, felt heard or smelled.

1.3 The Radiation Administration Control, Operating and Emergency Procedures contained herein are in conformance with the provisions of the following Federal and State Agencies:

1.3.1 U. S. Nuclear Regulatory Commission

1.3.2 States that have entered into an agreement with N.R.C. transferring regulatory authority over by-product materials to that State

1.3.3 Rules and regulations of non-agreement States pertaining to radiation protection.

1.3.4 U. S. Department of Transportation.

DEFINITION OF TERMS USED IN THIS DOCUMENT

2.0 DEFINITIONS:

2.1 "By-Product Material" means any radioactive material (except special nuclear Material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.

2.2 "Radiation" means any or all of the following...Alpha Rays, Beta Rays, Gamma Rays and X-Rays.

2.3 "Radiation Area" means any area where radiation exists at such levels that a major portion of the body could receive in any one hour, a dose in excess of 2 MR.

2.4 "High Radiation Area" means any area in which there exists radiation at such levels that a major portion of the body could receive in any one hour a dose in excess of 100 MR.

2.5 "Curie" is a unit of activity for measuring the quantity of radioactive material. One (1) curie yields 2.7 x 10th power (3.7 billion) disintegrations per second.

2.6 "Roentgen" (R) is the unit of measurement of X-rays and Gamma Rays absorbed in air. It is a measure for the absorption of X-rays and Gamma Radiation in the same sense that feet of inches are a measure of length.

2.7 "Milliroentgen" (MR) is $\frac{1}{1000}$ of a roentgen (R).

2.8 "Survey" means measuring radiation intensities at various locations in an area where radiation exists.

2.9 "Survey Chart" is an outline or sketch of the location where a radiation survey is taken and the recording of the result of the survey. Form 1-RT-2 Section II will be used in conjunction with all radiation surveys.

2.10 "Monitoring" is the act of surveying or measuring with instruments, pocket dosimeters or film badges, the amount of radiation present or accumulated.

2.11 "Radiation Signs" are painted magenta or purple on a yellow background with the conventional three bladed symbol conforming to AEC requirements. The degree of radiation present is indicated in the wording.

HUNTINGTON TESTING, INC.

DEFINITION OF TERMS USED IN THIS DOCUMENT

2.12 "Scattered Radiation" results from the deflection of primary rays as they interact with the atoms in materials such as air, steel, concrete or lead shields and may emerge from the exposed material in any direction. That scattered in a forward direction "the direction of the primary radiation" has higher energies that that scattered in the opposite (Backscatter).

2.13 "Shielding Material" is any material used to absorb or reduce radiation intensity levels.

2.14 "Radiographic Exposure Device" means any device that is AEC or Agreement State approved and is designed to contain a sealed source which may be moved or otherwise changed from a shielded to unshielded position for making a radiographic exposure.

2.15 "Sealed Source" means any by-product material that is encased in a capsule designed to prevent leakage or escape of the by-product material.

2.16 "Storage Container" means a device in which sealed sources are stored.

2.17 "By-Product Material Shipping Container" means a device in which by-product materials are transported. The design and labeling of these must conform to AEC, State and U. S. Department of Transportation Requirements.

2.18 "Rem" as used in this section is a measure of the dose of ionizing radiation to the body tissue in terms of it's estimated biological effect (RBE). One "millirem" = 0.001 "rem". For the purpose of this section the following may be considered to be equivalent: One "rem" = one (R) of X or Gamma Radiation.

2.19 "Plant or Construction Personnel" means all employees not directly concerned with radiation or any other personnel who may be at a plant or construction site.

2.20 "Radiographic Personnel" means all personnel directly connected with radiographic operations.

2.21 "Special Jigs and Fixtures" are devices designed to position sources for radiographic exposures where source tubes provided by the original manufacturer of a radiographic exposure device cannot be used. Any Huntington Testing manufactured device that alters or replaces any part of the original approved exposure device must have N.R.C. or Agreement State approval prior to use.

HUNTINGTON TESTING, INC.

RESPONSIBILITIES

3.0 RESPONSIBILITIES:

3.1 The "Radiation Safety Officer" will be responsible for the enforcement of Rules, Regulations and Procedures involving the safe handling and use of by-product materials and X-ray generating equipment in the possession of Huntington Testing. Records, equipment and radiographic personnel will be audited by him at frequent intervals to assure compliance with regulations and procedures pertaining to radiation safety. In addition he will be directly responsible for carrying out the following duties.

3.1.1 Procedures, equipment and records will be monitored and evaluated for compliance with the rules and regulations of Federal, State and local Agencies and Huntington Testing pertaining to the safe handling and use of by-product materials and X-ray generating equipment.

3.1.2 He shall act as the licensee's liaison officer with the Nuclear Regulatory Commission and State Agencies on all license matters.

3.1.3 Establishes and conducts training programs for radiographic personnel.

3.1.4 Examines, determines competency and qualified personnel to fulfill the functions described in 3.2, and 3.3 of Training Program.

3.1.5 Maintain control of procurement and disposal of licensed by-product material.

3.1.6 Maintains personnel monitoring programs.

3.1.7 Procures and maintains adequate radiation survey instruments.

3.1.8 Maintains adequate storage facilities.

3.1.9 Maintenance of exposure devices and related equipment.

3.1.10 Takes leak test swab to be forwarded to laboratory for radio-assay and maintains leak test records.

RESPONSIBILITIES

3.1.11 Conducts by-product material quarterly inventories.

3.1.12 Monitors utilization logs.

3.1.13 Maintains the survey instruments that will have a range such that two milliroentgens per hour through one roentgen per hour can be measured

Calibrates radiation survey instruments at intervals not to exceed ninety (90) days in accordance with Procedure 15.

3.1.14 Reviews radiation records not kept by himself.

3.1.15 Assumes control and institutes corrective action in emergency situations.

3.1.16 Investigates cause of incidents and determines necessary preventative action.

3.1.17 Supervises the shipment of transfer of by-product materials to insure compliance with the rules and regulations of the U. S. Department of Transportation

3.2 The "Radiographer" will be responsible for the safe use and handling of by-product materials and X-ray generating equipment while performing a radiographic assignment. He shall ascertain that all regulations, rules and procedures pertaining to radiation safety are strictly adhered to, prior to, during, and after taking a radiographic exposure. Any deviation from written procedure is strictly forbidden.

RESPONSIBILITIES

3.3 Physical Examinations:

3.3.1 Pre-Employment Physical Examination

3.3.1.1 A complete radiation history will be obtained whenever possible in order to determine if the applicant has previously received any significant exposure to radiation.

3.3.1.2 Each applicant will receive a complete physical examination including a blood count and urinalysis.

3.3.1.3 Where an applicant has pre-existing blood abnormalities, such as a persistent anemia, he shall not be assigned work where it is possible to be exposed to ionizing radiation.

3.3.2 Periodic Physical Examinations

3.3.2.1 "Radiation Personnel" will be given a complete physical examination at least once a year. Examinations will include a blood count and urinalysis.

3.3.2.2 In the event a film badge report indicates a radiation dosage in excess of 1250 MR has been received by an individual, he will be given a physical examination including a blood count and urinalysis, regardless of the time of his previous examination.

HUNTINGTON TESTING, INC.

RESPONSIBILITIES

4.0 PERSONNEL RADIATION RECORDS:

4.1 Film badge monitoring records will be retained indefinitely by Huntington Testing, Inc.

4.2 All radiation exposure reports that are required in "Personnel Monitoring" Procedure (Number II of Section II) will be retained in the same manner as film badge monitoring records.

5.0 MANDATORY PERSONNEL MONITORING REPORTS:
CFR TITLE 10--CHAPTER I, PART 10

5.1 Within the first quarter of each calendar year a personnel monitoring report indicating the total number of individuals for whom monitoring was provided during the previous calendar year will be issued in accordance with Part 20, 20.407.

5.2 When an individual terminates employment or is transferred out of the department performing radiographic inspection, a personnel monitoring report will be issued in accordance with Part 20, 20.408

5.3 Upon the request of an employee or former employee, a radiation exposure record will be provided in accordance with Part 20, 20.409.

RADIOACTIVE MATERIAL INVENTORY

1.0 SCOPE:

The following procedure describes the method of inventorying, each calendar quarter, all radioactive materials in the possession of Huntington Testing.

2.0 RESPONSIBILITIES:

It shall be the responsibility of the Radiation Safety Officer or his representative to take by-product material quarterly inventories.

3.0 INVENTORYING PROCEDURE:

3.1 A quarterly physical source inventory will be taken of all sources received and in the possession of Huntington Testing, Inc.

3.2 January 1st will be considered the beginning of the first quarter of the year.

3.3 Source storage containers or exposure devices will be removed from their place of storage and placed in an area where no radiation is present.

3.4 A calibrated radiation survey instrument will be positioned at the container surface and the radiation level noted.

3.5 Form 1-RT-4 will be used in recording the following quarterly inventory information:

- Date of source inventory
- Source type (i.e. Cobalt 60 or Iridium 192)
- Source serial number
- Source strength at day of inventory
- Initial of individual taking inventory
- Radiation-level at source container surface

3.6 Source inventory records will be retained in the files of Huntington Testing, Inc.

HUNTINGTON TESTING, INC.

LEAK TESTING

1.0 SCOPE:

This procedure describes the method of taking leak tests of radioactive sources.

2.0 RESPONSIBILITIES:

It is the responsibility of the Radiation Safety Officer or his representative to perform this test and to ensure that it is done at least every six months.

3.0 EQUIPMENT:

3.1 A radiation survey instrument capable of reading .1 mR per hour or less.

3.2 Technical Operations Inc. Leak Test Kit Model 518.

4.0 PROCEDURE:

4.1 Remove plug from storage container or from source tube part of exposure device.

4.2 Wet the swab with EDTA solution. Shake off excess solution and insert the swab into the hole of the container. Wipe the interior of the hole thoroughly by rotating swab holder.

4.3 Withdraw swab and place in plastic envelope.

4.4 The swab is now to be monitored by turning the radiation survey instrument to it's most sensitive range. Place the survey instrument in a low background area and move the swab in it's plastic envelope to the survey instrument. NOTE: Move the swab, not the survey instrument.

4.5 If there is no indication on the meter, or if the indication is no more than 0.2 mR per hour above background, put the plastic envelope with the swab in the provided mailing box; mail to Technical Operations, Incorporated, Burlington, Massachusetts, with the T/O supplied leak test report form.

4.6 If the swab should show more than 0.2 mR per hour, DO NOT MAIL Contact Technical Operations, Inc., for specific instructions.

4.7 Fill out Form 1-RT-5 and retain in files.

HUNTINGTON TESTING, INC.

RADIATION SURVEY INSTRUMENT CALIBRATION

1.0 SCOPE:

This procedure describes the methods and equipment required to calibrate radiation survey instruments in use at Huntington Testing, Inc.

2.0 RESPONSIBILITIES:

It is the responsibility of the Radiation Safety Officer or his representative to calibrate radiation survey instruments at least every calendar quarter and after repairs that may have affected an instrument's accuracy.

3.0 CALIBRATION PROCEDURE:

3.1 Radiation survey instruments will be calibrated using Technical Operations Calibration Kit Model T/O 571. or Technical Operations Model #773 Calibration Unit.

3.2 Remove case of survey instrument, exposing the calibration adjustment screws for each scale.

3.3A Victoreen 592-B

Turn survey meter range selector lever to "zero" position. Allow a few minutes for the survey meter to "warm up". (If indicator drifts, additional time is required for "warm up".) Adjust knob on outside of survey meter so that the indicator points to "zero". In the event that the meter fails to "zero", set screw knob at a halfway position and adjust "zero" set screw on the inside of meter. It is to be noted that the knob on the outside of the meter is for fine "zero" adjustments and the inside set screw is for coarser adjustments. If the meter cannot be "zeroed", the batteries may be weak and must be replaced. Then turn knob to the first scale. meter.

3.3B Eberline E130G and #520

Turn instrument knob to battery check position. Needle should enter the zone so marked on the meter face, if not, change the batteries. Then turn knob to the first scale.

4.0 PREPARATION FOR USE:

4.1 Remove from storage area and place the source shield in a restricted area so that the directional port is aimed horizontally. To minimize the effects of scattered radiation, the unit should be at least 16 feet from any wall, in the direction of the primary beam.

HUNTINGTON TESTING, INC.

RADIATION SURVEY INSTRUMENT CALIBRATION

4.2 Position a support 10' long horizontally from the T/O-571 or T/O-773 directional shield, as shown on Drawing 57101.

4.3 Restrict access to an area 10' from the container.

5.0 SURVEY METER CALIBRATION:

5.1 On the bottom of the identification label is a dose/distance computer. The source size and date of calibration is stamped on the identification label. Follow these steps: (1) Set the age of the source shown on Scale A opposite the original source size shown on Scale B. (2) Tighten the screws holding the bottom scale. Desired dose rates are shown on Scale C and you may read the correct distance directly below the dose rate desired.

5.2 Turn on your survey instrument, let it warm up for about 10 minutes and zero the meter.

5.3 Turn the range switch to the low range, and place the meter at the appropriate distance (see dose/distance computer) for a 2.5 mR/hr reading. The survey meter should be located so that the center of the chamber, or detector, is at the correct distance and centered on the center line of the radiation beam. The longest dimension of the ion chamber could be at right angles to the radiation beam. Depending on the physical size and configuration of your survey meter, it may be necessary to mount the 571 source shield somewhat higher than the bench surface. When the proper geometry for your meter has been established, use the same physical set-up consistently in future calibration operations.

A maximum dose rate of 1000 mR/hr can be obtained with certain survey meters in contact with the radiation port; however, the physical geometry of some survey meters may lead to incorrect readings at such a close distance. Do not use less distance than the minimum distance which provides the correct maximum dose in accordance with the dose/distance computer.

CAUTION

The meter should be placed so that you can read it from a distance without exposing yourself to the primary beam.

HUNTINGTON TESTING, INC.

RADIATION SURVEY INSTRUMENT CALIBRATION

5.0 SURVEY METER CALIBRATION:

5.4 Stand AWAY from the primary beam and open the source shutter. This may be done by lifting the source rod manually, or remotely with a string attached to the source rod. Check the reading on the instrument and then close the source shutter by allowing the source rod to drop to the stored position. If the reading does not agree within plus or minus 10%, an adjustment is required.

5.5 In turn check two points on each scale using the correct distance indicated by the dose/distance computer.

The points to be checked as follows:

Eberline E 130 G

Scale	Points
X1	2 & 8
X10	2 & 8
X100	2 & 8

Eberline E 520

X0	5 & 15
X.1	5 & 15
X1	5 & 15
X10	5 & 15
X100	5 & 15

Victoreen 592 B

X1	2 & 8
X10	2 & 8
X100	2 & 8

5.6 On completion of the calibration, the source rod is to be dropped to the closed position, the locking bar inserted to prevent source movement, and the lock is to be locked and secured. Return the source shield to storage area.

5.7 Survey meters which cannot be calibrated should be returned to the manufacturer for repair.

5.8 Fasten a label to your survey meter indicating the date of calibration.

5.9 The results of the survey instrument calibration will be recorded on For m 1-RT-6 and retained in the files of Huntington Testing, Inc.

HUNTINGTON TESTING, INC.

PERIODIC INSPECTION

1.0 SCOPE:

This procedure describes the method and frequency of making a periodic inspection of radiographic test equipment.

2.0 RESPONSIBILITY:

It is the responsibility of the Radiation Safety Officer to audit periodic inspection results.

3.0 FREQUENCY:

Periodic inspection and maintenance will be performed at least quarterly when equipment has been in normal use or after prolonged storage.

3.1 Normal use is defined as equipment that has been in use forty-five (45) or more days during any calendar quarter.

3.2 Prolonged storage is defined as equipment that has not been used during any calendar quarter.

4.0 AUDIT:

The audit results will be recorded on Form 1-RT-8 and shall become a part of the permanent records for each device.

HUNTINGTON TESTING, INC.

INTERNAL AUDIT OF RADIOGRAPHIC OPERATIONS

1.0 SCOPE:

The following procedure describes the method of auditing, at least once per calendar quarter, all radiographic operations being performed by Huntington Testing personnel.

2.0 RESPONSIBILITIES:

It shall be the responsibility of the Radiation Safety Officer to conduct these audits.

3.0 AUDIT PROCEDURE:

3.1 A physical audit of all radiographic operations will be undertaken at least once per calendar quarter.

3.2 January 1st will be considered the beginning of the first quarter of the year.

3.3 Each temporary job-site will be audited for compliance with applicable procedures and instructions, and will include the following:

a. Review of all charts and reports required to be maintained as outlined in the pertinent operating procedures.

b. Review of personnel operating techniques with particular regard to compliance with source handling procedures and the posting of high radiation areas.

c. Condition of equipment labels and source identification tags.

3.4 Form 1-RT-7 will be used to record the necessary quarterly audit information as outlined in 3.3 above.

3.5 If any area of non-compliance is found during an audit, the RSO shall initiate whatever corrective action he deems necessary to insure compliance with Huntington Testing's Operating and Emergency Procedures and pertinent Federal Regulations. Such corrective action shall be recorded in the remarks column of Form 1-RT-7.

3.6 These records will be retained in the offices of Huntington Testing, Inc. for a period of at least two years.

HUNTINGTON TESTING, INC.

Internal Inspection Checklist

Radiographic Location _____ Date _____ Time _____

Radiographer _____ Inspector _____

Radioisotope _____ Curies _____ Serial No. _____

Projector Serial No. _____ Projector Model No. _____

Survey Meter Model No. _____ Ser. No. _____ Calib. Due _____

		Yes	No
1.	Was the radiographer wearing a film badge and dosimeter?		
2.	Were other individuals working within the restricted area wearing film badges and dosimeters?		
3.	Was the restricted area posted with "CAUTION (or DANGER) RADIATION AREA" signs?		
4.	Was the restricted area properly controlled to prevent unauthorized entry?		
5.	Was the high radiation area posted with "CAUTION (or DANGER) HIGH RADIATION AREA" signs?		
6.	Did the radiographer have a calibrated and properly operating survey meter?		
7.	Was the utilization log properly filled out?		
8.	Did the radiographer have sufficient knowledge of safety rules? (Ascertained by oral questions.)		
9.	Was the radiographer working with defective equipment?		
10.	Did the radiographer properly survey the source projector and source tube and take a radiation reading 1 foot (0.3 m) in front of the source following the radiographic exposure?		
11.	Were radioactive isotopes stored properly and kept locked to prevent unauthorized removal?		

HUNTINGTON TESTING, INC.

Internal Inspection Checklist
(Cont'd)

	Yes	No
12. Was the storage area posted with "CAUTION (or DANGER) RADIOACTIVE MATERIAL" signs?		
13. Did the radiographer possess a copy of the applicant's operating and emergency procedures and, as applicable, State or NRC rules and regulations for protection against radiation?		
14. Were there any items of noncompliance other than those listed on this form? (If any, explain in remarks.)		

Remarks _____

QUALITY ASSURANCE PROGRAM
AS REQUIRED BY 10 CFR - PART 71

1.0 ORGANIZATION:

1.1 The Final responsibility for the Quality Assurance Program for Part 71 Requirements rests with Huntington Testing. Design and fabrication or radioactive material shipping packages shall not be conductged under this Quality Assurance Program. The Quality Assurance Program is implemented using the attached organization chart.

1.2 The Radiation Safety Officer is responsible for overall administration of the program, training and certification, document control, auditing, and Part 71 Quality Assurance Requirements.

1.3 The Radiographers are responsible for handling, storing, shipping, inspection, test, operating status and record keeping.

2.0 QUALITY ASSURANCE PROGRAM:

2.1 The management of Huntington Testing, Incorporated establishes and implements this Quality Assurance Program. Training for all QA functions, prior to engagement in these functions, is required according to written procedures. QA Program revisions will be made according to written procedures with management approval. The QA Program will ensure that all defined QC procedures, engineering procedures, and specific provisions of the package design approval are satisfied. The QA Program will emphasize control of the characteristics of the package which are critical to safety.

2.2 The Radiation Safety Officer shall assure that all radioactive material shipping packages are designed and manufactured under a Quality Assurance Program approved by the Nuclear Regulatory Commission for all packages designed or fabricated after 1, July 1978. This requirement can be satistied by receiving a certification to this effect from the manufacturer.

3.0 DOCUMENT CONTROL:

3.1 All documents related to a specific shipping package will be controlled through the use of written procedures. All document changes will be performed according to written procedures approved by management.

QUALITY ASSURANCE PROGRAM
AS REQUIRED BY 10 CFR - PART 71

3.0 DOCUMENT CONTROL: (Cont'd)

3.2 The Radiation Safety Officer shall insure that all QA functions are conducted in accordance with the latest applicable changes to these documents.

4.0 HANDLING STORAGE AND SHIPPING:

4.1 Written safety procedures concerning the handling, storage and shipping of packages for certain special form radioactive material will be followed. Shipments will not be made unless all tests, certifications, acceptances and final inspections have been completed. Work instructions will be provided for handling, storage and shipping operations.

4.2 Radiography personnel shall perform the critical handling, storage and shipping operations.

5.0 INSPECTION, TEST AND OPERATING STATUS:

5.1 Inspection, test and operating status of packages for certain special form radioactive material will be indicated and controlled by written procedures. Status will be indicated by tag, label, marking or log entry. Status of nonconforming parts or packages will be positively maintained by written procedures.

5.2 Radiography personnel shall perform the regulatory required inspections and tests in accordance with written procedures. The Radiation Safety Officer shall ensure that these functions are performed.

6.0 QUALITY ASSURANCE RECORDS:

6.1 Records of package approvals (including references and drawings), inspections, tests, operating logs, audit results, personnel training and qualifications and records of shipments will be maintained. Descriptions of equipment and written procedures will also be maintained.

6.2 These records will be maintained in accordance with written procedures. The records will be identifiable and retrievable. A list of these records, with their storage locations, will be maintained by the Radiation Safety Officer.

QUALITY ASSURANCE PROGRAM
AS REQUIRED BY 10 CFR - PART 71

7.0 AUDITS:

7.1 Established schedules of audits of the Quality Assurance Program will be performed using written checklists. Results of audits will be maintained and reported to management. Audit reports will be evaluated and deficient areas corrected. The audits will be dependent on the safety significance of the activity being audited, but each activity will be audited at least once per year. Audit reports will be maintained as part of the quality assurance records. Members of the audit team shall have no responsibility in the activity being audited.

HUNTINGTON TESTING, INC.

ITEM 8

LICENSE #1 47-23076-01

RENEWAL APPLICATION

H U N T I N G T O N T E S T I N G

I N C O R P O R A T E D

TRAINING PROGRAM

HUNTINGTON TESTING, INC.

INDEX--SECTION 3

TRAINING PROGRAM

HUNTINGTON TESTING, INC.

ISOTOPE RADIOGRAPHY

1.0 PURPOSE:

The purpose of this program is to establish training requirements for industrial radiography personnel employed by Huntington Testing, Inc.

2.0 RESPONSIBILITY:

The responsibility for the administration of this program shall rest with the Radiation Safety Officer.

3.0 CLASSIFICATION OF PERSONNEL, QUALIFICATIONS AND DUTIES:

3.1 "Radiation Safety Officer" shall have administrative ability and experience. He shall be thoroughly familiar with all types of radiographic exposure devices and radiation detection instruments used by Huntington Testing, Inc., Huntington, WV. He shall be thoroughly familiar with NRC safety requirements and reporting regulations applicable to industrial radiography. He will have satisfactorily completed a radiation safety training course of at least forty (40) hours covering the topics outlined in Appendix "A" of 10 CFR,, Part 34.

3.2 "Radiographer" shall have satisfactorily completed the initial training, on-the-job training and examination requirements for radiographers, as described in this Training Program Outline. Any employee of Huntington Testing who has had previous experience in Industrial Radiography may qualify as a radiographer after satisfactorily completing the initial training in Huntington Testing's Operating and Emergency Procedures and Examination Requirements described in this training program outline. A radiographer may operate or personally supervise the use of radiographic devices by a radiographer's assistant. He is responsible to the licensee for assuring compliance with the requirements of NRC regulations, Huntington Testing's operating and emergency procedures and the conditions of the license.

3.3 "Assistant Radiographer" shall work under the direct supervision of a qualified Radiographer and shall have satisfactorily completed the initial training in selected subjects and examination requirements for assistant radiographer as described in the Training Program Outline.

HUNTINGTON TESTING, INC.

3.0 CLASSIFICATION OF PERSONNEL, QUALIFICATIONS AND DUTIES (cont'd):

3.3.1 Before any individual will be permitted to act as a radiographer's assistant, he will be instructed in, and become thoroughly familiar with:

a. Huntington Testing's Operating and Emergency Procedures

b. Radiographic Exposure Devices and related source handling and monitoring equipment as per initial training course outline.

INITIAL TRAINING COURSE OUTLINE

1.0 OPERATING AND EMERGENCY PROCEDURE (Section II of this manual)

1.1 Radiographic exposure devices and source shipping containers. Procedures No.'s 10, 12 and 13.
Instruction time--2 hours.

1.2 Conducting Radiation Surveys. Procedures No.'s 3,4,7,10 and 11.
Instruction time--2 hours.

1.3 Locking of exposure devices and storage container. Procedures No.'s 5, 7, 10, 11, 12,13,14, and 16.
Instruction time--1 hour.

1.4 Personnel Monitoring. Procedures No.'s 1 and 2.
Instruction time--1 hour.

1.5 Transportation of Sealed Sources. Procedures No.'s 16.
Instruction time--1 hour.

1.6 Controlling access to Radiographic Areas. Procedure No. 3
Instruction time--1 hour.

1.7 Notification of Personnel. Procedure No. 7
Instruction time--1 hour.

1.8 Minimizing exposure to persons in case of an accident. Procedure No. 7.
Instruction time--1 hour.

1.9 Maintenance of Radiographic Exposure Devices. Procedures No.'s 1, 4, and 6.
Instruction time--1 hour.

1.10 Maintenance of Radiographic Exposure Devices. Procedure No. 14.
Instruction time--1 hour.

Upon completion of this phase of the Initial Training Program, a general test will be given to insure that the individual has complete understanding of the Operating and Emergency Procedures of Huntington Testing, Incorporated.

HUNTINGTON TESTING, INC.

INITIAL TRAINING COURSE OUTLINE

2.0 SAMPLE TEST QUESTIONS:

2.1 What is the maximum radiation level at the outer surface of a source charger?

Answer: Less than 200mR/hr.

2.2 What constitutes a "High Radiation Area"?

Answer: An area where a major portion of the body could receive a dose in excess of 100 millirem in any one hour.

2.3 How would you determine the boundary of a restricted area?

Answer: $1 = \frac{120}{t}$ mR/hr

2.4 How often will dosimeters be read during a shift?

Answer: Several times.

2.5 Explain how to make a radiation survey after completing a radiographic exposure.

Answer: With a calibrated and operable survey meter, approach the exposure device from the rear. Radiation level should increase to between 10 mR/hr - 200 mR/hr upon contact with the device. The survey should continue from the device along the source guide tube to insure that the source is in the stored position.

2.6 When transporting radioactive material, what radiation levels may be tolerated in the driver's seat?

Answer: All radiation levels below 2 mR/hr.

2.7 Who is responsible for performing daily inspections of gamma-ray radiographic exposure equipment?

Answer: Radiographer.

2.8 When making a radiographic exposure in an unlit area, what added precautions must be taken?

Answer: Warning lights must be used in conjunction with ropes and signs.

HUNTINGTON TESTING, INC.

INITIAL TRAINING COURSE OUTLINE

2.0 SAMPLE TEST QUESTION: (Cont'd)

2.9 How often is it necessary to fill out a source survey inspection and utilization form?

Answer: Every time a source is removed from it's place of storage or a periodic inspection of equipment is being conducted.

2.10 When will film badges be worn?

Answer: At all times while performing radiographic assignments.

2.11 Where are the keys for radiographic devices and storage vaults to be kept?

Answer: In the radiographic office

2.12 When transporting radioactive material in a company vehicle, the driver will be furnished with what?

Answer: Film badge, dosimeter, survey meter, Procedure 7 and Procedure 3.

2.13 Who is to be notified when damage to the device, source guide tubes or control cables occurs?

Answer: Radiation Safety Officer.

2.14 How often should a survey meter be calibrated?

Answer: At least every 3 months.

2.15 How often are film badges replaced?

Answer: Monthly.

These sample questions will be changed periodically. The frequency of this change will be governed by the number of people coming into the company and/or by the people presently with the organization who wish to become radiographer's assistants.

NOTE: A 90% passing grade is required on this test. Any individual not meeting this criteria will be subjected to further instruction in the deficient areas.

HUNTINGTON TESTING, INC.

RADIOGRAPHIC EXPOSURE DEVICES AND RELATED SOURCE HANDLING AND MONITORING EQUIPMENT

Upon demonstration of understanding the company's Operating and Emergency Procedures, the individual will receive practical instruction in the operating and use of all devices licensed by Huntington Testing Incorporated.

This instruction will be given by the Radiation Safety Officer or a qualified radiographer, and will include specific instruction regarding the design and function of these devices. Also, included in this phase of training will be observation of at least ten (10) radiographic set-ups.

When the individual has received at least eight (8) hours equipment instruction and has observed the necessary number of set-ups, he will be required to demonstrate his understanding of the instruction received by performing an operational competence test.

This test will be performed under the supervision of the Radiation Safety Officer and the test results recorded on Form 1-RT-9.

Should the individual fail this test, he will receive additional instruction from the Radiation Safety Officer.

HUNTINGTON TESTING, INC.

RADIOGRAPHIC EXPOSURE DEVICES AND RELATED SOURCE HANDLING AND MONITORING EQUIPMENT

OPERATIONAL COMPETENCE TEST

NAME _____

		Yes	No
1.	Are Film Badge, dosimeters being worn?	___	___
2.	Is the survey meter calibrated and operable?	___	___
3.	Was radiographic device surveyed prior to removing it from storage vault?	___	___
4.	Form 1-RT-1 filled out prior to starting work?	___	___
5.	Radiographic Operations Report #1, 1-RT-3 filled out?	___	___
6.	Equipment set up correctly?	___	___
7.	Was a theoretical "High Radiation Area" and "Radiation Area" established prior to making exposure?	___	___
8.	Were ropes and signs used at boundary of restricted area?	___	___
9.	When exposure was made, was the boundary of the restricted area surveyed? Radiographic Operations Report No. filled out?	___	___
10.	When source was returned to device, was device surveyed to insure return of source to storage position?	___	___
11.	Was device surveyed prior to securing it in storage vault?	___	___
12.	Radiographic Operations Report No. 1 filled out?	___	___
13.	Form 1-RT-1 filled out?	___	___

TRAINING OUTLINE

1.0 ON-THE-JOB-TRAINING:

No one will be allowed to participate in on-the-job training until he has become qualified as a radiographer's assistant. During this phase of the his training, the Assistant Radiographer may participate in radiographic operations under the direct supervision of a qualified radiographer. The Radiation Safety Officer will also frequently observe the Assistant's performance to accurately judge his competency. The duration of this phase of the training program will be approximately three months.

Upon completion of the above, and having proved his competence to the satisfaction of the Radiation Safety Officer, the candidate will be sent to Technical Operations, Inc., Burlington, Massachusetts, to attend their course on the Radiation Safety aspects of isotope radiography. This course provides instructions in the topics of Title 10 CFR, Part 34, Appendix A and all other Federal Standards of Protection.

Successful completion of the above would permit an individual to act as a radiographer.

2.0 PERIODIC TRAINING:

Radiographic Personnel will receive up-dated instruction whenever changes occur in the radiography program. This includes revision to the operating and emergency procedures; changes in equipment such as a new or different radiation survey instrument, radiographic sources and radiographic exposure devices; and amendments to applicable NRC regulations.

Radiographers and Assistant Radiographers shall demonstrate that they have an understanding of these instructions and are competent to use new equipment, instruments and procedures. (This will be accomplished by comprehensive written and/or oral examination or personal observation).

Refresher instructions on the fundamentals of radiation protection and associated subjects shall be given to Radiographers and Assistant Radiographers at intervals not to exceed 12 months.

Any individual employed by Huntington Testing who has been a radiographer for another Licensee will receive the same instruction on the Operating & Emergency Procedures and use of

2.0 PERIODIC TRAINING (cont'd):

the equipment as that given to Radiographer's Assistants. In addition he will be required to take a test similar to that given by Tech/Ops at the completion of his orientation - sample attached. A passing grade of 80% is required before the individual will be permitted to act as a radiographer.

3.0 TRAINING RECORD:

The Radiation Safety Officer shall maintain a complete record of all training and examination results for each individual engaged in Industrial Radiography for as long as they remain in the employ of Huntington Testing, Incorporated.

HUNTINGTON TESTING, INC.

RADIOGRAPHER TEST FOR INDIVIDUALS HAVING RECEIVED TRAINING THROUGH ANOTHER LICENSEE

1. What are the radiation exposure limits for adults in an unrestricted area?

2. What are the radiation exposure limits for adults in an restricted area?

3. How frequently must leak tests be performed? Describe how to make a leak test wipe. What is the acceptance criteria for leak tests? What action must be taken if a test exceeds this criteria?

4. What personnel monitoring devices must be worn by radiographic personnel?

5. What are some effects of acute whole body radiation exposure?

6. What radiation surveys would be made upon receiving a radiographic source in a source changer?

7. A gamma ray projector containing 100 curies of 192 Iridium has a maximum radiation level of 160 mr/hr. What will the maximum surface radiation level be in 148 days?

8. Define the following:

   Radiographer

   Radiographer's Assistant

   Curie

   Half Thickness

9. What is the intensity at a distance of 12 feet from a 10 curie 60-Cobalt source? How much lead shielding would be required to reduce this intensity to 2mr/hr? If concrete were to be used instead of lead, what thickness of concrete would be required to reduce the intensity to 2 mr/hr?

10. When and why must radiographic exposure devices be secured?

11. How must a radiographic exposure device be labeled?

12. A replacement source is received in a source changer and the surface radiation level is measured as 350 mr/hr. What action should you take?

13. How frequently must survey meters be calibrated? Describe how to properly calibrate a survey meter.

14. How frequently must inspection and maintenance of radiographic exposure devices be performed? Describe how to perform this inspection and maintenance.

15. What constitutes a High Radiation Area? How must this area be identified?

16. How long can a person work at a distance of seven feet from a 50 curie 192-Iridium source and receive only 100 mRem?

17. What surveys must be made prior to delivering a radioactive material shipping container to a carrier for transport? What labels must be applied to the container?

18. A radiographic exposure is to be made using 80 curies of 192-Iridium. The source will be exposed for 15 minutes. It will be the only exposure of the day. At what intensity should the boundary of the restricted area be set? At what distance from the source should the boundary be set?

19. A radiographic source is stuck in an unshielded position. Describe the action you should take.

20. Upon completion of a radiographic exposure, a radiographer observes that his dosimeter is "off scale". What action should be taken?

21. A radiographer must work at a distance of 10 feet from a 20 curie 192-Iridium source. The source is shielded by one inch of steel. How long can he work there and receive only 59 mRem?

22. A 30 curie 60-Cobalt source is stuck in an unshielded position. What is the distance to the restricted area boundary?

LICENSE RENEWAL APPLICATION

#47-23076-01

ITEM 10

INDEX--SECTION 2

OPERATING AND EMERGENCY PROCEDURES

INDEX--SECTION 2

OPERATING AND EMERGENCY PROCEDURES

HUNTINGTON TESTING, INC.

PERSONNEL MONITORING - DOSIMETRY

1.0 SCOPE:

This procedure describes the method of charging and using dosimeters including recording of readings.

2.0 RESPONSIBILITIES:

It is the responsibility of all personnel engaged in radiography to assure themselves that their dosimeters are calibrated in accordance with Section 2, Proc. 16, and to follow this procedure without deviation.

3.0 DOSIMETER CHARGING:

3.1 Insert dosimeter into charging socket.

3.2 Turn knob clockwise to the "ON" position, when applicable.

3.3 Depress dosimeter in socket firmly.

3.4 Look through dosimeter at the hairline and scale. Adjust knob so that hairline is at zero.

3.5 Remove dosimeter from charger and read scale again by looking at a source of light to assure that the hairline indicator has not moved.

3.6 Turn charger to "OFF" position, when applicable.

4.0 DOSIMETER USAGE:

4.1 Radiographic personnel shall wear dosimeters at all times while performing radiographic assignments.

4.2 Dosimeters will be recharged daily or as required at the start of each shift. The dosimeters scale readings will be recorded on form 1-RT-1.

4.3 Dosimeters will be read several times during a shift.

4.4 In the event a dosimeter does off scale (over 200MR) work will be stopped and the supervisor notified immediately.

4.5 Additional High Range Dosimeters are issued to radiographers as an added safeguard against over-exposure. Dosimeter range is 0 - 10R.

PERSONNEL MONITORING - DOSIMETRY

4.0 DOSIMETER USAGE: (Cont'd)

4.6 The film badge being worn by the radiographer at the time will be forwarded to:

R. S. Landauer & Co.
Div. - Technical Operations
Glenwood Science Park
Glenwood, Illinois 60425

for immediate evaluation.

4.7 The radiographer or radiographer's assistant will be prohibited from performing any further radiographic operations until the magnitude of the exposure has been determined by the processing of this individual's film badge by R. S. Landauer & Co.

4.8 Dosimeters being delicate instruments can indicate high readings if jarred or dropped. Therefore, the reason for the high reading will be determined.

4.9 If the dosimeter is judged to be faulty, it will be taken out of service until repaired.

4.10 At the end of a shift, dosimeters will be read and the amount indicated on the scale recorded on Form 1-RT-1.

HUNTINGTON TESTING, INC.

PERSONNEL MONITORING - FILM BADGES

1.0 SCOPE:

This procedure describes the use and control of film badges.

2.0 RESPONSIBILITIES:

It is the responsibility of all personnel engaged in radiography to follow this procedure without deviation.

3.0 FILM BADGE USE AND CONTROL:

3.1 "Radiographic Personnel" will wear film badges at all times while performing radiographic assignments.

3.2 Each film badge will have the person's name or identification and the period it is to be worn indicated on the badge.

3.3 Film badges will be the "Monthly" type.

3.4 The Radiation Safety Officer, or his designated representative, will change the film badge inserts at the start of each monitoring period.

3.5 The Radiation Safety Officer will be responsible for filing the film badge report results.

3.5.1 If the monthly film badge report indicates a man has received radiation in excess of 400 MR the RSO will investigate the cause and take corrective action to prevent a recurrence.

3.5.2 A written explanation will be attached to any film badge report where the amount shown in the report is in excess of 400 MR for the period describing the cause and corrective action.

3.6 Film badges will be placed in "Film Badge Rack" at all times when not being worn. The Control Badge will be retained in the same rack at all times.

3.7 Film badges and film will be supplied by:

R. S. Landauer & Co.
Div. - Technical Operations
Glenwood Science Park
Glenwood, Illinois 60425

HUNTINGTON TESTING, INC.

POSTING OF TEMPORARY RADIATION AREAS

1.0 SCOPE:

This procedure describes the method of establishing temporary radiation areas and high radiation areas.

2.0 RESPONSIBILITIES:

The radiographer is responsible for following this procedure without deviation

3.0 PROCEDURE:

3.1 To determine the distance to the boundary of a High Radiation Area.

3.1.1 Determine the amount of time (in minutes) the source has been exposed during the preceding hour.

3.1.2 Determine the amount of time (in minutes) the source will be exposed during the next hour.

3.1.3 Add these times. The sum is the quantity "t".

3.1.4 To determine the radiation intensity at the boundary of the High Radiation Area:

$$1 = \frac{6000}{t} \text{ mR/hr}$$

3.1.5 To determine the distance to this boundary use the following graph or

For Ir - 192

$$d = \sqrt{s \times t} \text{ ft.}$$

where s = source activity in curies
t = time as determined above in minutes.

For Co 60

$$d = 1.55 \sqrt{s \times t} \text{ ft.}$$

s = source activity in curies
t = time as determined above in minutes.

POSTING OF TEMPORARY RADIATION AREAS

3.1.6 To determine the radiation intensity at the boundary of the restricted area.

$$1 = \frac{120}{t} \text{ mR/hr}$$

Where t = time as determined above in minutes

3.1.7 To determine the distance to this boundary use the following graph or

For Ir - 192

$$d = 7 \sqrt{s \times t} \text{ ft.}$$

Where s = source activity in curies
t = time as determined above in minutes

For Co 60

$$d = 11 \sqrt{s \times t} \text{ ft.}$$

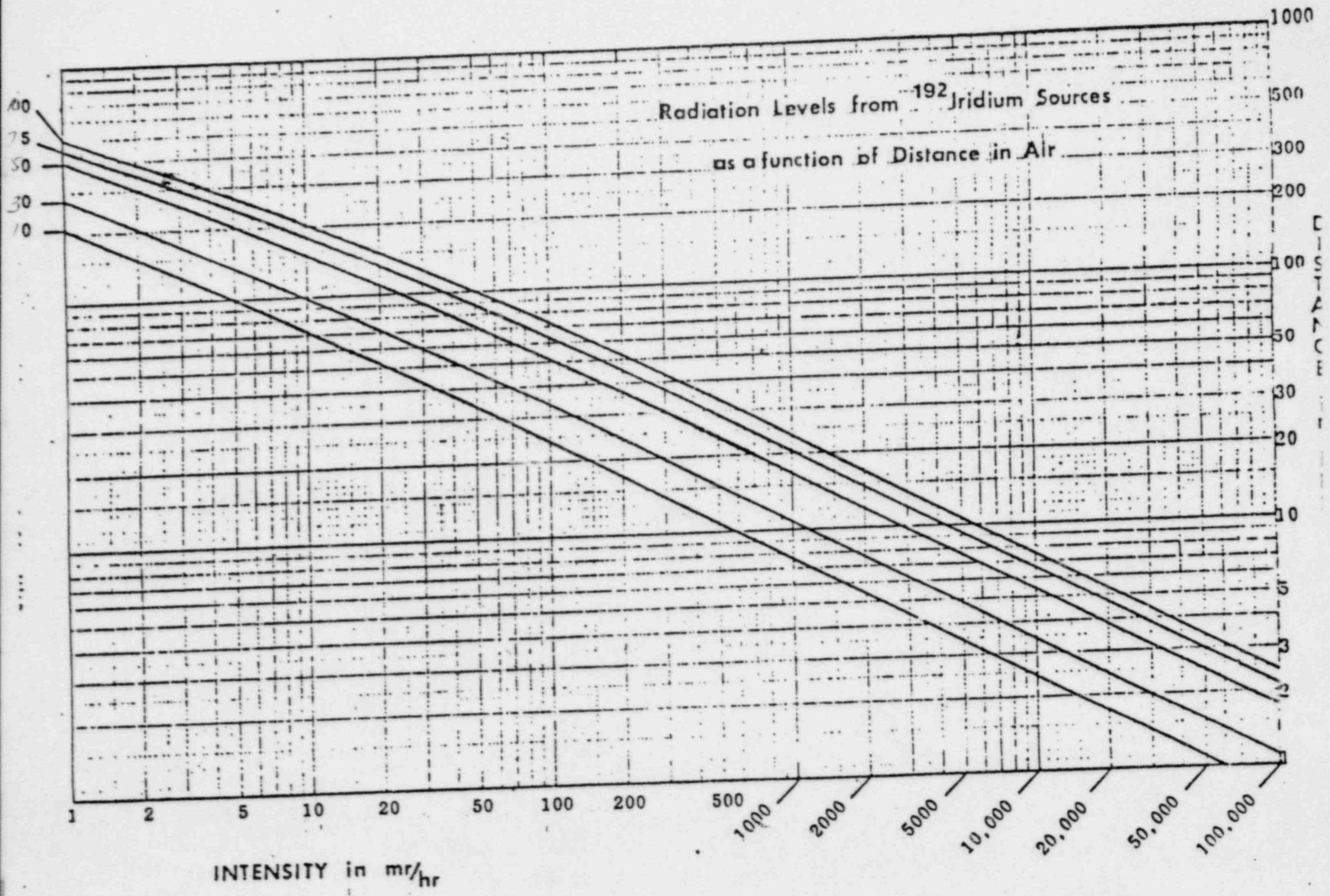
Where s = source activity in curies
t = time as determined above in minutes

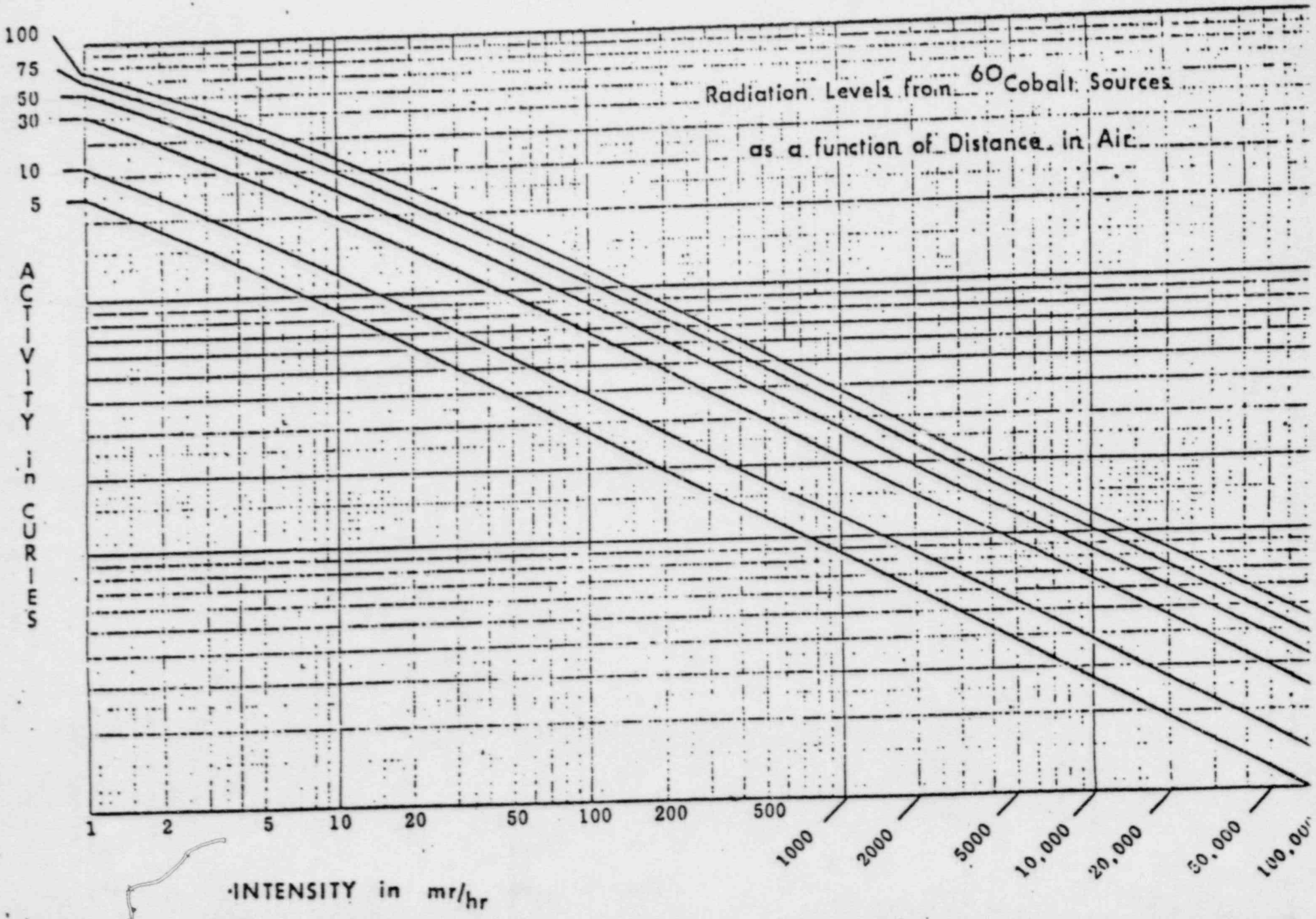
3.2 All High Radiation Areas shall have "CAUTION HIGH RADIATION AREA" signs posted around the boundary zone as determined in Section 3.1 of this procedure. All radiation areas shall have "CAUTION - RADIATION AREA" signs posted around the boundary zone as determined in Section 3.1 in this procedure.

3.3 Signs will be posted in such a manner that they are clearly visible to the approach of personnel from any direction.

3.4 Warning lights will be used in conjunction with the ropes and signs if gamma-ray exposure is made in an unlit area.

3.5 Signs, ropes and lights will be removed as soon as the source of radiation is returned to storage. (Caution must be employed so as not to leave signs, ropes and lights in evidence when not in use).


Radiation Levels from ^{192}Iridium Sources
as a function of Distance in Air
100
75
50
30
10
1000
500
300
200
100
50
30
20
10
5
3
2
1
DISTANCE in
1
2
5
10
20
50
100
200
500
1000
2000
5000
10,000
20,000
50,000
100,000
INTENSITY in mr/hr


Radiation Levels from ^{60}Cobalt Sources
as a function of Distance in Air
ACTIVITY in CURIES
100
75
50
30
10
5
1
2
5
10
20
50
100
200
500
1000
2000
5000
10,000
20,000
50,000
100,000
INTENSITY in mr/hr

RADIATION SURVEYS

1.0 SCOPE:

This procedure describes the method of taking radiation surveys of temporary radiation areas established for gamma ray work.

2.0 RESPONSIBILITIES:

The radiographer taking the Gamma Ray exposure is responsible for following this procedure without deviation.

3.0 PROCEDURE:

3.1 A calibrated and operable Radiation Survey instrument will be maintained at each radiographic site.

3.2 Prior to taking the exposure the radiographer will determine:

a) The boundary at which the radiation level is in excess of 100 mR/hr, and will post it with "High Radiation Area" signs.

b) The boundary at which the radiation level is in excess of 2 mR/hr. This area will be roped off and posted with "Caution Radiation Area" signs.

3.3 The radiographer will position himself in such a position that the entire radiation area is constantly within his range of vision during the exposure.

3.4 During the exposure a physical Radiation Survey will be made to insure that the radiation level outside of the roped off and posted area does not exceed 2 mR/hr.

3.5 Upon completion of the exposure and safe retrieval of the source to it's storage position the radiographer will approach the projector from the rear with a survey meter and shall survey the device around it's entire circumference. Providing normal levels are encountered at the projector the survey will be conducted along the full length of the guide tube, and the projector locked.

RADIATION SURVEYS

3.6 A Radiation Survey chart will be made as a result of conducting a radiation survey. The chart will consist of a sketch showing the area and distance of the area boundaries. Each chart will provide the following information:

Plant or Field Location
Date
Name of Radiographer
Radioisotope used
Strength of Isotope
Exposure Device
Exposure Time
Distance from source to edge of restricted area
Location of Radiographer during exposure
Location of Radiation warning signs.

The above information will be provided on Radiographic Operations Report No. 1.

3.7 The radiographer will not leave the area until such time as the source is safely retrieved, returned to it's shielded locked position, the projector surveyed in accordance with the requirements of Paragraph 3.5 and locked.

3.8 In the event of multiple exposures in the same general area a survey chart need not be made for each exposure. A physical survey will be made, however each time a radioisotope is moved from the shielded position of the exposure devices.

HUNTINGTON TESTING, INC.

SECURITY OF RADIOACTIVE MATERIALS

1.0 SCOPE:

This procedure describes the means of insuring that radioactive materials are secured so that non-monitored and unauthorized personnel cannot be subjected to any radiation.

2.0 RESPONSIBILITIES:

The Radiation Safety Officer and Radiographers are responsible for full compliance with this procedure.

3.0 GENERAL:

All projectors are locked in steel storage vaults both Huntington Testing's permanent facilities and on long term temporary field sites. These vaults are posted with "Caution-Radioactive Material" signs as required by 10 CFR 20 Para 203 (f)(2)(1). Shielding is provided to reduce the radiation level to at least 2 mR/hr at 18" from any external surface of the vaults so that any area adjacent to them may be considered "Unrestricted" for all personnel.

4.0 PROCEDURE:

4.1 All projectors being returned to storage will be surveyed in accordance with the applicable paragraphs of Section 11 Proc. 4.

4.2 Radiation survey results will be logged in on Huntington Testing's Utilization Record on Radiographic Operations Report No. 1

4.3 All projectors taken out of storage vaults either in the shop or field will be surveyed and inspected on a daily basis check for physical damage and the survey results logged as required in Para 4.2

4.4 Radiographic devices and storage vaults will be kept locked at all times when not in use.

4.5 Keys for Radiographic devices and storage vaults will be kept in the Radiographic Office in such a manner that only qualified personnel have access to them.

NOTE: Location and description of storage facility at permanent location is attached.

SOURCE SURVEY INSPECTION AND UTILIZATION RECORDS

1.0 SCOPE:

This procedure describes the method of maintaining the source survey, inspection and utilization records.

2.0 RESPONSIBILITIES:

It is the responsibility of Radiographers to follow this procedure without deviation.

3.0 SOURCE SURVEY INSPECTION AND UTILIZATION RECORDS:

3.1 Radiographic Operations Report No. 1 will be filled out in detail when any source is removed from it's place of storage or a periodic inspection of equipment is conducted.

3.2 Forms will clearly reflect the following information:

a. Plant or construction site location
b. Date
c. Source (type, e.g. Iridium 192, Cobalt 60, etc.)
d. Device (Manufacturer's name and model number)
e. mR/hr at the surface of exposure device
f. Results of daily inspections of exposure device, controls and source tubes
g. Job location and order number
h. Name or initials of radiographer inspecting and using source
i. Results of periodic inspection
j. Name or initials of qualified person conducting periodic inspection

EMERGENCY PROCEDURES

1.0 SCOPE:

This procedure describes emergency measures to be followed in the event of an incident affecting the security of radioactive sources or creating a radiation hazard.

2.0 RESPONSIBILITIES:

All personnel responsible for the security and use of radioactive sources will adhere to the following procedures in detail.

3.0 FIRE OR ACCIDENT IN OR NEAR RADIOGRAPHIC EXPOSURE AREA:

3.1 Return source to radiographic exposure device

3.2 Perform radiation survey of device as follows:

3.2.1 With a calibrated survey meter on scale approach device from rear.

3.2.2 Upon contact with the device the radiation level should vary from 10 mR/hr - 200 mR.hr depending on source strength. The radiation level should be checked around it's entire circumference.

3.2.3 Continue survey from device along source guide tube. As distance from device increases the radiation level should decrease, indicating that source is in stored position.

3.2.4 If the radiation level increases during the guide tube survey, the source is not in it's stored position and immediate steps must be taken to return source into it's fully retracted position.

3.3 Return radiographic camera to storage area if possible.

3.4 In the event the radiographic exposure device cannot be removed from the danger area, set up a restricted area as outlined in Procedure No. 3.

3.5 Notify the Radiation Safety Officer who will in turn notify the Fire Department or the Security Officer, whichever is applicable.

HUNTINGTON TESTING, INC.

EMERGENCY PROCEDURES

4.0 DAMAGE TO RADIOGRAPHIC EXPOSURE DEVICES, SOURCE GUIDE TUBES OR CONTROL CABLES:

4.1 Return source to device if possible and lock device.

4.1.1 Perform survey as per instruction in 3.2 of this Procedure.

4.2 Set up restricted area as outlined in Procedure No.3.

4.3 Notify the Radiation Safety Officer.

4.4 If source cannot be returned to device, the Radiation Safety Officer will determine what course of action is to be taken to introduce shielding in order to return source to source storage area.

4.5 Radiographic device will not be used again until repairs are made and the equipment is inspected by the Radiation Safety Officer.

4.6 The Radiation Safety Officer will determine if the incident requires notifying the regulatory authority. In the event an exposure device is damaged at a construction site, the RSO will be notified by phone and advised of the incident. The exposure device will not be returned to service until specific approval is granted by the RSO.

5.0 LOSS OF SOURCE:

5.1 In the event a source is lost, theRadiation Safety Officer will be notified immediately.

5.2 The Radiation Safety Officer will determine the last known location of the source.

5.3 The area will be surveyed and roped off in accordance with Procedure No. 3.

5.4 Shielding will be introduced until such time as the source is returned to it's place of storage.

5.5 The Radiation Safety Officer will determine if any non-monitored personnel were exposed to radiation.

5.6 The Radiation Safety Officer will determine if the incident requires notifying the appropriate regulatory authorities

HUNTINGTON TESTING, INC.

EMERGENCY PROCEDURES

6.0 ACCIDENT INVOLVING VEHICLE UNDER CONTROL OF HUNTINGTON TESTING INCORPORATED:

6.1 If a vehicle is involved in an accident while transporting a by-product material (Source), the area surrounding the source will be roped off in accordance with Procedure No. 3.

6.2 If the radiation survey instrument is inoperable, the area will be roped off at distances shown in either Table I or Table II (attached).

6.3 Notification of the accident will be carried out in accordance with the instructions listed in Paragraph 7.0

6.4 In case of a minor accident where it can be determined that the source has not been dislodged from it's container, there will be no necessity for posting a restricted area.

6.5 If no radiation hazard exists as visually determined but the radiation survey instrument is inoperable, the vehicle will not proceed until a calibrated and usable instrument is obtained.

7.0 NOTIFICATION AND REPORTS:

7.1 A written report will describe in detail any incident involving the loss, theft or an accident pertaining to by-product materials.

7.2 The radiation Safety Officer will determine the necessity for notifying the regulatory authority.

7.3 Numbers to call in case of emergency and/or an accident

a)	W. Yeoman--Radiation Safety Officer President	DAY NIGHT	(304) 453-6111 (304) 453-2109
b)	C. May--Operations Manager	DAY NIGHT	(304) 453-6111 (304) 523-2811
c)	P. Yeoman--District Manager	DAY NIGHT	(502) 897-1364 (502) 241-5779
d)	P. J. Wearden--Vice President	DAY NIGHT	(304) 453-6111 (304) 523-3855

HUNTINGTON TESTING, INC.

TABLE II

I R I D I U M - 192

Exposure Time in Any one Hour	Distance From Source (Unshielded) to Perimeter of Restricted Area	Distance From Source (Shielded With Gamma Shield) to Perimeter of Restricted Area	MR/HR Level
	10 Curies Strength		
60 Min.	175 Ft.	20 Ft.	2
30 Min.	125 Ft.	15 Ft.	4
10 Min.	75 Ft.	15 Ft.	12
5 Min.	50 Ft.	15 Ft.	24
1 Min.	25 Ft.	15 Ft.	120
	20 Curies Strength		
60 Min.	245 Ft.	25 Ft.	2
30 Min.	170 Ft.	20 Ft.	4
10 Min.	100 Ft.	15 Ft.	12
5 Min.	70 Ft.	15 Ft.	24
1 Min.	30 Ft.	15 Ft.	120
	30 Curies Strength		
60 Min.	300 Ft.	30 Ft.	2
30 Min.	210 Ft.	20 Ft.	4
10 Min.	120 Ft.	15 Ft.	12
5 Min.	85 Ft.	15 Ft.	24
1 Min.	40 Ft.	15 Ft.	120
	50 Curies Strength		
60 Min.	385 Ft.	40 Ft.	2
30 Min.	275 Ft.	24 Ft.	4
10 Min.	160 Ft.	20 Ft.	12
5 Min.	115 Ft.	15 Ft.	24
1 Min.	50 Ft.	15 Ft.	120
	100 Curies Strength		
60 Min.	545 Ft.	50 Ft.	2
30 Min.	385 Ft.	40 Ft.	4
10 Min.	225 Ft.	25 Ft.	12
5 Min.	160 Ft.	15 Ft.	24
1 Min.	75 Ft.	15 Ft.	120

HUNTINGTON TESTING, INC.

TABLE I

C O B A L T - 60

Exposure Time In Any one Hour	Distance From Source (Unshielded) to Perimeter of Restricted Area	Distance From Source (Shielded with Gamma Shield) to Perimeter of Restricted Area	MR/HR Level
	5 Curies Strength		
60 Min.	190 Ft.	65 Ft.	2
30 Min.	135 Ft.	45 Ft.	4
10 Min.	80 Ft.	25 Ft.	12
5 Min.	55 Ft.	20 Ft.	24
1 Min.	25 Ft.	15 Ft.	120
	10 Curies Strength		
60 Min.	270 Ft.	85 Ft.	2
30 Min.	190 Ft.	65 Ft.	4
10 Min.	110 Ft.	35 Ft.	12
5 Min.	80 Ft.	25 Ft.	24
1 Min.	35 Ft.	15 Ft.	120

OPERATION OF TECHNICAL OPERATIONS CALIBRATION UNIT MODEL #571

1.0 SCOPE:

This procedure describes the operation of Technical Operations Calibration Unit Model #571.

2.0 RESPONSIBILITIES:

The radiographer is responsible for operating this device in strict accordance with this procedure. Procedures for the use of film badges, dosimeters, radiation survey instruments and the posting of radiation areas will be followed without deviation.

3.0 DESCRIPTION:

Technical Operations Calibration Unit Model #571 is designed for use with a Co-60 calibration source. Maximum strength is 15 MiCi.

4.0 PREPARATION FOR USE:

4.1 Remove from storage area and place the source shield in a restricted area so that the directional port is aimed horizontally. To minimize the effects of scattered radiation, the unit should be at least 16 feet from any wall in the direction of the primary beam.

4.2 Stand AWAY from the primary beam and open the source shutter. This may be done by lifting the source rod manually, or remotely with a string attached to the source rod.

4.3 In turn check two points on each scale using the correct distance indicated by the dose/distance computer.

4.4 On completion of the calibration, the source rod is to be dropped to the closed position, the locking bar inserted to prevent source movement, and the lock is to be locked and secured. Survey the source shield and return to the storage area.

REPLACEMENT OF TECHNICAL OPERATIONS SEALED SOURCES

1.0 SCOPE:

This procedure describes the method of replacing Tech/Ops sealed by-product material sources utilizing their approved source changers Model Numbers 416, 650 and 488.

2.0 RESPONSIBILITIES:

The Radiation Safety Officer, or a radiographer must perform or directly supervise all source changing operations.

3.0 DESCRIPTION:

3.1 The source changers shielding consists of a lead or depleted uranium (U238) filled steel shell. Imbedded in it is a "U" shaped stainless steel source tube with both sides emerging from the shell. Midway in the "U" is a stop dividing it into two compartments, one for the new source and one for the depleted source.

3.2 The closure mechanism consists of two single or one dual cap and hold-down rod assembly which fasten down over the "U" tube ports to hold the source and connector firmly in a safe position.

4.0 PROCEDURE:

Tech/Ops provides with each source changer a complete operating procedure including photographs and sketches of the equipment. Prior to changing a source from the source changer to the exposure device, the instructions are to be reviewed and then followed in detail.

4.1 NOTE: All the precautions used when making radiographic exposures must be followed. Personnel monitoring devices must be worn during all source changing operations. All operations will be monitored with a calibrated, operable survey meter.

REPLACEMENT OF TECHNICAL OPERATIONS SEALED SOURCES

4.0 PROCEDURE: (Cont'd)

4.2 Model 650 Source Changer Isotope IR - 192
Model 416 Source Changer Isotope Co - 60
Model 771 Source Changer Isotope Co - 60

4.2.1 Prior to changing sources check for the following items:

a. Source Decay Chart & Leak Certificate
b. Source Identification Plate
c. Return Shipping Labels
d. Tamperproof Seals
e. Instruction Manual

4.2.2 Upon receipt of Source Changer, survey the Source Changer to insure that the source is in the proper storage position.

4.2.3 Locate the source changer and projector in a restricted area. Locate the devices so as to avoid sharp bends in the guide tube or control housing.

4.2.4 Set the projector as for an exposure. Establish the perimeter of a HIGH RADIATION AREA and a RADIATION AREA as per instructions in Procedure No. 3.

4.2.5 Remove the cover from the source changer by breaking the seal wire and unbolting. CAUTION: When the source hold-down cap is removed, the source connector is exposed. Care must be taken to insure the source is not dislodged when handling the changer.

4.2.6 At the Projector Controls, crank the source from the projector to the source change.

4.2.7 Approach the projector with the survey meter. Survey the projector on all sides, survey the guide tub e and survey the source changer on all sided to insure the source has been properly transferred. The maximum radiation level at the source changer should be less than 200 mR/hr.

REPLACEMENT OF TECHNICAL OPERATIONS SEALED SOURCES

4.0 PROCEDURE: (Cont'd)

4.2.8 Open the source guides. Disconnect the drive cable from the source assembly by moving the lock pin down and sliding the drive cable connector out through the keyway.

4.2.9 Disconnect the guide tube from the source changer. Connect the guide tube to the fitting above the chamber containing the new source.

4.2.10 Couple the drive cable to the source by depressing the lock pin, sliding the drive cable connector into the keyway, and releasing the lock pin.

4.2.11 At the projector controls, crank the source from the source changer to it's storage position in the projector.

4.2.12 Approach the projector with the survey meter. Survey the projector on all sides, survey the guide tube and survey the source changer on all sides to insure that source has been properly transferred.

4.2.13 Lock the projector.

4.2.14 Disconnect the source guide tube from the source changer.

4.2.15 Affix the identification plate of the new source to the projector and attach the identification plate of the old source to the source hold-down cap.

4.2.16 Bolt the source hold-down cap in place and seal wire.

4.2.17 Bolt the source changer cover in place and seal wire.

4.2.18 Survey all exterior surfaces of the source changer to insure that the radiation level does not exceed 200 mR/hr

REPLACEMENT OF TECHNICAL OPERATIONS SEALED SOURCES

4.0 PROCEDURES: (Cont'd)

4.2.19 Measure the radiation level three feet from all exterior surfaces of the source changer and insure that the radiation level is less than 10 mR/hr. The maximum radiation levels measured three feet from any exterior surface is the transport index. (Example: With a maximum radiation level of 2.2 milliroentgens per hour, the transport index is 2.2).

4.2.20 Complete the RADIOACTIVE III or RADIOACTIVE II shipping labels for contents, list the radioisotope contained. Indicate the activity as the number of curies. Record the transport index as determined above.

4.2.21 Apply the RADIOACTIVE III or RADIOACTIVE II shipping labels properly completed, to two opposite sides on the container.

4.2.22 Return the container to Technical Operations, Inc.

HUNTINGTON TESTING, INC.

RECEIVING AND SHIPPING OF BY-PRODUCT MATERIALS

1.0 SCOPE:

This procedure describes the manner in which by-product materials (radioisotopes) are received by and shipped from Huntington Testing or temporary jobsites.

2.0 RESPONSIBILITIES:

2.1 It is the responsibility of the Radiation Safety Officer at the plant, or his designated representative at temporary jobsite, to insure that by-product materials are received and shipped in strict accordance with this procedure.

2.2 It is the responsibility of the supplier of by-product materials to ship radioisotopes to Huntington Testing in accordance with the rules and regulations of the U.S. Nuclear Regulatory Commission and U.S. Department of Transportation.

2.3 The supplier will use only approved shipping containers and furnish appropriate labels, safety seals or container locks to Huntington Testing for the shipment of sources.

2.4 It is the responsibility of the Radiation Safety Officer to arrange the pick-up of radioactive material from a carrier's terminal as expeditiously as possible upon receipt of notification from the carrier of it's arrival.

3.0 PROCEDURE "RECEIVING":

When a shipment of by-product material is delivered, the Receiving Department will notify the Radiation Safety Officer immediately upon receipt.

3.1 The Radiation Safety Officer or a qualified radiographer shall monitor the shipment as soon as practicable, but no later than three (3) hours after receipt. The survey shall be as outlined in Procedure 10, Item 4. If the radiation levels on the external surfaces of the container are in excess of 200 mR/hr on contact or in excess of 10mR/hr at three (3) feet from the container, then a restricted area will be established as outlined in Procedure 3, and appropriate remedial action taken as deemed necessary by the RSO.

RECEIVING AND SHIPPING OF BY-PRODUCT MATERIALS

3.0 PROCEDURE "RECEIVING": (Cont'd)

3.1.1 If radiation levels in excess of those mentioned in 3.1 are found, then the final delivering carrier and the appropriate Commission Operations Regional Office shown in Appendix D of 10 CFR, Part 20, or the applicable State Agency shall be notified by telephone and telegraph.

3.2 The RSO or a qualified radiographer will have the shipping container delivered to the by-product material storage area where he will inspect for evidence of unauthorized opening.

3.3 CAUTION: Receiving personnel will not open, break seals or unlock by-product material shipping containers.

4.0 SHIPPING OF BY-PRODUCT MATERIALS:

After a source has been secured in the source shipping container, the Radiation Safety Officer and a qualified radiographer shall prepare the container for shipment as follows:

4.1 Survey all exterior surfaces of the source shipping container to insure that the radiation level does not exceed 200 mR/hr.

4.2 Measure the radiation level three (3) feet from all exterior surfaces of the source shipping container and insure that the radiation level is less than 10 mR/hr. The maximum radiation levels measured three feet from any exterior surface is the transport index. (Example: With a maximum radiation level of 2.2 milliroentgens per hour, the transport index is 2.2.

4.3 Apply the radioactive II or III shipping labels properly completed to two opposite sides of the container.

4.4 Complete Huntington Testing's Uniform Straight Bill of Lading for radioactive material.

4.5 Ship container.

OPERATION OF TECH/OPS. MODEL 660 PROJECTOR

1.0 SCOPE:

This procedure describes the operation of Radiographic Exposure Device Model 660 manufactured by Technical Operations, Inc.

2.0 RESPONSIBILITIES:

The Radiographer is responsible for operating the Radiographic Exposure Device described herein in strict accordance with this procedure. Procedures for the use of film badges, dosimeters, radiation survey instruments and the posting of radiation areas will be followed without deviation.

3.0 DESCRIPTION:

Technical Operation Exposure Device Model 660 is designed for use with Iridium 192. It has a capacity of 100 curies.

4.0 OPERATING INSTRUCTIONS:

4.1 Guide Tube Assembly At the radiographic focal point, position and secure the snout of the master guide tube using the tripod stand and swivel clamps.

4.2 Remove the plastic dust caps and attach additional extender guide tubes, as necessary, to the master guide tube.

4.3 Determine the position of the projector (source shield) allowing for maximum possible operating shielding. Assuming appropriate shielding is available, the operator will be approximately thirty-five feet from the projector during actual operation.

4.4 Lay out the guide tubes as straight as possible directing them toward the projector. Note that the bend radius of the guide tubes should not be under twenty inches. Smaller bend radii may restrict the movement of the control cable.

NOTE: THE GUIDE TUBES SHOULD NOT BE SUBJECTED TO ANY UNDUE STRESS OR ABUSE WHICH COULD CAUSE RESTRICTION IN THE TUBES

OPERATION OF TECH/OPS. MODEL 660 PROJECTOR

4.0 OPERATING INSTRUCTIONS: (Cont'd)

4.5 Remove the shipping plug from the projector connector and attach the last guide tube to the projector.

CAUTION: NEVER OPERATE THE SYSTEM WITH MORE THAN THREE GUIDE TUBE SECTIONS (INCLUDING THE MASTER.).

4.6 Control Unit: Determine the operating site of the control unit. For maximum safety, the operator should be located behind a protective field.

4.7 Lay out the control cable as straight as possible, directing it toward the projector. Note that the bend radius should not be less than three feet. Smaller bend radii may restrict the movement of the control cable.

4.8 Attach the control cable to the projector in accordance with the following sequence:

4.8.1 Unlock the projector with the key provided and turn the connector selector ring from the LOCK position to the CONNECT POSITION. When the ring is in the CONNECT position, the storage cover will disengage from the projector.

4.8.2 Slide the control cable collar back and open the jaws of the control cable connector. This exposes the male position of the swivel connector as shown.

4.8.3 Engage the male and female portions of the swivel connector by depressing the springloaded locking pin toward the projector with the thumbnail. Release the locking pin and test that the connection has been properly made.

4.8.4 Close the jaws of the control cable connector over the swivel-type connector.

4.8.5 Slide the control cable collar over the connector jaws.

OPERATION OF TECH/OPS. MODEL 660 PROJECTOR

4.0 OPERATING INSTRUCTIONS: (Cont'd)

4.8.6 Hold the control cable collar flush against the projector connector and rotate the selector ring from the CONNECT position to the LOCK position until actual operation is ready to start.

5.0 OPERATING PROCEDURE:

5.1 Establish and post "HIGH RADIATION AREA" and "RADIATION AREA" as specified in Procedure No. 3, Amendment 1.

5.2 Thoroughly check all cable connections and bend radii and position of the snout of the master guide tube. (This represents the radiographic focal point of the source). To operate the system, perform the following:

WARNING

OPERATE THE SYSTEM ONLY IN AREAS MONITORED WITH APPROPRIATE RADIATION MEASURING EQUIPMENT

5.3 Unlock the projector connector and rotate the selector ring to the OPERATE position. The source is now free to move.

NOTE

IF CRANKING BECOMES DIFFICULT ANY TIME DURING THE NEXT STEP, REVERSE THE DIRECTION OF THE CRANKING TO RETURN THE SOURCE TO THE STORED POSITION IN THE PROJECTOR. FIRST MONITOR THE AREA WITH A SURVEY METER TO INSURE THAT THE SOURCE IS PROPERLY STORED. THEN CHECK THE CONTROL AND GUIDE TUBES FOR EXCESSIVELY SMALL BEND RADII AND REPEAT THE STEP.

5.4 At the control unit (in a shielded area), rapidly rotate the hand crank in the EXPOSE (counterclockwise) direction to move the source out of the projector and into the guide tubes toward the radiographic focal point. Continue to rotate the hand crank until the source reaches the snout which serves as a mechanical stop for the source. The odometer reading will indicate the total distance the source traveled (approximately seven feet for two sections, and twenty-one feet for three sections).

OPERATION OF TECH/OPS. MODEL 660 PROJECTOR

5.0 OPERATING PROCEDURE: (Cont'd)

5.5 Specimen exposure should be figured from the time that the source reaches the snout or stop. Amendment

5.6 To return the source to the projector, after the desired exposure time has elapsed, rapidly turn the hand crank in the RETRACT (clockwise) direction. Continue to turn the crank until the odometer reading reaches the 000 position (Source properly stored).

CAUTION

AFTER AN EXPOSURE, THE PROJECTOR SHOULD BE THOROUGHLY MONITORED WITH A SURVEY METER BEFORE CONTINUING WITH STEP 5.7

5.7 At the projector, rotate the connector selector from the OPERATE position to the LOCK position and secure with the projector lock.

NOTE

IF THE PROJECTOR SELECTOR RING CANNOT BE ROTATED TO THE LOCK POSITION, THE SOURCE HAS NOT BEEN FULLY RETRACTED. CHECK THE CONTROL UNIT ODOMETER READING, IT SHOULD BE 000. TURN THE HAND CRANK TO THE FULL CLOCKWISE (ROTATE) DIRECTION.

6.0 SPECIFIC INSTRUCTION FOR SECURING TECH/OPS. MODEL 660 PROJECTOR WHEN NO ADDITIONAL EXPOSURES ARE REQUIRED:

6.1 To disconnect the control unit from the projector, perform the following:

6.1.1 Unlock the projector using the supplied key.

6.1.2 Rotate the connector selector ring from the LOCK position to the CONNECT position. When the selector ring reached the CONNECT position, the cable connector will partially disengage from the projector.

OPERATION OF TECH/OPS. MODEL 660 PROJECTOR

6.0 SPECIFIC INSTRUCTION FOR SECURING TECH/OPS. MODEL 660 PROJECTOR WHEN NO ADDITIONAL EXPOSURES ARE REQUIRED: (Cont'd)

6.1.3 Open the connector jaws and disconnect the swivel-type connector by depressing the spring-loaded locking pin towards the projector with the thumbnail and separating the male and female connections.

NOTE: IF ANY DIFFICULTY IS ENCOUNTERED, REPORT TO THE RSO FOR FURTHER INSTRUCTIONS.

6.1.4 Replace the storage cover in the projector connector and rotate the selector ring to the LOCK position. Remove the key and engage the lock to secure the projector

6.1.5 Coil the control cable in the 664 control unit or around 604 control unit and store the unit in an area where the cable will not be subjected to undue stress or abuse.

6.2 Approach the projector with the survey meter. Survey the projector on all sides and the source guide tube to insure that source is in stored position. Radiation levels at contact with projector will vary between 10 mR/hr and 200 mR/hr depending on source strength. Record results on Radiographic Operations Report No. 1.

6.3 Remove device to storage area and physically secure device to prevent tampering or removal by unauthorized personnel.

HUNTINGTON TESTING, INC.

OPERATION OF TECH/OPS. MODEL 684 PROJECTOR

1.0 SCOPE:

This procedure describes the operation of Radiographic Exposure Device Model 684 manufactured by Technical Operations, Incorporated

2.0 RESPONSIBILITIES:

The Radiographer is responsible for operating the Radiographic Exposure Device described herein in strict accordance with this procedure. Procedures for the use of film badges, dosimeters, radiation survey instruments and the posting of radiation areas will be followed without deviation.

3.0 DESCRIPTION:

Technical Operations Exposure Device Model 684 is designed for use with Cobalt 60. It has a capacity of 10 curies.

4.0 OPERATING INSTRUCTIONS:

4.1 Guide Tube Assembly: At the radiographic focal point, position and secure the snout of the master guide tube using the tripod stand and swivel clamps.

4.2 Remove the plastic dust caps and attach additional extender guide tubes, as necessary, to the master guide tube.

4.3 Determine the position of the projector (source shield) allowing for maximum possible operating shielding. Assuming appropriate shielding is available, the operator will be approximately thirty-five feet from the projector during actual operation.

4.4 Lay out the guide tubes as straight as possible directing them toward the projector. Note that the bend radius of the guide tubes should not be under twenty inches. Smaller bend radii may restrict the movement of the control cable.

4.5 Remove the shipping plug from the projector connector and attach the last guide tube to the projector.

CAUTION: NEVER OPERATE THE SYSTEM WITH MORE THAN THREE GUIDE TUBE SECTIONS (INCLUDING THE MASTER).

OPERATION OF TECH/OPS. MODEL 684 PROJECTOR

4.0 OPERATING INSTRUCTIONS: (Cont'd)

4.6 Control Unit: Determine the operating site of the control unit. For maximum safety, the operator should be located behind a protective shield.

4.7 Lay out the control cable as straight as possible, directing it toward the projector. Note that the bend radius should not be less than three feet. Smaller bend radii may restrict the movement of the control cable.

NOTE: THE CONTROL CABLE SHOULD NOT BE SUBJECTED TO ANY UNDUE STRESS OR ABUSE WHICH COULD CAUSE RESTRICTIONS IN THE CABLE.

4.8 Attach the control cable to the projector in accordance with the following sequence:

4.8.1 Unlock the projector with the key provided and turn the connector selector ring from the LOCK position to the CONNECT position. When the ring is in the CONNECT position, the storage cover will disengage from the projector.

4.8.2 Slide the control cable collar back and open the jaws of the control cable connector. This exposes the male position of the swivel connector as shown.

4.8.3 Engage the male and female portions of the swivel connector by depressing the spring-loaded locking pin toward the projector with the thumbnail. Release the locking pin and test that the connection has been properly made

4.8.4 Close the jaws of the control cable connector over the swivel-type connector.

4.8.5 Slide the control cable collar over the connector jaws.

4.8.6 Hold the control cable collar flush against the projector connector and rotate the selector ring from the CONNECT position to the LOCK position until actual operation is ready to start.

HUNTINGTON TESTING, INC.

OPERATION OF TECH/OPS. MODEL 684 PROJECTOR

5.0 OPERATING PROCEDURE:

5.1 Establish and post "HIGH RADIATION AREA" and "RADIATION AREA" as specified in Procedure No. 3,

5.2 Thoroughly check all cable connections and bend radii and the position of the snout of the master guide tube. (This represents the radiographic focal point of the source). To operate the system, perform the following:

WARNING

OPERATE THE SYSTEM ONLY IN AREAS MONITORED WITH APPROPRIATE RADIATION MEASURING EQUIPMENT.

5.3 Unlock the projector connector and rotate the selector ring to the OPERATE position. The source is now free to move.

NOTE

IF CRANKING BECOMES DIFFICULT ANY TIME DURING THE NEXT STEP, REVERSE THE DIRECTION OF THE CRANKING TO RETURN THE SOURCE TO THE STORED POSITION IN THE PROJECTOR. FIRST MONITOR THE AREA WITH A SURVEY METER TO INSURE THAT THE SOURCE IS PROPERLY STORED. THEN CHECK THE CONTROL AND GUIDE TUBES FOR EXCESSIVELY SMALL BEND RADII AND REPEAT THE STEP.

5.4 At the control unit (in a shielded area), rapidly rotate the hand crank in the EXPOSE (counterclockwise) direction to move the source out of the projector and into the guide tubes toward the radiographic focal point. Continue to rotate the hand crank until the source reaches the snout which serves as a mechanical stop for the source. The odometer reading will indicate the total distance the source traveled (approximately seven feet for two sections, and twenty-one feet for three sections).

5.5 Specimen exposure should be figured from the time that the source reaches the snout or stop.

HUNTINGTON TESTING, INC.

OPERATION OF TECH/OPS. MODEL 684 PROJECTOR

5.0 OPERATING PROCEDURE: (Cont'd)

5.6 To return the source to the projector, after the desired exposure time has elapsed, rapidly turn the hand crank in the RETRACT (clockwise) direction. continue to turn the crank until the odometer reading reaches the 000 position. (Source properly stored).

CAUTION

AFTER AN EXPOSURE, THE PROJECTOR SHOULD BE THOROUGHLY MONITORED WITH A SURVEY METER BEFORE CONTINUING WITH STEP 5.7

5.7 At the projector, rotate the connector selector from the OPERATE position to the LOCK position and secure with the projector lock.

NOTE

IF THE PROJECTOR SELECTOR RING CANNOT BE ROTATED TO THE LOCK POSITION, THE SOURCE HAS NOT BEEN FULLY RETRACTED. CHECK THE CONTROL UNIT ODOMETER READING. IF SHOULD BE 000. TURN THE HAND CRANK TO THE FULL CLOCKWISE (ROTATE) DIRECTION.

6.0 SPECIFIC INSTRUCTIONS FOR SECURING TECH/OPS. MODEL 684 PROJECTOR WHEN NO ADDITIONAL EXPOSURES ARE REQUIRED:

6.1 To disconnect the control unit from the projector, perform the following:

6.1.1 Unlock the projector using the supplied key.

6.1.2 Rotate the connector selector ring from the LOCK position to the CONNECT position. When the selector ring reaches the CONNECT position the control cable connector will partially disengage from the projector.

6.1.3 Open the connector jaws and disconnect the swivel-type connector by depressing the spring-loaded locking pin towards the projector with the thumbnail and separating the maler and female connections.

NOTE: IF ANY DIFFICULTY IS ENCOUNTERED, REPORT TO THE RSO FOR FURTHER INSTRUCTIONS

OPERATION OF TECH/OPS. MODEL 684 PROJECTOR

6.0 SPECIFIC INSTRUCTIONS FOR SECURING TECH/OPS. MODEL 684 PROJECTOR WHEN NO ADDITIONAL EXPOSURES ARE REQUIRED: (Cont'd)

6.1.4 Replace the storage cover in the projector connector and rotate the selector ring to the LOCK position. Remove the key and engage the lock to secure the projector.

6.1.5 Coil the control in the 664 control unit or around 604 control unit and store the unit in an area where the cable will not be subjected to undue stress or abuse.

6.2 Approach projector with the survey meter. Survey the projector on all sides, and the source guide tube to insure that source is in stored position. Radiation levels at contact with projector will vary between 10 mR/hr and 200 mR/hr depending on source strength. Record results on Radiographic Operations Report No. 1.

6.3 Remove device to storage area and physically secure device to prevent tampering or removal by unauthorized personnel.

HUNTINGTON TESTING, INC.

OPERATION OF TECH/OPS. MODEL 680 PROJECTOR

1.0 SCORE:

This procedure describes the operation of Radiographic Exposure Device Model 680 manufactured by Technical Operations, Incorporated.

2.0 RESPONSIBILITIES:

The Radiographer is responsible for operating the Radiographic Exposure Device described herein in strict accordance with this procedure. Procedures for the use of film badges, dosimeters, radiation survey instruments and the posting of radiation areas will be followed without deviation.

3.0 DESCRIPTION:

Technical Operations Exposure Device Model 680 is designed for use with Cobalt 60. It has a capacity of 10 curies.

4.0 OPERATING INSTRUCTIONS:

4.1 Guide Tube Assembly: At the radiographic focal point, position and secure the snout of the master guide tube using the tripod stand and swivel clamps.

4.2 Remove the plastic dust caps and attach additional extender guide tubes, as necessary, to the master guide tube.

4.3 Determine the position of the projector (source shield) allowing for maximum possible operating shielding. Assuming appropriate shielding is available, the operator will be approximately thirty-five feet from the projector during actual operation.

4.4 Lay out the guide tubes as straight as possible directing them toward the projector. Note that the bend radius of the guide tubes should not be under twenty inches. Smaller bend radii may restrict the movement of the control cable.

4.5 Remove the shipping plug from the projector connector and attach the last guide tube to the projector.

CAUTION: NEVER OPERATE THE SYSTEM WITH MORE THAN THREE GUIDE TUBE SECTIONS (INCLUDING THE MASTER).

OPERATION OF TECH/OPS. MODEL 680 PROJECTOR

4.0 OPERATING INSTRUCTIONS: (Cont'd)

4.6 Control Unit: Determine the operating site of the control unit. For maximum safety, the operator should be located behind a protective shield.

4.7 Lay out the control cable as straight as possible, directing it toward the projector. Note that the bend radius should not be less than three feet. Smaller bend radii may restrict the movement of the control cable.

NOTE: THE CONTROL CABLE SHOULD NOT BE SUBJECTED TO ANY UNDUE STRESS OR ABUSE WHICH COULD CAUSE RESTRICTIONS IN THE CABLE.

4.8 Attach the control cable to the projector in accordance with the following sequence:

4.8.1 Unlock the projector with the key provided and turn the connector selector ring from the LOCK position to the CONNECT position. When the ring is in the CONNECT position, the storage cover will disengage from the projector.

4.8.2 Slide the control cable collar back and open the jaws of the control cable connector. This exposes the male position of the swivel connector as shown.

4.8.3 Engage the male and female positions of the swivel connector by depressing the spring-loaded locking pin toward the projector with the thumbnail. Release the locking pin and test that the connection has been properly made.

4.8.4 Close the jaws of the control cable connector over the swivel-type connector.

4.8.5 Slide the control cable collar over the connector jaws.

4.8.6 Hold the control cable collar flush against the projector connector and rotate the selector ring from the CONNECT position to the LOCK position until actual operation is ready to start.

OPERATION OF TECH/OPS. MODEL 680 PROJECTOR

5.0 OPERATING PROCEDURE:

5.1 Establish and post "HIGH RADIATION AREA" and "RADIATION AREA" as specified in Procedure No. 3,

5.2 Thoroughly check all cable connections and bend radii and position of the snout of the master guide tube. (This represents the radiographic focal point of the source). To operate the system, perform the following:

WARNING

OPERATE THE SYSTEM ONLY IN AREAS MONITORED WITH APPROPRIATE RADIATION MEASURING EQUIPMENT.

5.3 UNLOCK THE PROJECTOR CONNECTOR AND ROTATE THE SELECTOR RING TO THE operate POSITION. THE SOURCE IS NOW FREE TO MOVE.

NOTE

IF CRANKING BECOMES DIFFICULT ANY TIME DURING THE NEXT STEP, REVERSE THE DIRECTION OF THE CRANKING TO RETURN THE SOURCE TO THE STORED POSITION IN THE PROJECTOR. FIRST MONITOR THE AREA WITH A SURVEY METER TO INSURE THAT THE SOURCE IS PROPERLY STORED. THEN CHECK THE CONTROL AND GUIDE TUBES FOR EXCESSIVELY SMALL BEND RADII AND REPEAT THE STEP.

5.4 AT THE CONTROL UNIT (IN A SHIELDED AREA), RAPIDLY ROTATE THE HAND CRANK IN THE EXPOSE (counterclockwise) direction to move the source out of the projector and into the guide tubes toward the radiographic focal point. Continue to rotate the hand crank until the source reaches the snout which serves as a mechanical stop for the source. The odometer reading will indicate the total distance the source traveled (approximately seven feet for two section, and twenty-one feet for three sections).

5.5 Specimen exposure should be figured from the time that the source reaches the snout or stop.

HUNTINGTON TESTING, INC.

OPERATION OF TECH/OPS. MODEL 680 PROJECTOR

5.0 OPERATING PROCEDURE: (Cont'd)

5.6 To return the source to the projector, after the desired exposure time has elapsed, rapidly turn the hand crank in the RETRACT (clockwise) direction. Continue to turn the crank until the odometer reading reaches the 000 position. (Source properly stored).

CAUTION

AFTER AN EXPOSURE, THE PROJECTOR SHOULD BE THOROUGHLY MONITORED WITH A SURVEY METER BEFORE CONTINUING WITH STEP 5.7

5.7 At the projector, rotate the connector selector from the OPERATE position to the LOCK position and secure with the projector lock.

NOTE

IF THE PROJECTOR SELECTOR RING CANNOT BE ROTATED TO THE LOCK POSITION, THE SOURCE HAS NOT BEEN FULLY RETRACTED. CHECK THE CONTROL UNIT ODOMETER READING, IT SHOULD BE 000. TURN THE HAND CRANK TO THE FULL CLOCKWISE (ROTATE) DIRECTION.

6.0 SPECIFIC INSTRUCTIONS FOR SECURING TECH/OPS. MODEL 680 PROJECTOR WHEN NO ADDITIONAL EXPOSURES ARE REQUIRED:

6.1 To disconnect the control unit from the projector, perform the following:

6.1.1 Unlock the projector using the supplied key.

6.1.2 Rotate the connector selector ring from the LOCK position to the CONNECT position. When the selector ring reaches the CONNECT position the control cable connector will partially disengage from the projector.

HUNTINGTON TESTING, INC.

OPERATION OF TECH/OPS. MODEL 680 PROJECTOR

6.0 SPECIFIC INSTRUCTIONS FOR SECURING TECH/OPS. MODEL 680 PROJECTOR WHEN NO ADDITIONAL EXPOSURES ARE REQUIRED:

6.1.3 Open the connector jaws and disconnect the swivel-type connector by depressing the spring-loaded locking pin towards the projector with the thumbnail and separating the male and female connections.

NOTE: IF ANY DIFFICULTY IS ENCOUNTERED, REPORT TO THE RSO FOR FURTHER INSTRUCTIONS.

6.1.4 Replace the storage cover in the projector connector and rotate the selector ring to the LOCK position. Remove the key and engage the lock to secure the projector.

6.1.5 Coil the control in the 664 control unit or around 604 control unit and store the unit in an area where the cable will not be subjected to undue stress or abuse.

6.2 Approach projector with the survey meter. Survey the projector on all sides, and the source guide tube to insure that source is in stored position. Radiation levels at contact with projector will vary between 10 mR/hr and 200 mR/hr depending on source strength. Record results on Radiographic Operations Report No. 1.

6.3 Remove device to storage area and physically secure device to prevent tampering or removal by unauthorized personnel.

HUNTINGTON TESTING, INC.

OPERATION OF TECH/OPS MODEL 616 PROJECTOR

1.0 SCOPE:

This procedure describes the operation of radiographic exposure device Model 606 Gamma Ray Projector System manufactured by Technical Operations Incorporated.

2.0 RESPONSIBILITIES:

The radiographer is responsible for operating this radiographic exposure device described herein in strict accordance with this procedure. Procedures for the use of film badges, dosimeters, radiation survey instruments and the posting of radiation areas will be followed without deviation.

3.0 DESCRIPTION:

3.1 Projector: The projector or storage container, consists of a steel shell sealed against tampering or the entrance of dirt. The shield is depleted uranium metal cast in one piece weighing 28 lbs and is rigidly supported within the housing.

Within the shield is a tube that contains the source and through which the source can be moved from the stored position to the beam aperture of Port. Motion of the source is accomplished by a source rod of inert shielding material and a vacuum actuator. The actuator is spring-loaded to the off position so that a failure of the vacuum immediately returns the source to the stored position. A lock prevents the exposure of the source by unauthorized personnel. The unit can only be locked in the off position. The shield assembly contains a fixed carrying handle.

3.2 Control Unit: The Model 694 Vacuum Control Unit, included in the system, is a sturdy metal chest with a lid latch and carrying handle. A compartment is provided for storage of the 25' vacuum control hose. The controls in this unit consist of the manual pumping handle, a vacuum gage, and a vacuum switch which exposes and stores the source. To operate the unit, the radiographer manually pumps the vacuum and switches to "expose". After the exposure is complete, the radiographer simply switches to "off" and the source retracts into the shield.

OPERATION OF TECH/OPS MODEL 606 PROJECTOR

3.0 DESCRIPTION: (Cont'd)

3.3 Source Replacement: Sources for the Model 616 can only be changed at Technical Operations, Inc.

4.0 OPERATING INSTRUCTIONS:

4.1 Survey the projector on all sides to insure that the source is in the proper stored position. Radiation levels should not exceed 50 mR/hr at a distance of six inches from the projector.

NOTE

CARE SHOULD BE EXERCISED TO KEEP HAND CARRYING TIME TO A MINIMUM IN AN EFFORT TO REDUCE RADIATION EXPOSURE.

4.2 Position the projector with the beam port directed towards the object being radiographed.

4.3 Insure the projector is positioned securely to prevent movement. When determining source to film distance, it should be noted that the source is positioned in the center of the projector 3 1/8" from the beam port face.

4.4 Position the vacuum control unit as far from the projector and behind as much shielding as possible to minimize exposure. Establish the boundary of the high radiation area and the restricted area as outlined in Section II Procedure No. 3.

4.5 Remove the protective stopper from the source actuator and wipe away sand, grit or other foreign matter that may have accidentally entered the opening.

4.6 Uncoil the flexible vacuum hose and insert the vacuum fitting into the source actuator. Insure that the control valve on the control unit is in the "off" position.

4.7 Approach the projector with a calibrated, operable survey meter and observe readings.

OPERATION OF TECH/OPS. MODEL 616 PROJECTOR

4.0 OPERATING INSTRUCTIONS: (Cont'd)

4.8 Unlock the projector by turning the key lock in the source actuator housing. The lock cylinder will pop up.

4.9 At the control unit, pump the handle until the gauge indicates a vacuum of 20-25 inches.

4.10 Initiate the exposure by putting the control valve to the "expose" position. Watch the vacuum gauge. An initial drop of from 8 to 10 inches will occur when exposing the source. Any decrease in vacuum after the initial drop indicates a vacuum leak.

4.11 During the exposure maintain a good working distance from the radiation source, minimize the amount of time spent in the radiation area and utilize available shielding to minimize radiation exposure to operating personnel

4.12 At the end of the exposure time, press the control valve to the "off" position. Hold the valve down to release the vacuum and observe that the gauge reads zero.

4.13 With a calibrated, operable survey meter approach the projector. Survey the projector on all sides to insure that the source has returned to the proper stored position. Record results on Radiographic Operations Report No. 1.

4.14 Depress the lock cylinder and lock the source. Disconnect the vacuum hose and install the protective stopper in the source actuator housing.

4.15 Remove device to storage area and physically secure it to prevent tampering or removal by unauthorized personnel.

INSPECTION AND MAINTENANCE OF RADIOGRAPHIC EXPOSURE DEVICES AND STORAGE CONTAINERS MANUFACTURED BY TECHNICAL OPERATIONS, INC.

1.0 SCOPE:

The following procedure delineates the method to be employed in the inspecting and the maintenance of all exposure devices and storage containers manufactured by Technical Operations, Inc. The procedure is broken into two parts, a daily (when equipment is in use) inspection, and periodic inspections.

2.0 RESPONSIBILITIES:

2.1 It is the responsibility of the Radiation Safety Officer to instruct Radiographers in the daily inspection of gamma ray radiographic exposure equipment and he will be responsible for having all phases of the inspection and maintenance program carried out in accordance with this procedure.

2.2 Radiographers will be responsible for performing daily inspection and reporting any equipment malfunction to plant or field RSO. No attempt will be made to use any exposure equipment that is not working properly.

2.3 It is the responsibility of the Radiation Safety Officer to audit the inspection and maintenance program for compliance with the procedure detailed below:

3.0 DAILY INSPECTION PROCEDURE:

To insure safety and avoid malfunctions that could impair the productivity of this equipment daily (when in use) inspections will be made and recorded on radiographic operations report No. 1.

3.1 Tech/Ops Model Nos. 660, 684 and 672. Equipment will be inspected for completeness as follows:

3.1.1 Shield (Radiographic Projector)

a. Key for Lock
b. Lables
c. Source Identification Tag
d. Shipping Plug
e. Connector Cap

INSPECTION AND MAINTENANCE OF RADIOGRAPHIC
EXPOSURE DEVICES AND STORAGE CONTAINERS
MANUFACTURED BY TECHNICAL OPERATIONS, INC.

3.0 DAILY INSPECTION PROCEDURE: (Cont'd)

3.2 Equipment will be inspected for serviceability as follows:

3.2.1 Shield (Radiographic Projector)

a. Check functioning of lock.
b. Check source exit fitting screw threads for cleanness and possible damage.
c. Check connectors for cleanness, looseness, binding, or possible damage.
d. Check general hardware for looseness or missing items.

3.2.2 Accessories

a. Check source drive cable connector.
b. Check locking sleeve actuation.
c. Check for cleanness.
d. Check for kinks or fraying of guide tubes.
e. Check source drive cable housing fittings, also check for kinks, delete cuts and dirt.
f. Check crank for loose or missing hardware, damaged parts and free turning.
g. Check source guide tube fittings for clean threads and possible damage, also for kinks and flattening.

3.3 Tech/Ops Model 616 will be inspected for completeness as follows:

3.3.1 Survey the projector on all exterior surfaces. With the survey meter at 6 inches from the surface. Radiation levels should not exceed 50 mR/hr.

NOTE

IF THE RADIATION LEVEL MEASURED EXCEEDS 60 mR/hr, DO NOT USE THE PROJECTOR AND REPORT THE FACT IMMEDIATELY TO THE RSO WHO WILL IF NECESSARY, CONTACT TECHNICAL OPERATIONS, INC. AT TELEPHONE NUMBER (617) 272-2000.

INSPECTION AND MAINTENANCE OF RADIOGRAPHIC
EXPOSURE DEVICES AND STORAGE CONTAINERS
MANUFACTURED BY TECHNICAL OPERATIONS, INC.

3.0 DAILY INSPECTION PROCEDURE: (Cont'd)

3.3.2 Visually inspect the following for damage that may impair operation or reduce the system safety.

a. Projector outer shell, including handles.
b. All fasteners for tightness and for safety wire.
c. Projector name plate and radiation warnings.
d. Source identification tag.

3.3.3 Inspect control tubing for breaks and cuts. Test vacuum control unit as follows:

a. Ensure hose is attached to control unit.
b. Place control valve in "off" position.
c. Pump control to obtain 20-25 inches indicated vacuum.
d. Seal the end of the tube with a finger.
e. Place the control valve to the expose position.
f. Observe the vacuum gauge after initial drop of approximately 10 inches. The gauge should remain steady. A falling gauge indicates a leak.

3.3.4 If Leaks are found the tube must be repaired on replaced

3.3.5 Inspect the control unit for loose or missing hardware.

3.3.6 During the first exposure of the day, note the operation of the source actuator by assuring that the source is properly raised to the exposing position and that the source is properly returned to the stored position at the end of the exposure.

INSPECTION AND MAINTENANCE OF RADIOGRAPHIC EXPOSURE DEVICES AND STORAGE CONTAINERS MANUFACTURED BY TECHNICAL OPERATIONS, INC.

4.0 PERIODIC INSPECTION AND MAINTENANCE PROCEDURE:

4.1 Machines undergoing a periodic inspection and maintenance will be given a complete disassembly, cleaning and check for wear or damage. Missing or unserviceable parts will be replaced, the machine reassembled and given a final inspection. This inspection will be performed at intervals not to exceed three months.

4.2 Equipment and Material

Wrenches, screwdriver and allen keys
Basin approximately 12" diameter
2 Quarts Solvent (percholrethylene)
Syringe
Lubricant 2 oz. Texaco "Unitemp" Grease or equivalent

4.3 Control Cable

Detach from shield, eject and coil source drive cable by cranking control in EXPOSE direction. Examine cable for kinks, fraying, broken wire or rust. Minor bends in the cable may be straightened by hand. DO NOT USE PLIERS. A cable with frayed or broken wires must be replaced. Light rust may be removed by hand wire brushing. Do not use a powered brush or abrasives. Heavy rust that has penetrated into the cable will cause unsatisfactory operation or complete failure. Replace cable.

Clean cable by immersing the coil in solvent A heavy accumulation of dirt laden lubricant may require more than one washing.

Examine the connector. Check for wear. Neck of ball must not be bent. Check with Tech/Ops "GO-NOGO" Gauge Model 550. Examine cable attachment to connector for straightness and evidence of looseness. A loose attachment or bend at this point must be repaired. Do not attempt to fabricate a replacement connector or to fasten it to the cable. The connector is a special heat treated steel made to exacting tolerances and under strict metallurgical control. The attachment is swaged with special tools and proof tested.

INSPECTION AND MAINTENANCE OF RADIOGRAPHIC
EXPOSURE DEVICES AND STORAGE CONTAINERS
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4.0 PERIODIC INSPECTION AND MAINTENANCE PROCEDURE: (Cont'd)

4.3 (Cont'd)

Order a replacement from Technical Operations. Lubricate the cable with "Unitemp" Grease, or equivalent. This is the most satisfactory lubricant for this purpose. Common greases can cause gumming and unsatisfactory operation. Take care in handling the cable to avoid picking up dirt or grit.

4.4 Control Cranks - All Models

4.4.1 Remove control cable housings by undoing fitting nuts. Remove crank unit from reel, remove crank and disassemble. Was parts in solvent. Check inside of housing for evidence of galling wear. A deeply scored (more than .020 deep) line where the cable contacts the inner wall of the housing indicates the need for replacement.

4.4.2 Check clearance between the hubs of the wheel and the bushings. More than .005 clearance indicates replacement.

4.4.3 Examine teeth of wheel for damage. A bent tooth may be filed off. Two or more bend teeth adjacent will require replacement of the wheel.

4.4.4 Lubricate bushings with Unitemp grease or equivalent and reassemble.

4.5 Control Cable Housings

4.5.1 Examine carefully for internal damage by flexing the housings by hand. Internal damage to the reinforcing braid of flexible metallic tube will be evidenced by a crunchy feeling when the cable housing is flexed. Cut, flattened or burnt cable housings should be replaced. Superficial cuts or burns may be sealed and reinforced with tape.

INSPECTION AND MAINTENANCE OF RADIOGRAPHIC
EXPOSURE DEVICES AND STORAGE CONTAINERS
MANUFACTURED BY TECHNICAL OPERATIONS, INC.

4.0 PERIODIC INSPECTION AND MAINTENANCE PROCEDURE: (Cont'd)

4.5 Control Cable Housings

4.5.2 Clean housings by syringing a few ounces of solvent into bore and blow out with low pressure air, (not more than 20 PSI). Do not allow solvent to remain. Do not soak in solvent. Check end fittings for secure attachment.

4.6 Source Guide Tubes

Check for cuts, burns or crushed tubes. Check fittings for secure attachment. Examine and test screw threads for function. Clean bore or tube with solvent and drain out promptly. Do not soak in solvent. Check for free passage of source by holding tube vertical and dropping dummy source assembly through tube. The dummy source assembly should fall through freely.

4.7 Shield Assembly

4.7.1 Check exterior for loose or missing hardware. Replace or tighten as required. Examine source exit fitting. Nut should rotate freely without excessive shake. Look into exit port and check concentricity of source tube with nut. Misalignment if found, indicates a damaged housing or shifting of the shield within the housing.

4.7.2 Examine the shield assembly for complete labels and warning symbol. Replace obliterated or illegible marking. Adhesive backed replacements are available from Technical Operations.

5.0 FINAL INSPECTION:

5.1 Reassemble system, connect control cables and source guide tubes to shield and install source in Tech/Ops. Model No. 650 or 416 Source Changers in accordance with the instructions in Section II, Procedure 10. Upon completion of this procedure, disconnect drive cable from live source and replace

INSPECTION AND MAINTENANCE OF RADIOGRAPHIC
EXPOSURE DEVICES AND STORAGE CONTAINERS
MANUFACTURED BY TECHNICAL OPERATIONS, INC.

5.0 FINAL INSPECTION: (Cont'd)

5.1 (Cont'd)

with dummy source. Operate machine several times to be sure of proper function. Check operation of the source position indicator system. The odometer in both 664 and 604 control units has a screwdriver adjustment control. If the hand crank is in it's full RETRACTED position, the odometer should indicate 000. If not, slowly adjust the control to obtain a 000 reading. The odometer adjustment screw is located on the side of the housing.

5.2 Examine connector of the live source while it is in the source changer. Assembly should be clean and free of grit and dirt. Check operation of the locking sleeve by pushing operating pin back. Sleeve should return when released. Check cable to connector junction for fraying. Test engagement of connector with mating part of source drive cable. Do not use a source assembly that fails these tests.

5.3 Return live source to shield in accordance with the instructions contained in Section II, Procedure 10. Radiation levels must not exceed the following:

No more than 200 mR/hr on contact with the external surfaces of the shield,

or

Less than 10 mR/hr at a distance of three feet from all exterior surfaces.

HUNTINGTON TESTING, INC.

POCKET DOSIMETER CALIBRATION

1.0 SCOPE:

The following procedure outlines the rules to be followed and the technique to be employed during the calibration of the following dosimeters:

Victoreen Model 541R, 0-200mR
Dosimeter Corp. of America, Model #862 0-200mR
Dosimeter Corp. of America, Model #611 0-200mR
Dosimeter Corp. of America, Model #608, 0-10R

2.0 RESPONSIBILITIES:

2.1 It is the responsibility of the Radiation Safety Officer and all qualified radiographers to assure themselves that all dosimeters in use are within calibration prior to the start of each job.

2.2 It is also his responsibility to ensure that dosimeters in use on long term temporary jobsites are calibrated within the required interval, or that dosimeters that are out of calibration are replaced with calibrated ones within the interval specified.

2.3 No radiographer within the employ of Huntington Testing shall work without a calibrated dosimeter being in his possession.

3.0 GENERAL REQUIREMENTS:

3.1 Pocket dosimeters shall be calibrated at intervals not exceed 1 year or if there is reason to believe that the dosimeter is defective.

3.2 Pocket dosimeter calibration shall be performed only by a qualified radiographer under the supervision of the RSO.

3.3 Pocket dosimeter calibration shall be accomplished using a Tech/Ops. Model #571 calibration device with a Cobalt 60 source.

3.4 Pocket dosimeters shall be calibrated by measuring the response to a known exposure. The dosimeters response will be checked at 25% and 75% of the full scale reading as follows:

HUNTINGTON TESTING, INC.

POCKET DOSIMETER CALIBRATION

3.0 GENERAL REQUIREMENTS: (Cont'd)

3.4 (Cont'd)

0-200mR dosimeter at 50mR and 150mR
0-5mR dosimeter at 1.25r and 3.25r
0-10r dosimeter at 2.5r and 7.5r

A dosimeter will be considered in satisfactory calibration if it's response is within plus or minus 30% of the known exposure. Additionally, dosimeters will be checked for leakage. If it drifts more than 2% of full scale in 24 hours it shall be considered unsatisfactory.

4.0 PROCEDURE:

4.1 Determine the points to be checked for the dosimeter to be calibrated and determine the exposure time necessary to obtain the required exposure.

4.2 Remove the Tech/Ops Model #571 or #773 from the storage vault, survey the source shield to ensure that the source is in the stored position. (For operating instructions for Tech/Ops Model #571 calibration device, see Section II, Procedure 8 and Section II Procedure 22 for T/O Model #773

4.3 Position dosimeter so that the chamber is at the correct distance, and centered on the center line of the radiation beam, and expose for the required time.

4.4 Read the dosimeter and record the reading on the Dosimeter Calibration Record Sheet, form 1-RT-10.

4.6 If the dosimeter is in satisfactory condition, a calibration tag shall be attached to it indicating the date of calibration, the due date and the technician's initials.

If the dosimeter is not in satisfactory condition, it shall be returned to the Radiation Safety Officer for further evaluation or disposal as required.

TRANSPORTATION OF RADIOACTIVE SOURCES

1.0 SCOPE:

The following procedure outlines the rules, regulations and precautions to be observed in the transportation of radioactive materials. The transportation of radioactive materials is governed by the rules and regulations of the U. S. Department of Transportation, which are to be found in the Title 49 CFR 170-177.

2.0 RESPONSIBILITIES:

2.1 It is the responsibility of the Radiation Safety Officer and Field Radiographer to assure that the procedure detailed below is followed without deviation.

2.2 It is also his responsibility to establish, prior to the transfer of radioactive materials from plant or construction sites, that qualified personnel are at the plant or construction site where the shipment is to be received.

2.3 It is the responsibility of common, contract or private carriers including air-carriers to assume the responsibility for adherence to Federal and State rules and regulations governing the transportation of radioactive materials whenever radioactive materials are in their possession under a shipping contract with Huntington Testing, Inc.

2.4 It is the responsibility of the Huntington Testing employee assigned to transport radioactive materials in any vehicle under the control of Huntington Testing to comply with this procedure without deviation.

3.0 PROCEDURE: SHIPPING BY COMMON, CONTRACT OR PRIVATE CARRIERS (GENERAL)

Prior to the loading of radioactive materials in any vehicle for transportation, the shipping container, source changer or projector will be inspected by the Radiation Safety Officer or a qualified radiographer for the following:

HUNTINGTON TESTING, INC.

TRANSPORTATION OF RADIOACTIVE SOURCES

3.0 PROCEDURE: (Cont'd)

a. That the container has received a Certificate of Compliance from the Nuclear Regulatory Commission, Transportation Certification Branch and is approved for use and shipment under the general license provisions of 10 CFR 71.12(B) and the requirements of 49 CFR L73.393(a).

b. That the security seals are properly fastened.

c. That the proper radioactive material labels are securely attached.

d. That Huntington Testing's Uniform Straight Bill of Lading is filled out for radioactive material shipments which is an integral part of this procedure.

3.1 For Vehicles Under the Control of Huntington Testing

3.1.1 Transportation of IR-192 projectors (Model 660) will be accomplished by locking them in steel "lock boxes" located to the rear of the vehicle wheel wells.

Note: Surveys conducted prior to transporting a 100 Ci, Ir-192 source in this manner indicate a radiation level of less than 2mR.hr at a distance of 18" from the closest external surface of the vehicle.

3.1.2 Transportation of Model 684 Co-60 projectors (10Ci) will be accomplished by securing them in the center of the vehicle so that they will not move during transit.

3.1.3 A survey will be taken after the container is loaded and the results logged. Care shall be taken so that the driver and/or passengers will not be subject to radiation levels in excess of 2 mR/hr. Radiation levels at the outer surfaces of the vehicle shall not exceed the 2 mR/hr level. Lead or other shielding material shall be added if necessary to meet this requirement.

HUNTINGTON TESTING, INC.

TRANSPORTATION OF RADIOACTIVE SOURCES

3.0 PROCEDURE: (Cont'd)

3.1.4 The transportation vehicle must be properly posted with diamond shaped "RADIOACTIVE" signs on the front, rear and each side of the vehicle. The "RADIOACTIVE" signs shall have the top portion yellow with the symbol black. The lower portion shall be white and the inscription black. The sign must be posted on the vehicle away from any other sign or graphic display by at least 3" in any direction (Ref: Code of Federal Regulations, Title 49, Section 172.516; 9/26/76) as amended.

The transporting vehicle shall also be posted on each side and rear with the following sign:

In Case of accident - NOTIFY

HUNTINGTON TESTING, INC.
Phone: (304) 453-6111
Kenova, WV

OR

HUNTINGTON TESTING, INC.
Phone: (502) 897-1364
Louisville, KY

OR

U. S. NUCLEAR REGULATORY COMMISSION
Phone: (404) 221-4503
Atlanta, GA

3.1.5 When by-product materials are shipped to a field site and the transportation is under the control of Huntington Testing, the RSO will notify the appropriate personnel, at the destination, as to the route to be taken and the expected time of arrival. In the event that any unusual delay is encountered, the vehicle driver will notify the appropriate personnel and advise them of his revised arrival time.

TRANSPORTATION OF RADIOACTIVE SOURCES

3.1.6 A calibrated and useable survey instrument will be carried in any vehicle transporting a by-product material.

3.1.7 The driver will be furnished a film badge, dosimeter and will be instructed in the operation of the survey instrument. He shall also be instructed in Procedures 7 and 3 of Section II of this manual. Copies of these Procedures will be issued along with equipment already mentioned.

3.1.8 When it is necessary to make an overnight stop or to park the vehicle and use it for source storage, it will be posted with "CAUTION: Radioactive Material" signs as required by 10 CFR, Part 20. A radiation survey will also be taken to assure compliance with the requirements of Paragraph 3.1.1 of this procedure.

Keys for both the truck and/or lock boxes will be retained in the possession of the radiographer or the Radiation Safety Officer, whichever is applicable.

CAUTION: The transfer of any radioactive materials or radiographic exposure devices between plants or construction sites is strictly prohibited without the express authorization of the RSO.

NOTE: Certain roads, generally state thruways or turnpikes, prohibit the passage of vehicles carrying radioactive materials. Entrances to these roads are posted. No attempt will be made by Huntington Testing's controlled vehicles to use prohibited roads.

Official, Southern, Western and Illinois classification territories March 15, 1922, as amended August 1, 1930, and June 15, 1941.) subject to all the provisions and conditions of the bill of lading form appearing in classification effective at this time, which provisions and conditions HUNTINGTON TESTING guarantees are correctly agent to this bill of lading is not to be understood as certifying the size, dimensions, composition quality or other similar description of the property mentioned herein, such description being for the convenience of the shipper only except as required by the carrier's Classification and tariff as part of the description of the freight.

UNIFORM STRAIGHT BILL OF LADING — Original — Not Negotiable

Shipper's No. .....

Agent's No. .....

RECEIVED, subject to the classifications and tariffs in effect on the date of issue of this Bill of Lading.

HUNTINGTON TESTING

Division of Union Boiler

at _____ **19**___

the property described below, in apparent good order, except as noted (contents and conditions of contents of packages unknown), marked, consigned and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own road or its own water line, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

(Mail or street address of consignee—For purposes of notification only)

Consigned to _____

Destination _____ State of _____ County of _____

Route _____

Delivering Carrier _____ Car Initial _____ Car No. _____

NO. PACKAGES	DESCRIPTION OF ARTICLES, SPECIAL MARKS AND EXCEPTIONS	*WEIGHT (SUB. TO COR.)	CLASS OR RATE	CHK. COL.
	Radioactive Material/Special Form _____ Curies _____ S/N _____ Radioactive _____ Label Required Transport Index _____ Container Model No. _____ S/N _____ Reason for Shipment _____ _____ Seal Identification _____ Remarks: _____ _____ "This is to certify that the above-named articles are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation". Site R. S. O. _____ **Customer's Order No.** _____			

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

_____
(SIGNATURE OF CONSIGNOR)

If charges are to be prepaid, write or stamp here, "To Be Prepaid."

_____

Received $_____ to apply in prepayment of the charges on the property described hereon.

_____
AGENT OR CASHIER

Per _____
(THE SIGNATURE HERE ACKNOWLEDGES ONLY THE AMOUNT PREPAID)

Charges Advanced:

$_____

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

NOTE—Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property

is hereby specifically stated by the shipper to be not exceeding _____ per _____

HUNTINGTON TESTING, Shipper

Division of Union Boiler

_____ Agent

Per _____ Per _____

Permanent post-office address of shipper

HUNTINGTON TESTING, INC.

P. O. BOX 1618 • HUNTINGTON, WEST VIRGINIA 25717
Telephone (304) 453-6111

SHIPPING/CERTIFICATION DOCUMENT
FOR RADIOACTIVE MATERIAL

DATE: _____

SHIPPED TO: _____ CARRIER: _____

_____ WEIGHT: _____

_____

PROPER SHIPPING NAME

☐ RADIOACTIVE MATERIAL, Special Form N.O.S.

☐ RADIOACTIVE MATERIAL, L.S.A., N.O.S.

EXPOSURE DEVICE AND MATERIAL IDENTIFICATION

EXPOSURE DEVICE	SERIAL NO.	SOURCE S/N	NRC CERTIFICATE OF COMPLIANCE	TYPE OF PACKAGE
T/O MODEL 491			N/A	DOT-55
T/O MODEL 496			N/A	EXEMPT PER 49CFR, 173,391
T/O MODEL 616			USA/9039/B (U)	TYPE - B
T/O MODEL 660			USA/9033/B (U)	TYPE - B
T/O MODEL 655			N/A	DOT-55
T/O MODEL 670			N/A	DOT-55
T/O MODEL 680			USA.9035/B (U)	TYPE - B
T/O MODEL 684			USA/9028/B (U)	TYPE - B
T/O MODEL 414			N/A	DOT-55
T/O MODEL 416			N/A	DOT-55
T/O MODEL 488			N/A	DOT-55
T/O MODEL 650			USA/9032/B (U)	TYPE - B

NATURE AND QUANTITY OF CONTENT:

RADIONUCLIDE	FORM	ACTIVITY IN CURIES
IRIDIUM 192	Special Form	
COBALT 60	Special Form	
CESIUM 137	Special Form	
DEPLETED U238 ___ lb. @ .15mci/lb.	Normal Form	

LABELING:

SHIPPING LABEL	TRANSPORT INDEX
RADIOACTIVE WHITE I	
RADIOACTIVE YELLOW II	
RADIOACTIVE YELLOW III	

SHIPPERS CERTIFICATION:

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the DEPARTMENT OF TRANSPORTATION.

TRANSPORTATION BY AIR:

This shipment is within the limitations prescribed for cargo - only aircraft.

SIGNED: _____ DATE: _____

MODEL # 653 COLLIMATOR OPERATION

1.0 SCOPE:

This procedure describes the operation of the Tech/Ops. Model #653 Collimator. It is designed for use with the Tech/Ops. Model 660 and the model 684 Gamma Ray Projectors.

2.0 RESPONSIBILITIES:

The Radiographer shall be responsible for adhering to this procedure without deviation.

3.0 PROCEDURE:

3.1 Inspect guide tube and Collimator threads for any sign of wear or damage.

3.2 Mount Collimator on exposure stand using mounting bracket and slip collar.

3.3 Turn exposure port down so that high radiation beam will be pointing directly at the floor.

3.4 Attach source guide tubes to Collimator.

3.5 Refer to Huntington Testing's Procedure No. 12 and No. 13 for operation of the exposure device.

PIPING OR HEADER GAMMA RAY PROCEDURE

1.0 SCOPE:

This procedure describes the use of special designed source guide tube fixtures to be adapted to the end of Technical Operations' source tubes on Models 660 and 684 Radiographic exposure devices.

1.1 The adapter (see Sketch) is designed to center a source in the piping or header I.D. opposite the weld, thereby permitting a panoramic radiographic exposure.

1.2 Gamma ray access holed are standardized with the hole diameter 1-17/64". The center of the hole is 6" from the center of the weld.

2.0 RESPONSIBILITIES:

It is the responsibility of the Radiographer to adhere to this procedure without deviation. Source guide tube fixtures are not to be altered in any manner.

3.0 PROCEDURE:

3.1 Inspect source guide tube fixture for any signs of wear or damage.

3.2 Insert the fixture assembly into the access hole of the pipe or header, seating the tapered plug (MK.3 of Sketch) firmly.

3.3 Mark on the plug where it intersects the pipe or header O.D. a line to indicate the depth the plug was inserted into the hole.

3.4 Remove the fixture from the hole and measure the vertical distance from the center of the end cap (MK.8) to the line marked on the plug.

3.5 Loosen Allen Screws and adjust vertical dimension of one-half or pipe O.D.

3.6 Align pointer on plug with bend of source guide tube and tighten the plug in place.

3.7 Double-check vertical distance.

PIPING OR HEADER GAMMA RAY PROCEDURE

3.0 PROCEDURE: (Cont'd)

3.8 Place fixture in gamma ray hole. Align pointer along the length of the pipe thus positioning end cap directly in line with the weld to be radiographed

3.9 Attach the Tech/Ops. source tube to the source guide tube fixture (finger tight) by screwing the female union fitting (MK.6) onto the fixture fitting (MK.4).

3.10 Proceed with remaining set-up and exposure operations as outlined in Procedures No. 12 of Section II or No. 13 of Section II (Technical Operations Exposure Device Procedures).

PIPING GAMMA RAY SOURCE GUIDE FIXTURE

Guide Fixture
For Use With Tech/Ops. Models 660, 684 and 680

Gamma Ray Projector Tube Assembly No. B40210

Bill of Material for One Piece

MK No.	Quantity	Description
1	1	1/2" Hard Copper Tube Guide
2	1	1/4" Dia. 4" long Stainless Steel Pointer
3	1	Stainless Steel Gamma Ray Plug
4	1	20 TPI, 1" Standard Male Coupling
5	1	1" Standard Female Coupling (Tech/Ops. Part #B40210
6	3	3/8" Allen Screws
7	1	1/2" Standard Sweat Cap

HUNTINGTON TESTING, INC.

MODEL 714 COLLIMATOR OPERATION

1.0 SCOPE:

This procedure describes the operation of the Model 714 Collimator. It is designed for use with Technical Operations Exposure Devices using a standard Tech/Ops. source stop.

2.0 RESPONSIBILITIES:

The Radiographer shall be responsible for adhering to this procedure without deviation.

3.0 PROCEDURE:

3.1 Loosen Clamping Bolts located on collimator

3.2 Insert standard source stop in opening and push it into the collimator until the source stop appears in side port.

3.3 Fasten collimator assembly to source guide tube by tightening clamping bolts.

3.4 Refer to Procedure Nos. 12 and 13 for operation of the exposure device.

HUNTINGTON TESTING, INC.

OPERATING INSTRUCTIONS FOR T/O MODEL 715 SHIPPING CONTAINER

1.0 SCOPE:

This procedure describes the method of replacing Tech/Ops. by-product material sources utilizing their approved shipping container Model #715

2.0 RESPONSIBILITIES:

The Radiation Safety Officer must perform or directly supervise a radiographer in all operations to do with receipt or shipping of this container.

3.0 DESCRIPTION:

3.1 The Model #715 shipping container is designed as a Type B package and is a protective overpack for radiographic devices and is certified for use with the Tech/Ops Model #616 radiographic projector.

3.2 The overpack consists of an MS-27683-2 gauge steel drum: 14 gauge clamp closure ring fastened by a bolt; 1.5 inches of MIL-I-2781 or MIL-2819 high temperature insulation, and a molded rubberized hair filler material. Overall dimensions of the overpack are approximately 15.5" diameter by 24" high. Maximum weight including contents is 105 pounds.

3.3 Contents:

a) Sealed sources of Ir-192 that meet the requirements of special form as defined in Paragraph 71.4 (o) of 10 CFR Part 71.

b) Maximum quantity, 240 cubes contained in the Model #616 radiographic device.

4.0 SAFETY PRECAUTIONS:

Personnel loading the Model 715 shipping container must have a calibrated and operational survey meter with a range of at least 0-1000 mR/hr. In addition, personnel monitoring devices must be worn during the operation. They are, a film badge and a direct reading pocket dosimeter.

OPERATING INSTRUCTIONS FOR T/O MODEL 715 SHIPPING CONTAINER

5.0 RECEIPT:

5.1 Upon receipt of the Model 715 shipping container, survey the package on all sides to insure radiation levels do not exceed the following:

Surface	200mR/hr
At One Meter	10 mR/hr

5.2 Check surface of container for obvious damage.

5.3 Check invoice and bill of lading to insure all are intact and are representative of the shipment.

5.4 If there are any discrepancies in Items 1-3, secure the shipping container and contact Technical Operations, Inc. immediately to resolve the discrepancy. (Tel: 800-225-7383, Telex 949313).

5.5 If Items 1-3 are determined to be in order, place the shipping package in a restricted area until the gamma ray projector is to be unpacked.

6.0 SHIPPING:

6.1 Wearing a film badge and dosimeter, approach the gamma ray projector to be shipped with a calibrated and operable survey instrument.

6.2 Survey the exterior surfaces of the gamma ray projector to be shipped with a calibrated and operable survey instrument.

6.3 Insure that the proper molded filler is installed in the Model 715 for the projector which is to be transported. Also, insure that the insulation is in place.

6.4 Place the gamma ray projector in the Model 715 shipping container. Place the top section of the molded filler over the projector. Place the top section of the insulation in the container. Cover the container top with the gasket and lid.

6.5 Place the clamp ring in place and tighten the bolt. Sealwire the bolt and nut using a tamperproof seal.

OPERATING INSTRUCTIONS FOR T/O MODEL 715
SHIPPING CONTAINER

6.0 SHIPPING: (Cont'd)

6.6 Survey the exterior surfaces of the container and insure that the maximum radiation level is less than 200 milliroentgens per hour.

6.7 Measure the radiation level three feet from all exterior surfaces of the container and insure that the radiation level is less than 10 milliroentgens per hour.

6.8 Determine the proper shipping label to be applied to the package using Table I. The maximum radiation level measured three feet from any exterior surface of the shipping container is the Transport Index.

6.9 Fill out the information requested on the label indicating:

a) Contents (Isotope)
b) No. of Curies
c) Transport Index (Maximum Radiation Level measured at three feet from the surface)

6.10 Remove all old shipping labels. However, do not remove the metal container identification tag.

6.11 Affix new shipping labels to two opposite sides.

6.12 Properly complete the shipping papers indicating:

a) Proper shipping name (i.e. radioactive material, special form, N.O.S.)
b) Name of radionuclide (i.e. 192 Iridium)
c) Physical or chemical form (or special form)
d) Activity of Source (expressed in curies or millicuries)
e) Category of label applied (i.e. radioactive yellow II)

f) Transport Index
g) USNRC Identification Number (USA/9039/B)
h) For export shipments, IAEA Identification Number (USA/9039/B)

OPERATING INSTRUCTIONS FOR T/O MODEL 715
SHIPPING CONTAINER

6.0 SHIPPING: (Cont'd)

6.12 Shipper's Certification required:

"This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transport according to the applicable regulations of the Department of Transportation."

NOTE: For air shipments, the following shipper's certification may be used:

"I hereby certify that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled and are in proper condition for carriage by air according to applicable National Governmental Regulations".

NOTE: For air shipments, the package must be labeled with a "Cargo Aircraft Only" label and the shipping papers must state:

"THIS SHIPMENT IS WITHIN THE LIMITATIONS PRESCRIBED FOR CARGO-ONLY AIRCRAFT".

6.13 Return the Model 715 shipping container to:

Technical Operations, Inc.
40 North Avenue
Burlington, MA 01803
USA

HUNTINGTON TESTING, INC.

OPERATION OF TECHNICAL OPERATIONS CALIBRATION UNIT MODEL #773

1.0 SCOPE:

This procedure describes the operation of Technical Operations Calibration Unit Model #773.

2.0 RESPONSIBILITIES:

The Radiographer is responsible for operating this device in strict accordance with this procedure. Procedures for the use of film badges, dosimeters, radiation survey instruments and the posting of radiation areas will be followed without deviation.

3.0 DESCRIPTION:

Technical Operations Calibration Unit Model #773 is designed for use with 165 mCi of 137 Cesium. The unit is equipped with three attenuators (Transmission of 0.25, 0.10 and 0.10) to allow a survey instrument with three ranges to be calibrated at 20% and 80% of each range without changing the position of the survey instrument. This unit can be used to calibrate survey instruments with ranges up to 2000 mR/hr.

4.0 PREPARATION FOR USE:

4.1 Place the source shield in a restricted area so that the directional port is aimed horizontally. To minimize the effects of scattered radiation, the unit should be 16 feet from any wall in the direction of the primary beam.

4.2 Position a support horizontally from the Model 773 Instrument Calibration Device as shown in Figures 1 and 2.

4.3 Restrict access to the area where the radiation level is in excess of 2 milliroentgens per hour (See Figure 4).

5.0 OPERATION:

NOTE: To properly calibrate a survey instrument it is necessary to check the instruments response at two points on each of the instruments ranges. These points must be separated by at least 50% of the full scale reading. The instruments reading should agree with the actual radiation intensity within 20% to be in proper calibration.

OPERATION OF TECHNICAL OPERATIONS
CALIBRATION UNIT MODEL #773

5.0 OPERATION: (Cont'd)

The following procedure is designed for a survey instrument with three scales and a range of 0-1000mR/hr. For instruments with different ranges, the procedure will be similar but the points will differ.

5.1 Turn on the survey meter and allow it to "warm up" for approximately 10 minutes.

5.2 Determine the activity of the source on the date of calibration from the decay chart provided with the source.

5.3 Determine the distance from the source at which the radiation intensity would be 800 mR/hr (use Figure 3).

5.4 Using the tape measure attached to the Model 773, place the survey meter such that the axis of the detector is located at the proper distance from the source as determined above.

NOTE: The survey meter should be located so that the center of the detector is at the correct distance and centered on the center line of the radiation beam. The axis of the detector should be perpendicular to the centerline of the radiation beam. Depending upon the physical size of your survey instrument, it may be necessary to mount it somewhat higher than the bench surface. When the proper geometry for your instrument has been established, use the same physical arrangement consistently in future calibration operations.

At short distances, using survey instruments with large detector volumes, the radiation intensity will not be uniform across the detector. Consideration should be given to this effect when determining the radiation intensities to be checked.

5.5 Unlock the handle of the Model 773. Remove the shipping plate. Remove all the attenuators from the radiation beam.

OPERATION OF TECHNICAL OPERATIONS
CALIBRATION UNIT MODEL #773

5.0 OPERATION: (Cont'd)

5.5 Unlock the handle of the model 773. Remove the shipping plate. Remove all the attenuators from the radiation beam.

5.6 Standing away from the radiation beam, expose the source by manually raising the source rod. Note and record the survey meter reading, return the source to the stored position. The actual intensity is 800 mR/hr. If the reading is within plus or minus 20% of the actual intensity, continue checking the instrument. If the instrument reading is not within plus or minus 20% of the actual intensity, the instrument must be adjusted and recalibrated.

5.7 Place the 0.25 attenuator in the beam. Repeat step 6; the actual intensity is 200 mR/hr.

5.8 Remove the 0.25 attenuator from the beam and place a 0.10 attenuator in the beam. Repeat step 6; the actual intensity is 80 mR/hr.

5.9 Place the 0.25 attenuator in the beam. Repeat step 6; the actual intensity is 20 mR/hr

5.10 Remove the 0.25 attenuator from the beam and place the other 0.10 attenuator in the beam. Repeat step 6; the actual intensity is 8 mR/hr.

5.11 Place the 0.25 attenuator in the beam. Repeat step 6; the actual intensity is 2 mR/hr.

5.12 Upon completion of the calibration, the source rod is to be dropped to the closed position, the locking bar inserted to prevent source movement and the lock secured. Survey the source shield and return to the storage area.

HUNTINGTON TESTING, INC.

HUNTINGTON TESTING INCORPORATED

LIST OF FORMS

1-RT-1	Monthly Record of Dosimeter Readings
1-RT-2	Reserved
1-RT-3	Radiographic Operations Report No. 1
1-RT-4	By-Product Material Quarterly Inventory Record
1-RT-5	Record of Periodic Inspection Results
1-RT-6	Survey Instrument Calibration Record
1-RT-7	Audit Check List - Radiography
1-RT-8	Reserved
1-RT-9	Operational Competance Test
1-RT-10	Pocket Dosimeter Calibration Record

HUNTINGTON TESTING, INC.

Section 2 Proc 1
Form 1-RT-1

HUNTINGTON TESTING

MONTHLY RECORD OF DOSIMETER READINGS

_____ Month of _____ 19____
Radiographer

Date	Dosimeter Start	Reading Finish	Day Total Dosage MR	Date	Dosimeter Start	Reading Finish	Day Total Dosage MR
1				17			
2				18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			
16				Total			MR

_____
Supervisor

HUNTINGTON TESTING

H T

RADIOGRAPHIC OPERATIONS REPORT No. 1

District/Branch _____

Part A: WARNING: Intentional Failure to Record Information Accurately on this Form may Result in a Fine and/or Disciplinary Action

Location of source: City _____ State _____ Date _____

Customer _____ Project _____

Part B: "Source of Radiation"
Ir _____ Co _____ X-ray _____
Model _____ Serial No. _____
Activity _____ curies

"Projector"
Model No. _____ Serial No. _____
In Storage _____
Storage Dates _____
(1 wk. Maximum)

"Survey Instrument"
Model No. _____
Serial No. _____
Cal. Due _____
Back-up S/N _____

Part C: Transport to: **Truck/Vehicle No.** _____ **(Complete Applicable Column)**

1.) Placing Projector in vehicle:
_____ mr/hr surface transport container
_____ Transport Index (0.1 - 10.0)
Label: Class I _____ II _____ III _____
_____ NRC Package Approval No. Attached
(Column 1 or 2): Vehicle Placarded _____ Yes _____ No

2.) Projector remaining in vehicle from previous transport
_____ Transport Index
Label: Class I _____ II _____ III _____
_____ mr/hr @ 1 ft. from vehicle surface _____ mr/hr @ Driver

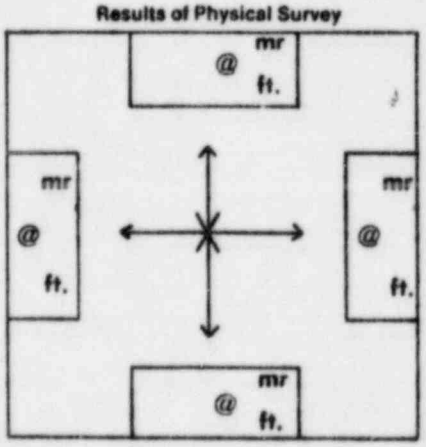
3.) _____ Not transported (✓)

Part D: Radiographic Operations:
Daily Equipment Inspection Check List

(✓) OK (NA) Not Applicable (•) See Remarks
_____ A. Survey Projector for Excessive Radiation Levels
_____ B. Projector inspected for damage to fittings, locks, and labels
_____ C. Control Cable and Fittings checked for cuts, breaks, or looseness
_____ D. Crank inspected for looseness
_____ E. Control checked for freedom of cable movement
_____ F. Guide tube inspected for cuts, crushing, and broken or loose fittings
_____ G. Collimator (if used) checked for secure attachment
_____ H. Pipe positioner (if used) checked for damage and secure attachment
Maintenance inspection performed or witnessed by Radiographer signed below (Part G).

Personnel Informed: _____

Results of Physical Survey



_____ Signs _____ Rope
_____ Constant Surveillance

Part E. Securing Radiographic Operations:

Record of Physical Survey made to determine source is in shielded position when securing exposure device (RSM Section 2 Proc. 18 3.1.3)

_____ mr/hr @ surface of exposure device or at 6" from device as required by RSM Section 2 Proc. 4

Survey Performed or witnessed by Radiographer signed below (Part G)

Length of Exposures _____
Number of Exposures _____
Total Exposure Time _____ hr _____ min.

Part F: Transport From/Return: **Truck/Vehicle No.** _____ **(✓) If same as Part C** **(Complete the applicable column)**

Destination: City _____ State _____ Location _____

1). Returning Projector to vehicle
_____ mr/hr surface transport container
_____ Transport Index (0.1 - 10.0)
Label: Class I _____ II _____ III _____
_____ NRC Package Approval No. Attached
(Column 1 or 2) VEHICLE PLACARDED _____ Yes _____ No

2.) _____ Projector not removed from vehicle (✓)

_____ mr/hr @ ft. from vehicle surface _____ mr/hr @ Driver

3.) _____ Not Transported (✓)

Part G: The below signed individual(s) herein verify that the above listed information (Part A through Part F) is accurate and has been completed in accordance with **HUNTINGTON TESTING** License Procedures and State and Federal Regulations.

In addition, the above named materials have been properly classified, described, packaged, marked, and labeled, and are in proper condition for transport according to the applicable regulations of the Department of Transportation.

Radiographer: _____ Radiographer's Assistant: _____

Remarks: _____

HUNTINGTON TESTING, INC.

Form 1-RT-4

BY-PRODUCT MATERIAL QUARTERLY INVENTORY RECORD

LOCATION: _____

Date of Inventory	Source Type	Serial Number	Source Strength	MR/HR at Contanier Surface	Inventory by (Initials)	Remarks

In accordance with the requirements fo CFR-10, Part 34 (Para 34.28 & 34.32J), the following source and related storage and handling equipment was inspected as follows:

Tech Ops Model No. _____ Device Serial No. _____

Source _____

		Satis.	Unsati
1.	Inspect cables for cuts, breaks and broken fittings.	_____	_____
2.	Inspect source tubes for cuts, crushing and broken fittings.	_____	_____
3.	Survey for excessive radiation levels.		
4.	Inspect shield for damage to fittings, lock, fasteners and labels.	_____	_____
5.	Inspect crank for damage and loose hardware.	_____	_____
6.	Check operation of cable connection.	_____	_____
7.	Check operation of control for freedon of source movement.	_____	_____
8.	Changes in operating characteristics.	_____	_____
9.	Proper operation of source position indicator mechanism.	_____	_____
10.	Proper operation of crank mechanism.	_____	_____
11.	Proper operation of locking mechanism.	_____	_____
12.	Source and drive cable wear or damage. (Go-NoGo Gage)	_____	_____
13.	Damaged or worn source and drive cable tube and connector wear and damage.	_____	_____
14.	Dust, dirt or sludge build-up in the source tube.	_____	_____
15.	Proper positioning of source inside the shield.	_____	_____
16.	Shifting of the shield inside the projector housing.	_____	_____
17.	Proper connection of all mating components.	_____	_____
18.	Damage which may impair operation.	_____	_____
19.	Cable and drive gear box damage and wear.	_____	_____
20.	Clean and grease drive cable if necessary according to appropriate Manual or Service memo.	_____	_____
21.	Proper labeling.	_____	_____

NOTES:

_____
RADIATION SAFETY OFFICER.

From 1-RT-6

HUNTINGTON TESTING, INC.

HUNTINGTON TESTING

SURVEY INSTRUMENT CALIBRATION RECORD

NAME		MODEL		SERIAL NO.				NAME		MODEL		SERIAL NO.			
DATE	CONDITION						CALIBRATION BY	DATE	CONDITION						CALIBRATIO BY
SCALE	X-1		X-10		X-100		AND COMMENTS	SCALE	X-1		X-10		X-100		AND COMMENTS
POSITION	A	B	A	B	A	B		POSITION	A	B	A	B	A	B	

HUNTINGTON TESTING, INC.

HUNTINGTON TESTING INCORPORATED

Audit Check List
Radiography

LOCATION_____ DATE_____

RADIOGRAPHER_____

ASS'T RADIOGRAPHER_____

Check List		Satis.	Unsatis.
1.	No. item of noncompliance found	_____	_____
2.	Areas posted to indicate presence of radioactive material.	_____	_____
3.	Containers labeled to indicate presence of radioactive material.	_____	_____
4.	A current copy of NRC Part 19, 20, 30 and 34. A copy of the License and a current copy of the operating procedures available on site	_____	_____
5.	High Radiation Areas and Radiation Areas posted during an exposure.	_____	_____
6.	Form NRC-3 posted.	_____	_____
7.	Film Badge and dosimeter records maintained.	_____	_____
8.	Radiation Survey Charts maintained.	_____	_____
9.	Leak Test Reports maintained.	_____	_____
10.	Quarterly inventory records maintained	_____	_____
11.	Quarterly maintenance records maintained	_____	_____
12.	Utilization Logs maintained	_____	_____
13.	Certification of Personnel qualifications maintained.	_____	_____

REMARKS:

Auditor

HUNTINGTON TESTING, INC.

B. RADIOGRAPHIC EXPOSURE DEVICES AND RELATED SOURCE HANDLING AND MONITORING EQUIPMENT

OPERATIONAL COMPETANCE TEST

NAME_____

		Yes	No
1.	Are Film Badge, dosimeters being worn?	___	___
2.	Is the survey meter calibrated and operable?	___	___
3.	Was radiographic device surveyed prior to removing it from storage vault?	___	___
4.	Form 1-RT-1 filled out prior to starting work?	___	___
5.	Radiographic Operations Report #1 filled out?	___	___
6.	Equipment set up correctly?	___	___
7.	Was a theoretical "High Radiation Area" and "Radiation Area" established prior to making exposure?	___	___
8.	Were ropes and signs used at boundary of restricted area?	___	___
9.	When exposure was made, was the boundary of the restricted area surveyed? Form 1-RT-3 filled out?	___	___
10.	When source was returned to device, was device surveyed to insure return of source to storage position?	___	___
11.	Was device surveyed prior to securing it in storage vault?	___	___
12.	Radiographic Operations Report #1 filled out?	___	___
13.	Form 1-RT-1 filled out?	___	___

HUNTINGTON TESTING, INC.

RECORD OF PERIODIC INSPECTION RESULTS

In accordance with the requirements of CFR-10, Part 34 (Para. 34.28 & 34.32J), the following source and related sotrage and handling equipment was inspected as follows:

Device Serial No._____

		Satis.	Unsatis.
1.	Inspect cables for cuts, breaks, and broken fittings.	_____	_____
2.	Inspect source tubes for cuts, crushing and broken fittings.	_____	_____
3.	Survey for excessive radiation levels	_____	_____
4.	Inspect shield for damage to fittings, lock, fasteners and labels	_____	_____
5.	Inspect crank for damage and loose hardware.	_____	_____
6.	Check operation of cable connection	_____	_____
7.	Check operation of control for freedom of source movement.	_____	_____
8.	Changes in operating characteristics	_____	_____
9.	Proper operation of source position indicator mechanism.	_____	_____
10.	Proper operation of crank mechanism	_____	_____
11.	Proper operation of locking mechanism.	_____	_____
12.	Source and drive cable wear or damage. (Go-NoGo Gage)	_____	_____
13.	Damaged or worn source and drive cable tube and connector wear and damage.	_____	_____

HUNTINGTON TESTING, INC.

RECORD OF PERIODIC INSPECTION RESULTS
(Continued)

		Satis.	Unsatis.
15.	Proper positioning of source inside the shield.	_____	_____
16.	Shifting of the shield inside the projector housing.	_____	_____
17.	Proper connection of all mating components.	_____	_____
18.	Damage which may impair operation.	_____	_____
19.	Cable and drive gear box damage and wear.	_____	_____
20.	Clean and grease drive cable if necessary according to appropriate Manual or Service memo.	_____	_____
21.	Proper labeling.	_____	_____

NOTES:

_____
RADIATION SAFETY OFFICER

9/12/79
Form 1-RT-10

HUNTINGTON TESTING, INC.

DOSIMETER CALIBRATION RECORD

Manufacturer:

Serial Number:

Range: 0 - 200mr

	Actual Exposure	Indicated Exposure	Error	Initials
Date:	50 mr			
Leakage Rate:	100 mr			
Source:	150 mr			
Date:	50 mr			
Leakage Rate:	100 mr			
Source:	150 mr			
Date:	50 mr			
Leakage Rate:	100 mr			
Source:	150 mr			
Date:	50 mr			
Leakage Rate:	100 mr			
Source:	150 mr			
Date:	50 mr			
Leakage Rate:	100 mr			
Source:	150 mr			

REMARKS:

Radiation Safety Officer

9/12/79
Form 1-RT-10

HUNTINGTON TESTING, INC.

DOSIMETER CALIBRATION RECORD

Manufacturer:

Serial Number:

Range: 5 Roentgens

	Actual Exposure	Indicated Exposure	Error	Initials
Date:	1.25 R			
Leakage Rate:	2.50 R			
Source:	3.75 R			
Date:	1.25 R			
Leakage Rate:	2.50 R			
Source:	3.75 R			
Date:	1.25 R			
Leakage Rage:	2.50 R			
Source:	3.75 R			
Date:	1.25 R			
Leakage Rate:	2.50 R			
Source:	3.75 R			
Date:	1.25 R			
Leakage Rate:	2.50 R			
Source:	3.75 R			

REMARKS:

Radiation Safety Officer

Purolator courier SM

Purolator Account No. to be billed | Date 11/26/85

257582132

Service Check One See reverse side for detail

- ○ PuroLetter Overnight Letter
- ⊗ PuroPak Overnight Pack
- ○
- ⊗ Priority National Overnight service Nationwide
- ○ Priority Regional Overnight Service up to 400 miles
- ○ Standard 2-day Service

Optional Service

- ○ Saturday Delivery Extra Charge
- ○ Hold for Pick-up

Payment

- ⊗ Sender Prepaid
- ○ Third Party
- ○ Collect
- ○ Cash Check

From Sender's Name: Bill Herman

Sender's Area Code/Phone Number: (304) 453-1111

Company Name: Inc.

Street Address: Rt 2 Box

City: Kenova | State: WV | Zip Code - Required: 25530

Sender's Signature: HBHerman

P.O. or Reference Number:

To Recipient's Name: Peter R. Quinn

Recipient's Area Code/Phone Number: ( )

Company Name: U.S. Nuclear Regulatory Commission

Dept./Suite

Street Address (P.O. Box numbers not deliverable): 101 Marietta St. N.W. Suite 3100

City: Atlanta GA | State: GA | Zip Code - Required: 30323

Third Party Billing Name/Address

[redacted]

Weight	L	W	H
1			

Tariff	Rate Item	S/A	Origin Airport	Destination Airport
			HTS	ATL

Advance	Valuation	Code	Amount	Code	Amount	Total Charge

Special Charge	☐ DB	Route	Courier Guard Initials	S.S. - Last 4 digits
		109	MM	0648

PURPOLATOR USE ONLY

BL-1 Rev. 9/84

RECIPIENT'S COPY

9/12/79
Form 1-RT-10

HUNTINGTON TESTING, INC.

DOSIMETER CALIBRATION RECORD

Manufacturer:

Serial Number:

Range: 10 Roentgens

	Actual Exposure	Indicated Exposure	Error	Initials
Date:	2.5 R			
Leakage Rate:	5.0 R			
Source:	7.5 R			
Date:	2.5 R			
Leakage Rate:	5.0 R			
Source:	7.5 R			
Date:	2.5 R			
Leakage Rate:	5.0 R			
Source:	7.5 R			
Date:	2.5 R			
Leakage Rate:	5.0 R			
Source:	7.5 R			
Date:	2.5 R			
Leakage Rate:	5.0 R			
Source:	7.5 R			

REMARKS:

Radiation Safety Officer