

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.

APPLICATIONS FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
WASHINGTON, DC 20545

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

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIALS SAFETY SECTION
475 ALLENDALE ROAD
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
NUCLEAR MATERIALS SAFETY SECTION
101 MARIETTA STREET, SUITE 2800
ATLANTA, GA 30320

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 75011

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
NUCLEAR MATERIALS SAFETY 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 THAT 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 _____
- C. RENEWAL OF LICENSE NUMBER 37-17534-01

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

High Steel Structures, Inc.
P.O. Box 10008
Lancaster, Pa. 17605-0008

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

1911 Old Philadelphia Pike, Lancaster, Pa.
3501 Steelway, Williamsport, Pa.

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Jere D. Long

TELEPHONE NUMBER

(717) 299-5211

SUBMIT ITEMS 5 THROUGH 11 ON 8 1/2" 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

10. RADIATION SAFETY PROGRAM

11. WASTE MANAGEMENT

12. LICENSEE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY Byproduct Mat 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 20, 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 15, 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

Patrick P. Loftus

President - H.S.S.I.

6/17/88

900P010154 88:214
REG 1 LIC 50
37-17534-01 PDR

FOR NRC USE ONLY

TYPE OF FEE <u>REN</u>	FEE LOG <u>Jul 23</u>	FEE CATEGORY <u>30</u>	COMMENTS	APPROVED BY
AMOUNT RECEIVED <u>\$700</u>	CHECK NUMBER <u>267030</u>			DATE <u>7/28/88</u> <u>109126</u>

Item 5

Radioactive Material

Iridium 192

- A. Amersham Corporation Sealed Source
Model A 58101-8
- B. Not to exceed 200 curies per source
- C. For use in Amersham Corporation
Model 616 exposure device for industrial radiography
- D. Sources to be returned to manufacturer for changing

Cesium 137

- A. Victoreen Model 541-205
- B. 10 microcuries
- C. For use in Victoreen Model 541-205 calibrator
for pocket dosimeters

Cesium 137

- A. Amersham Corporation Model 77302
- B. 165 millicuries
- C. For use in Amersham Corporation Model 773 calibration device
for calibrating G-M survey instruments

Item 6

Purpose(s) For which Licensed Material will be used

- Iridium 192 - For use in Amersham Corporation Model 616 exposure device for industrial radiography.
- Cesium 137 - For use in Victoreen Model 541-205 calibrator for calibration of pocket dosimeter.
- Cesium 137 - For use in Amersham Corporation Model 773 calibration device for calibrating G-M survey instruments.

Item 7

Overall Organizational Structure

President and General Manager

Patrick P. Loftus

Vice President of Fabrication

Robert A. Kase

Quality Control Supervisor

Jay E. Mellinger

Radiographers

Radiation Safety Officer

Jere D. Long - Lancaster

Dennis E. Harris - WillimSPORT

Assistant Radiation Safety Officer

Jay E. Mellinger - Lancaster

Derrick S. Bockey - " "

James A. Leeser - " "

C. Richard Hess - WillimSPORT

Item 7

INDIVIDUALS RESPONSIBLE FOR RADIATION SAFETY PROGRAM

RADIATION SAFETY OFFICER - Jere D. Long (Lancaster)

1970 - 1977 7 years experience as a Quality Control Technician monitoring the practice of various radiographers as to proper safety perimeters and exposure techniques.

Jan., 1977 40 hours Programmed Instruction Handbook Radiographic Testing - General Dynamics.

Feb., 1977 40 hours Radiation Safety School - Tech/Ops, Boston, MA

May, 1977 Qualified as a Radiographer after three months in-house training with a Model 616 pipeliner.

June, 1988 11 years experience as an assistant Radiation Safety Officer.

RADIATION SAFETY OFFICER - Dennis E. Harris (Williamsport)

Nov., 1987 40 hours Radiation Safety School - Amersham Corporation, Boston, MA

Nov., 1987 Completed inhouse training to qualify as a Radiographer's Assistant.

May, 1988 Qualified as a radiographer after five months inhouse training with a Model 616 pipeliner.

Item 7

ASSISTANT RADIATION SAFETY OFFICER - Jay E. Mellinger

Nov., 1977 40 hours Programmed Instruction Handbook
"Radiographic Testing" - General Dynamics

Feb., 1978 40 hours Radiation Safety School
Tech/Ops, Boston, MA

April, 1978 3 months as a Radiographer's assistant inhouse
training with the Model 616 pipeliner

June, 1988 10 years experience as a radiographer

ASSISTANT RADIATION SAFETY OFFICER - Derrick S. Bockey

Feb., 1988 Graduated from the Spartan School of Aeronautics,
Tulsa, Oklahoma. 40 hours of Radiation Safety
training and 120 hours of Radiographic
inspection instruction.

July, 1982 Industrial Inspection Industries, Inc. North
Canton, Ohio. 5 months Radiographer's assistant
using Iridium 192 to radiograph pipe welds.

Oct., 1983 Applied Engineering Co., Orangeburg, South
Carolina. 8 months radiographer's assistant
chemical and power plant inspection.

Sept., 1984 Maryland Quality Control Laboratory 7 months
radiographer's assistant, one month as a
radiographer using Iridium 192 to test pipe
welds and castings.

June, 1988 2 years experience as a radiographer using
the Amersham Model 616 pipeliner.

Item 7

ASSISTANT RADIATION SAFETY OFFICER - James A. Leeser

April, 1978 40 hours inhouse Radiation Safety School,
Trans-Eastern Inspection, Inc. Washington, PA

June, 1978 3 months working under a Radiographer as a
Radiographer's Assistant.

April, 1985 7 years experience as Radiographer using
Iridium 192

Sept., 1986 40 hours Radiation Safety School, Amersham
Corporation, Boston, MA

June, 1988 10 years experience as a Radiographer

ASSISTANT RADIATION SAFETY OFFICER - C. R. Hess (Williamsport)

1969 - 1977 7-1/2 years experience as Quality Control
Supervisor monitoring the practice of various
Radiographers as to proper safety perimeters,
equipment and exposure techniques.

Jan., 1977 40 hours Programmed Instruction Handbook
"Radiographic Testing" - General Dynamics

May, 1977 Qualified as a Radiographer after three months
inhouse training with a Model 616 pipeliner

June, 1988 11 years experience as a Radiation Safety Officer

Training Program

The scope of High Steel Structure's Training Program is to establish safe procedures for the radiographic examinations within the company. This is accomplished by means of thorough and continuous education and practical experience for the purposes of technical proficiency and safety throughout the operations of the company.

The entire Training Program is supervised by the Radiation Safety Officer. High Steel Structures is also considering the use of outside personnel to assist with the on-the-job training, such as personnel from U.S.N.R.C., the State Health Department and Amersham Corporation.

Trainees and Assistant Radiographer(s) who fail the examinations (minimum grade 85%) of this Training Program, are given four weeks to study before taking another examination. Within this period the instructor will explain to each individual the areas of failure, misinterpretation or deficiency.

Initial Training (prior to becoming a Radiographer's Assistant)

The N.R.C. requirements (Part 10, CFR 19, 20, 21, 30, 34 & 71) are explained to all trainees. A detailed explanation of the working procedures, proper handling, maintenance and safety requirements connected with the Pipeliner is given to all of the trainees.

After a period of at least four weeks of initial training, the trainee is sent to the Radiation Safety Training Course at Amersham Corporation, or a course of similar structure and content. Having satisfactorily passed the Training Course at Amersham Corporation, the trainee is given an examination to test the trainee's understanding of radiation safety. Upon satisfactory completion of the exam he becomes an assistant radiographer. (See Appendix C for sample questions and expected answers.) He then receives practical "on-the-job" experience doing radiography under the direct supervision of the Radiation Safety Officer and/or the Radiographer.

Item 8

The purpose of this "on-the-job" practical training is to have the Radiographer's Assistant observe the Radiographer in the safe handling of the exposure device. The Radiographer's Assistant will also handle the Pipeliner with a live source but only under the direct supervision of the Radiographer and/or the Radiation Safety Officer. He will then demonstrate his ability at doing the following:

1. Proper assembly of the Pipeliner.
2. Determination of the isodose line at 2 mr/hr.
3. Correct surveying and posting.
4. Checking survey meters and pocket dosimeters.
5. Exposure set-ups.
6. Knowledge of operating and emergency procedures.

A minimum of three months as an Assistant Radiographer will permit the candidate to advance to the position of "Radiographer" after another written and practical test. Forty hours are devoted to the classroom explanation of the Operating and Emergency Procedures covering the following areas:

1. Mechanics of Model 616 Pipeliner and the step-by-step operating procedures.
2. The inverse square law; storage of the Pipeliner; proper handling of survey meters; procedures for performing surveys; the use and recording of pocket dosimeters and film badges; transportation of the Pipeliner; daily and quarterly maintenance procedures relevant to the Pipeliner; whom and how to report emergencies such as a vehicular accident or a fire.

An additional 15 hours of classroom training are used to discuss 10 CFR Parts 19, 20, 21, 30, 34 & 71, and also Section 206 of the Energy Reorganization Act of 1974.

The remaining time will be spent on practical setups in the shop.

The written and practical tests must be passed with a grade of 85% if the Assistant Radiographer is to become a Radiographer. Subjects of the practical demonstration are as follows:

1. Storage of the Pipeliner
2. Use of logbooks, interpretation of film badge reports.
3. Demonstration of Operating & Emergency Procedures.

See exhibit 1 for sample questions for use in the written part of the examination.

Item 8

In case of hiring new personnel with previous experience in radioisotope radiography, the new employee will have to be trained in the entire procedures outlined in order to become a Radiographer for High Steel Structures.

This training would take place after he has proven through a written and practical examination and demonstration that he has the necessary knowledge to be a Radiographer's Assistant. This training will be necessary regardless of whether he was already a Radiographer. The training time may be shortened depending upon the ability shown by the new employee to a minimum of four weeks.

Periodic Training

Under the direction of the Radiation Safety Officer, training will be conducted annually or more frequently if it is deemed necessary.

The subjects covered at such periodic training meetings are as follows:

1. Revisions (if any) in the Rules and Regulations of the NRC or State or DOT.
2. Corrections in the safe handling of the exposure device.
3. Reorientation with the Operating & Emergency Procedures.
4. Omissions and/or inconsistencies, if any, which may be found in reporting procedures, logbook entries, daily and quarterly inspection, etc.

The above periodic training meetings may be attended by guest speakers, such as Federal or State officials, outside consultants & manufacturers' representatives.

Exhibit 1

SAMPLE QUESTIONS AND EXPECTED ANSWERS FROM
THE ASSISTANT RADIOGRAPHERS TEST

1. What is ionization?
E.A. Ionization is the process by which an electron is knocked out of the orbit of its parent atom.
2. Define the term "half-life". What is the half-life of Iridium 192?
E.A. Half-life is the time required to reduce the original activity of the isotope by 50%. The half-life of Iridium 192 is 74 days.
3. Define a Curie.
E.A. A Curie is that quantity of radioactive material which undergoes 37 billion disintegrations per second.
4. Explain the difference between dose and dose rate.
E.A. A dose is the total amount of radiation measures, while the dose rate is a measure of the radiation received over a particular unit of time (roentgens/hour).
5. What is meant by "chronic exposure"?
E.A. Chronic exposure is exposure received by natural sources unavoidable to any humans.
- ✓ 6. What are the three means of controlling external radiation dose?
E.A. A) Shielding by natural absorbers
B) Collimators
C) Distance
- ✓ 7. What is the purpose of a collimator?
E.A. Radiation beam limitations.
8. What is the normal allowable annual dose of ionizing radiation to the whole body or critical organs permitted by Federal Regulations?
E.A. Whole body = 5 rads
Hands, forearms, ankles, feet = 75 rads
- ✓ 9. Who is responsible for maintaining control and surveillance of the restricted area?
E.A. The Radiographer

Exhibit 1

SAMPLE QUESTIONS AND EXPECTED ANSWERS FROM
THE ASSISTANT RADIOGRAPHERS TEST (cont'd)

10. What is meant by the term "half value layer", and what are the half value layers of lead for Iridium 192?
E.A. Half value layer is the amount of material necessary to reduce the amount of radiation by 50%. The half value layer for Iridium 192 = .2 inches.
- ✓ 11. In the event of loss of source, whom would you notify?
E.A. Your Radiation Safety Officer and immediate supervisor.
12. Assume a person is exposed to a very high dose rate from a Ir192 source:
(a) Can this person become radioactive? E.A. No.
(b) Can this person become contaminated? E.A. No.
(c) When the source is no longer present, is ionization from gammas still taking place in this person's body? E.A. No.
- ✓ 13. How many calibrated survey instruments must be on hand at all times?
E.A. 1 at all times.
- ✓ 14. If a radiographic projector cannot be removed from a danger area, what is to be done?
E.A. The area is to be roped off to a safe distance and all operations ceased immediately. The Safety Officer is notified.
- ✓ 15. Must everyone wear dosimeters and film badges in a restricted area?
E.A. Yes.
- ✓ 16. Can the duties and responsibilities of a radiographer be delegated to a Radiographer's Assistant?
E.A. No.
- ✓ 17. Must a person assisting a radiographer in using a survey instrument be a qualified Radiographer's Assistant?
E.A. Yes. He must also be properly trained in reading them.
- ✓ 18. What is the calibration frequency for survey instruments?
E.A. Every 3 months and/or after change of batteries.

Exhibit 1

SAMPLE QUESTIONS AND EXPECTED ANSWERS FROM
THE ASSISTANT RADIOGRAPHERS TEST (cont'd)

19. How many of the following must be supplied to radiographers and radiographer's assistants?
(a) Part 19
(b) Part 20
(c) Part 34
(d) Part 30
(e) Operating and emergency procedures
E.A. One of each.
- ✓ 20. How often is a leak test required?
E.A. Every 6 months.
- ✓ 21. Who is responsible for reading dosimeters every time they are used?
E.A. Radiographer & Radiographer's Assistant (wearer)
- ✓ 22. When must dosimeters be read, if used?
E.A. Before and after work with the radioisotope and frequently during the operation in order to avoid unexpected overexposures.
- ✓ 23. Dosimeter readings of 25MR or less do not have to be recorded. True or false?
E.A. False
- ✓ 24. What is the minimum dosimeter reading that must be recorded?
E.A. Any and every reading before and after work with a radioisotope.
- ✓ 25. Who must be notified of off-scale dosimeter readings?
E.A. Radiation Safety Officer in attendance. All radiographic work must cease after returning the source in a "safe" position.

Exhibit 1

SAMPLE QUESTIONS AND EXPECTED ANSWERS FROM
THE ASSISTANT RADIOGRAPHERS TEST (cont'd)

- ✓ 26. In the event of an accident or other emergency in the vicinity of an exposed radiation source, what must be done?
E.A. Return, immediately, source to a "safe" position, cease work, and notify the safety officer.
- ✓ 27. How often must film badges be changed?
E.A. Monthly
- ✓ 28. Where must be-product materials be stored when not in use?
E.A. In a locked vault.
29. List several advantages and disadvantages of film badges.
E.A.
- | | <u>Advantage</u> | <u>Disadvantage</u> |
|------------------------|-----------------------------------|---|
| Film badges | Integrated reading | delayed report |
| pocket dosi-
meters | Immediate indication
of danger | inaccuracy; instrument
subject to hidden damage. |
- ✓ 30. Who is the Radiation Safety Officer for your company?
E.A. Telephone No. - Plant ext.
Home

Item 9

Facilities and Equipment

Licensed material shall be used only at 1911 Old Philadelphia Pike, Lancaster, Pennsylvania and at 3501 Steel Way, Williamsport, Pennsylvania.

Item 10.1

Radiation Safety Program

Personnel Monitoring Equipment

Each radiographer and radiographer's assistant must wear his/her personal film badge and a pocket dosimeter with a range of 0 to 200 milliroentgens during radiographic operations. Film badges will be exchanged monthly and returned to Tech/Ops Landauer for processing.

Pocket dosimeters will be charged at the start of each work day. Dosimeter reading will be recorded at the beginning and end of each work day. When not in use, the pocket dosimeters will be stored in the office equipment cabinet.

During radiographic procedures the pocket dosimeters must be inspected frequently. If it is found to be offscale or indicates an individual exposure in excess of 10 mr/hr, all radiographic exposures and activities must be suspended and the Radiation Safety Officer notified immediately. The R.S.O. will then ship the film badge to Landauer for immediate processing. The wearer will be suspended from radiographic work until the exposure report is received.

Item 10.2

Radiation Safety Program

Radiation Detection Instruments

Sufficient calibrated and operable survey meters capable of measuring 2 milliroentgens per hour through 1 roentgen per hour will be maintained to make physical radiation surveys as required by 10 CFR parts 20 and 34.

Survey meters will be calibrated after servicing and intervals not to exceed three months to verify that the readings are $\pm 20\%$ of the actual values of the range of the instrument. A label affixed to each survey meter will show the date the instrument was calibrated and the due date of the next calibration. A calibration certification showing the results of the calibration will be kept on file for a minimum of two years.

Survey meters that require service or repair will be sent to Amersham Corporation, Burlington, MA (NRC License No. 20-12836-01)

Item 10.3

Radiation Safety Program

Internal Inspection Program

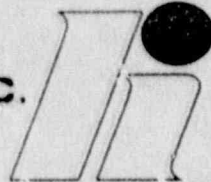
The Radiation Safety Officer or Assistant Radiation Safety Officer will make periodic on-the-job inspection visits at least one time per quarter per active radiographer.

During these visits the operating procedures, film badge and dosimeter reports, and inventory (receipts, possession and use) procedures will be reviewed for conformance to the license requirements and a written audit report will be maintained on file. (see exhibit # 2)

Any discrepancies or deviations from the rules noted during the periodic inspections will be noted. Corrective action will be taken immediately. Also, changes in procedures will be instituted wherever and whenever the R.S.O. finds such changes to be beneficial in providing improved safety in the radiographic operations. All findings and corrective actions will be noted in the logbook.

1905 Old Philadelphia Pike
Lancaster, Pennsylvania 17604
Phone 717/299-5211

HIGH STEEL STRUCTURES, INC.



A Subsidiary of High Industries, Inc

RSO AUDIT OF ACTIVE RADIOGRAPHY

Date _____ Time _____ Radiographer _____

Camera Model Tech/Ops 616 Source Material Ir 192

Source Strength _____ Radiation Reading at Nearest Rope _____

OBSERVATIONS

1. Is the radiographer observing his work area? _____
2. Does he have the work area roped off at the 2 MR line? _____
3. Does he have the 100 MR warning signs up? _____
4. Is he wearing his film badge? _____ Dosimeter? _____
5. Dosimeter on scale? _____
6. Logs filled out? _____
7. Radiographer's Manual? _____
8. Working survey meter? _____
9. Is he observing at a maximum distance from the source, beside the vacuum control box, and utilizing shielding, if possible? _____
10. After an exposure is completed, did he survey the camera as he approached it? _____
11. Did he lock the camera before handling? _____
12. Did he leave the camera unattended? _____ If so, was it secured? _____

Item 10.4.1

Operating & Emergency Procedures

Step-by-Step Operating Instructions for Amersham 616 Iridium
192 Device

1. Open storage vault.
2. Survey vault and exposure device. Record the survey data in the utilization log.
3. Transport exposure device, connecting hose and control to exposure site. Such transportation must always be accompanied by at least one working survey meter.
4. Upon arrival at the exposure site, rope-off or block access to the area at the 2 mr/hr level. Post signs "Caution, Radiation Area" at the blocked area, and "Caution, High Radiation" at the expected 100 mr/hr radiation level.
5. Position exposure device and take a survey.
6. Perform the daily maintenance in accordance with the Daily Maintenance Check procedure.
7. Connect control to the device. The control shall be positioned as far from the exposure device as possible and in a radiatic shielded place, whenever possible.
8. Unlock exposure device; return to control and set control valve to "off".
9. Stroke the pump handle until the vacuum gauge indicates 15 inches.
10. Turn control valve to "Expose". The exposure is now starting.
11. For exposure termination set the control valve to "Off". Observe the survey meter to verify drop in radiation.
12. Now approach the exposure device with a survey meter and survey the collimated radiation field.
13. Lock the exposure device.

Item 10.4.1

14. When the exposure device is returned to the permanent storage, resurvey exposure device.
15. Enter exposure and survey data into the logbook.

Notes: During the exposure, survey the limited access area and correct the limit to 2 mr/hr wherever necessary.

The entire area must remain under continuous surveillance to prevent people from entering the exposure area. In the event that unauthorized personnel enter the restricted area, immediately terminate the radiographic exposure.

Item 10.4.6

Operating & Emergency Procedure

Transporting Sealed Sources

1. Remove 616 projector from radioactive material storage locker, survey projector, and place in shipping container provided by Amersham Corporation. Include the Iridium 192 "Source Decay Chart", with the source before securing the lid and sealing the shipping bolt.
2. After securing the lid, survey the drum at the surface, and at three feet, and record the readings on the "RT Transport Log".
3. If the radiation is 50 MR/hr. or less at the surface, and 1.0 MR/hr. or less at three feet, place two "Radioactive - Yellow II" labels on the outside of the shipping container. If the radiation exceeds these limits, place two "Radioactive - Yellow III" labels on the outside of the shipping container.
4. Complete the information on the appropriate warning label. The transportation index is the MR/hr. reading at three feet from the container.
5. Apply address label to container, making sure the "Radioactive Material Special Form; n.o.s." label is legible. If not, apply a new label.
6. If the shipping container requires a Yellow III label, the vehicle in which it is carried must have placards on all four sides to show that it is carrying radioactive material.
7. Locate the shipping container near the rear of the vehicle to minimize the drivers radiation dose. The shipping container must be tied or braced against movement.
8. Survey the inside and outside of the vehicle and record the results on the RT Transport Log. At no time must the radiation level on the outside of the vehicle exceed 2 MR/hr. neither driver nor passenger should be exposed to a higher dose rate than 1 MR/hr. inside the vehicle.

Item 10.4.6

9. Required equipment available in the vehicle:

- a. One operable and calibrated survey meter
- b. 100 feet of yellow/magenta rope
- c. Four warning signs "Caution Radiation"
- d. " " " " "Caution High Radiation"
- e. " " " " "Caution Radioactive Material:"
- f. RT Transport Log
- g. Complete copy of the Operating & Emergency Procedures Manual.

OPERATING & EMERGENCY PROCEDURES

Transportation of Exposure Device on Company Property

1. Insure that the vehicle used is in good condition and carries the normal complement of safety equipment including radiation area signs and length of rope. Additionally, the operator must have a calibrated and operable survey meter and be wearing a film badge and dosimeter.
2. Place the radioactive exposure device in the vehicle. Secure the device against movement in the vehicle.
3. Survey the driver's compartment to insure that the driver or passengers will not be exposed to a dose rate above 1 mr/hr.
4. Should any kind of breakdown or accident occur, make an immediate radiation survey to see where, if at all, the radiation levels are higher than normal. If any abnormal radiation areas exist, keep all persons out of them and contact the Radiation Safety Officer via a third person. If the radiation survey is normal, secure the exposure device in the vehicle and then contact the R.S.O. or obtain another vehicle to complete transportation to the work area.

Note: "Radiation" areas must be secured to the 2 mr radius as required in a normal radiographic work zone.

Item 10.4.7

Operating & Emergency Procedures

Emergencies

If the source does not return to the safe storage position at the termination of the radiographic exposure, do the following:

- a. Maintain the restricted area under surveillance until the situation is corrected.
- b. Notify the plant superintendent and Radiation Safety Officer, if necessary through a third person - DO NOT LEAVE THE AREA.
- c. The Radiation Safety Officer will notify Amersham Corporation and request their immediate assistance.

If there is a vehicle accident while transporting radioactive material:

- a. Survey the transport vehicle.
- b. Survey the storage container if possible. If the radiation levels are normal, proceed to your destination after securing the device. If necessary due to radiation leakage, establish and post the restricted area at the 2 milliroentgens per hour radiation level (even on busy highways).
- c. Have someone notify the police and cooperate fully with them. Have the police notify the NRC and the Radiation Safety Officer.
- d. The Radiation Safety Officer will notify Amersham Corporation (800-225-1383) and request their immediate assistance.

Telephone number of Radiation Safety Officer:

Lancaster - Jere D. Long (717) 626-4037
Williamsport - Dennis Harris (717) 323-5783

Item 10.4.7

Telephone numbers of Assistant Radiation Safety Officers:

Lancaster - Derrick S. Bockey (717) 367-4933
Jay E. Mellinger (717) 687-6161
James E. Leeser (717) 838-4346

Williamsport - C. R. Hess (717) 394-5877

Telephone extensions of Plant Superintendents:

Lancaster - William R. Mankin x-147
Williamsport - C. R. Hess x-76-21

Local Police, Fire Department and State Police: 911

NRC Field Office: 631 Park Avenue
King of Prussia, PA 19406
(215) 337-5000

Operating & Emergency Procedures

Daily Maintenance Check

The radiographer will perform a daily maintenance check of the exposure device and related radiographic equipment. This inspection will be conducted prior to the use of the equipment on each day that radiographic work is to be performed. Report defective equipment to the RSO immediately. Do not attempt to use defective equipment. After determining that the equipment is operative, record the condition of the radiographic equipment.

Source Shield Assembly

Make a radiation survey on exterior surfaces of the source shield assembly. With the center of the survey meter 6 in. from the surface, the radiation levels should not exceed 0.25 mr per hour per curie. Example: 80 curies x 0.25 = 20 mr/hr.

Visually inspect for signs of damage. Check the fastenings on the actuator. Look for missing or loose fasteners. Check to ensure the safety wiring on the fasteners is intact. Check for presence and legibility of the nameplate bearing the radiation symbol. Make operation check of the lock.

Control Assembly

Check visually for damage. Test for leaks by turning the control valve to OFF. Pump a vacuum of approximately 15 in. Observe the gage. The gage should remain steady. A falling gage indicates a leak. A leaking control assembly must be repaired.

System Check

Conduct the check in an area where the source may be exposed. Position the source shield assembly so that beam is directed away from you and preferably into a shielding wall or floor. Place a survey meter turned ON adjacent to the projector so you can observe it.

Connect tube to source shield assembly.

Lock projector.

Item 10.4.10

Connect tube to control assembly.

Set control valve to OFF.

Pump vacuum to approximately 15 in.

Turn control to ON. Observe survey meter. Radiation level should not change. If radiation level increases, the lock is faulty and must be repaired.

Observe vacuum gage. A falling gage indicates a leak in control hose or source actuator.

Turn control to OFF.

Remove hose from source shield assembly.

IMPORTANT: Be sure control valve is turned to OFF. Be sure hose is removed from source shield assembly before unlocking.

Unlock projector.

Replace hose in source shield assembly.

Pump control to approximately 15 in. vacuum.

Turn control valve to ON. Observe survey meter. Radiation level should increase. Turn control valve to OFF. Radiation level should decrease to initial level.

Record the results of the daily inspection in the log.

DATE																				
<u>SOURCE SHIELD ASSEMBLY</u>																				
A) Radiation Survey (less than 50MR/HR @ 5'																				
B) Visual Inspection No loose or missing activator fastenings.																				
INTACT SAFETY WIRING																				
SECURE AND LEGIBLE NAME PLATE																				
LOCK OPERATION																				
<u>CONTROL ASSEMBLY</u>																				
A) Visual Inspection																				
B) Leak Test with Control Off																				
<u>SYSTEM CHECK</u>																				
A) With Locked Pro- jector																				
B) With Unlocked Pro- jector																				

Exhibit 4

REMARKS:

DAILY RT
MAINTENANCE
CHECKLIST

Operating & Emergency Procedures

Procedure for Receipt of Radioactive Materials

1. Before accepting shipment, survey container to insure the maximum radiation at the surface does not exceed 200 MR/hr. or 10 MR/hr. at three (3) feet. If the container does not meet these requirements:
 - a. Do not accept shipment
 - b. Isolate container
 - c. Notify the radiation safety officer immediately
2. If the container is acceptable upon survey, accept shipment and notify the radiation safety officer that the radioactive material shipment has arrived.
3. Supply radiation safety officer with a copy of the bill of lading.
4. Send container to the radioactive material storage area.
5. Re-check radiation levels if o.k., proceed with the unpacking process.
6. Record information in the "Receipt and Shipping of Radiation Materials Log".

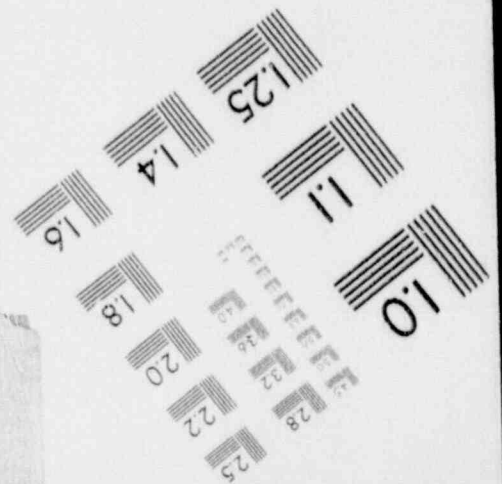
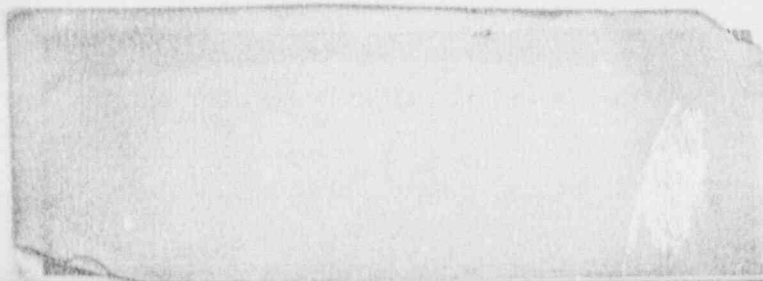
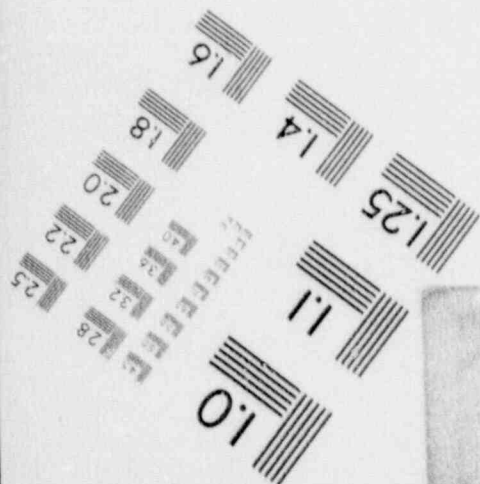
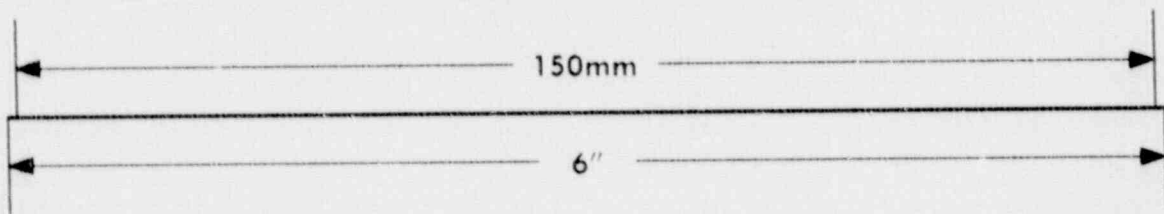
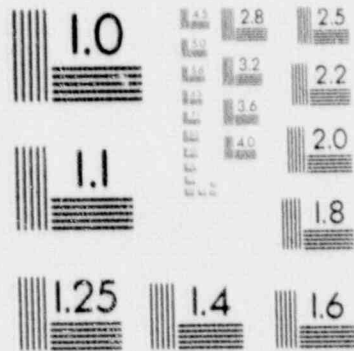
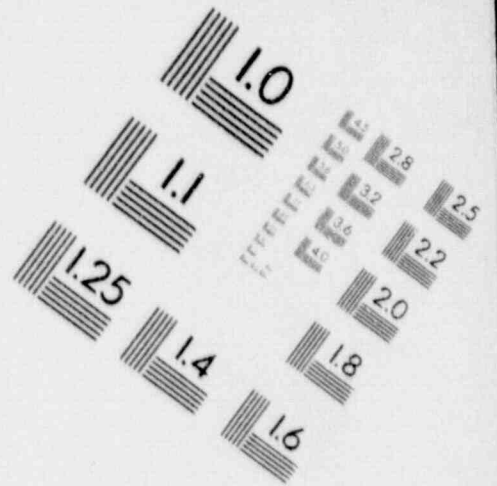
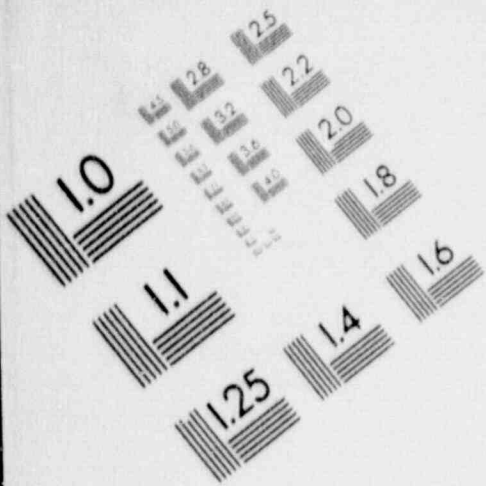
Operating & Emergency Procedures

Procedure for Shipment of Radioactive Materials

1. Remove 616 projector from radioactive material storage locker, survey projector, and place in shipping container provided by Tech/Ops. Include the Iridium 192 "Source Decay Chart", with the source before securing the lid and sealing the shipping bolt.
2. After securing the lid, survey the drum at the surface, and at three feet, and record the readings on the "Inventory and Transport Log".
3. If the radiation is 50 MR/hr. or less at the surface, and 1.0 MR/hr. or less at three feet, place two "Radioactive - Yellow II" labels (provided by Tech/Ops), on the outside of the shipping container. If the radiation exceeds these limits, place two "Radioactive - Yellow III" labels on the outside of the shipping container.
4. Complete the information on the Radioactive - Yellow II label. The transportation index is the MR/hr. reading at three feet from the container.
5. Apply address label to container, making sure the "Radioactive Material Special Form; n.o.s." label is legible. If not, apply a new label.
6. Notify the Warehouse Supervisor that we have a radioactive material shipment, so that he can make the shipping arrangements.
7. Supply the Warehouse Supervisor with a bill of lading - fill in the number of curies of IR 192, and the transport index.
8. Send the number one copy of the bill of lading to Amersham as notification of shipment. Keep one copy on file in the Inventory and Transport file.
9. Complete the Inventory and Transport Log, noting the carrier, and date of shipment.

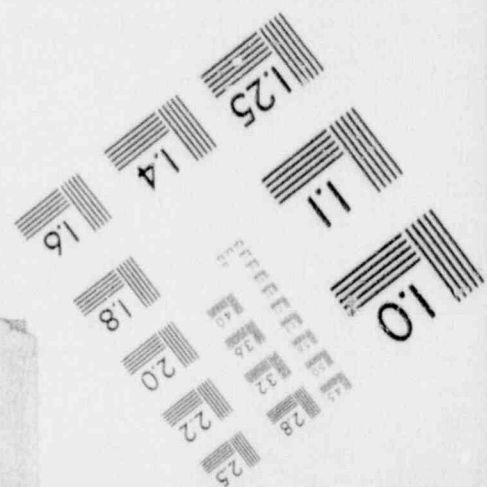
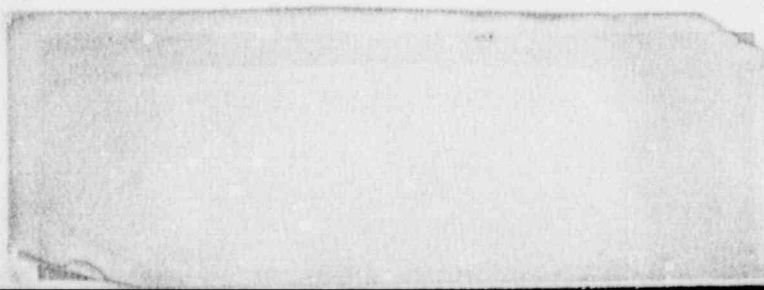
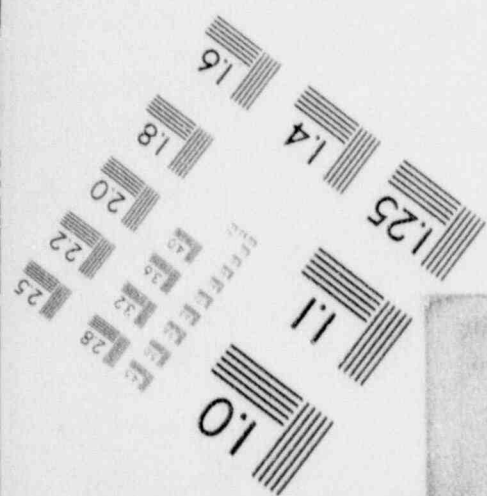
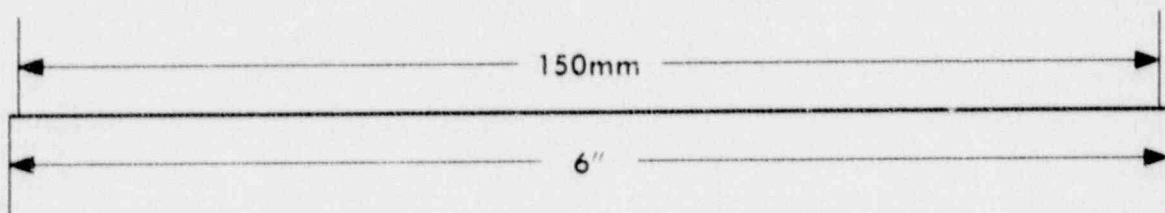
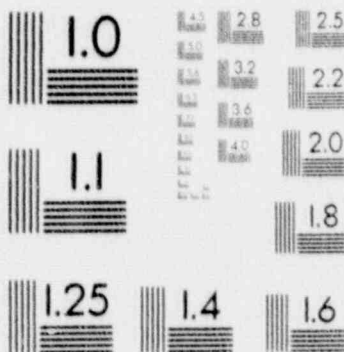
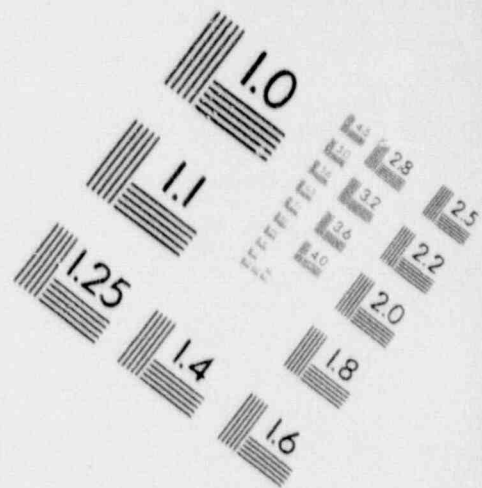
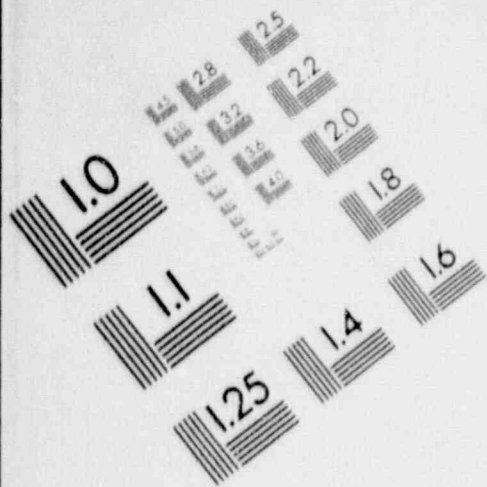
1

IMAGE EVALUATION TEST TARGET (MT-3)



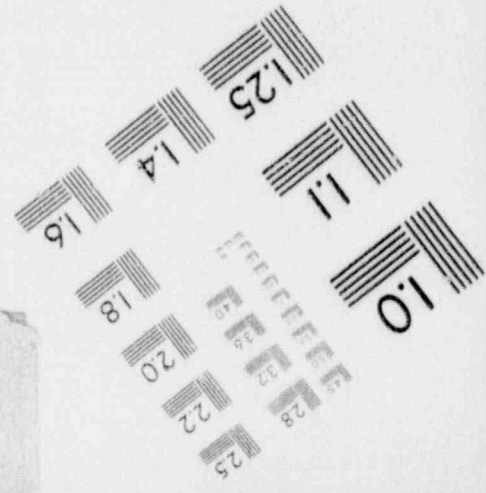
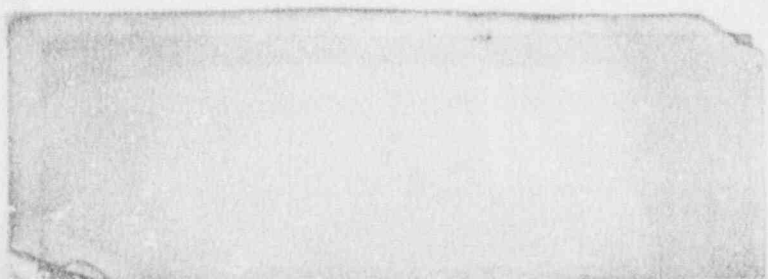
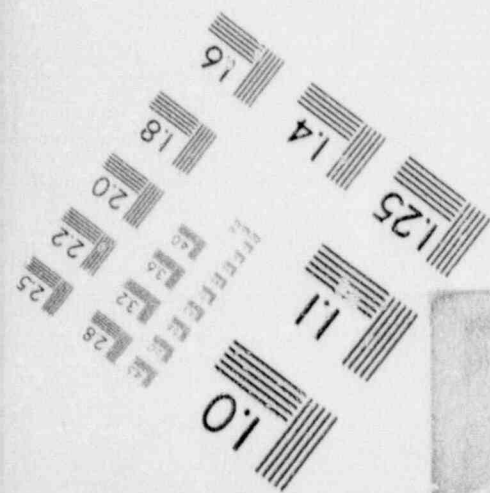
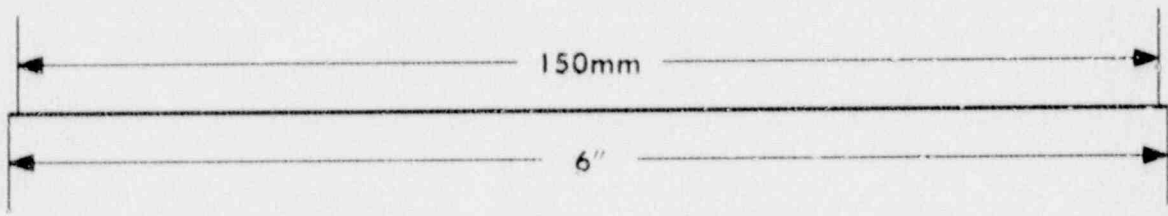
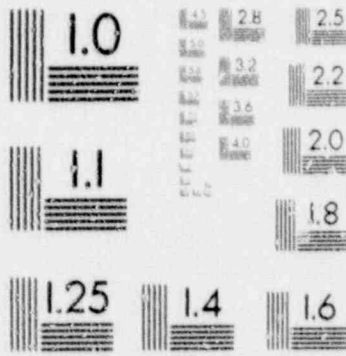
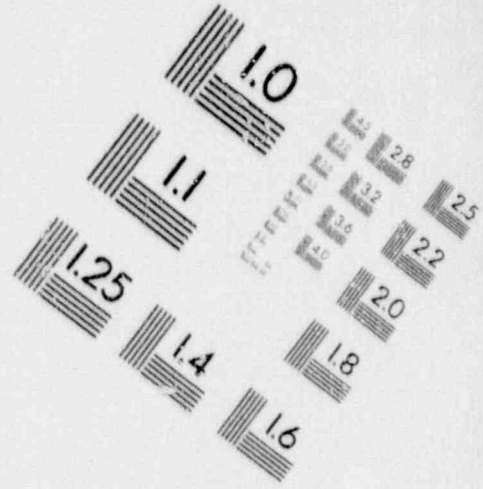
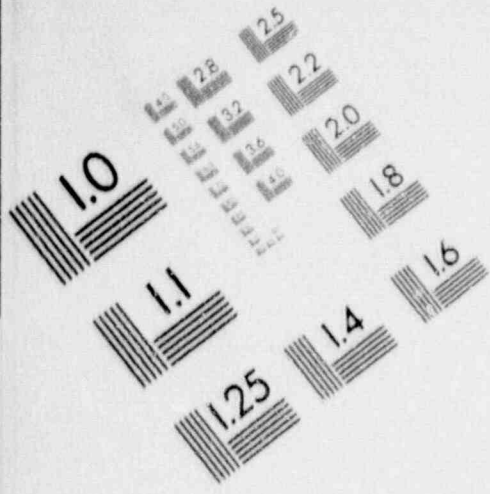
1

IMAGE EVALUATION TEST TARGET (MT-3)



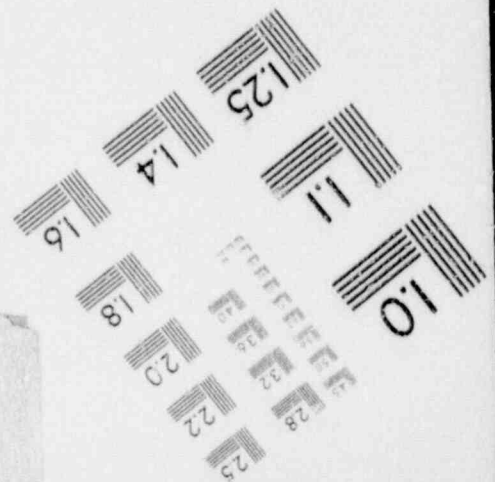
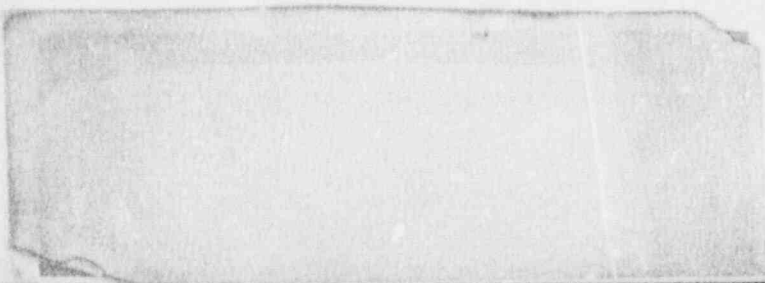
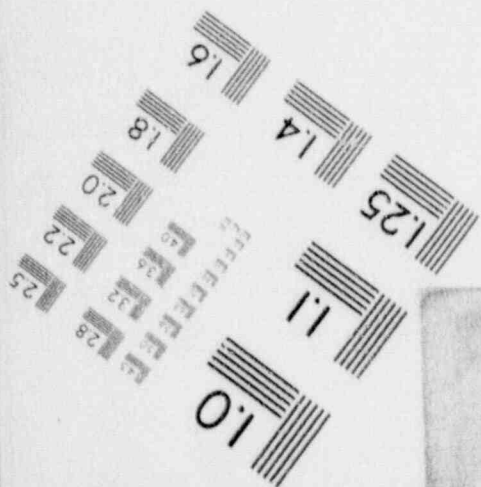
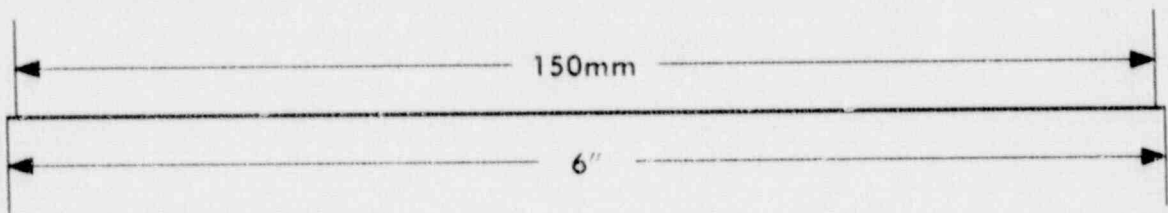
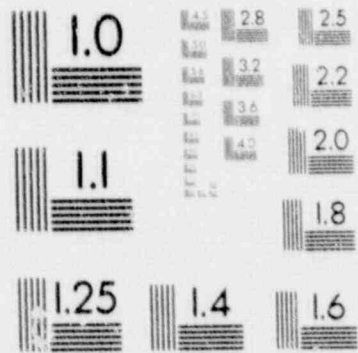
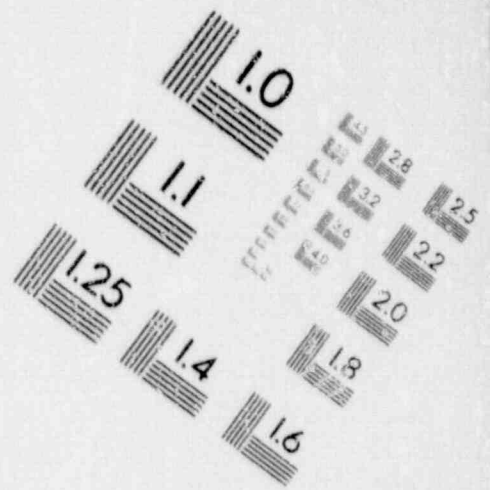
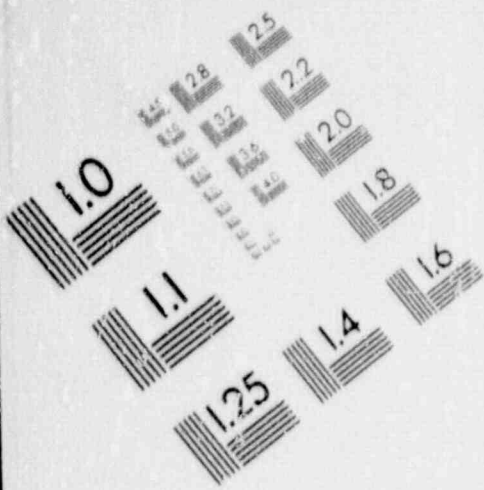
1

IMAGE EVALUATION TEST TARGET (MT-3)



1

IMAGE EVALUATION TEST TARGET (MT-3)



Operating and Emergency Procedures

Step-by-step Operating Instructions for Amersham Model 773
Instrument Calibration Device.

Personnel operating the 773 calibration device must use a calibrated and operable survey instrument and wear appropriate personnel monitoring devices.

1. Open the storage vault and survey the 773 calibration device to insure that the radiation level is normal.
2. Transport the calibration device to a suitable area where access can be restricted. Rope-off or block access to the area at the 2 mr/hr level (to minimize the effects of scatter radiation, the unit should be 16 feet from any wall in the direction of the primary beam). Post signs "Caution, Radiation Area" at the blocked area.
3. Turn on the survey meter and allow it to "warm up" for approximately 10 minutes.
4. Determine the activity of the source on the date of calibration from the decay chart.
5. Determine the distance from the source at which the radiation intensity would be 800 mr/hr.
6. 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.
7. Unlock the handle of the Model 773. Remove the shipping plate. Remove all the attenuators from the radiation beam.

Item 10.4.13

8. 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 $\pm 20\%$ of the actual intensity, continue checking the instrument. If the instrument reading is not within $\pm 20\%$ of the actual intensity, the instrument must be adjusted and recalibrated. CAUTION: Do not enter the area of the radiation beam while the source is exposed.
9. Place the 0.25 attenuator in the beam. Repeat step 6; the actual intensity is 200 mr/hr.
10. 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.
11. Place the 0.25 attenuator in the beam. Repeat step 6; the actual intensity is 20 mr/hr.
12. 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.
13. Place the 0.25 attenuator in the beam. Repeat step 6; the actual intensity is 2 mr/hr.
14. Install the shipping plate, lock the handle, return the calibration device to the vault and re-survey to insure that the radiation level is normal.

Leak Testing Procedures

The Radiation Safety Officer or Assistant R.S.O. at High Steel Structures shall take a wipe test of the exposure devices and the Model 773 Instrument Calibration Device every six months using Amersham leak test kit Model 518.

The Procedure to be used to perform the leak test on the gamma ray exposure devices is as follows:

1. Be sure source is fully retracted into projector. (Use a survey meter to be sure that radiation levels are normal).
2. Wet the swab with EDTA solution. Shake off excess and inset the swab into the hole in the shield. Wipe the beam port thoroughly with swab in the holder.
3. Withdraw swab and place in plastic envelope.
4. The swab should now be monitored by turning the survey meter to its most sensitive range. Place the meter in a low background area and move the swab in its plastic envelope to the meter, not the meter to the swab.
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 mailing box and mail to Amersham Corporation, Burlington, Mass.
BE SURE TO FILL OUT AND RETURN THE IDENTIFICATION SHEET.
6. If the swab should show more than 0.2 MR per hour, do not mail. Contact Amersham Corporation for specific instructions.

The assay of the wipe test will be performed by Amersham Corporation and a copy of the assay results must be retained in our files.

If the device is returned for a source change or for other reasons within the six months, the test will be performed by Amersham Corporation.

Item 10.5

The procedure to be used to perform the leak test on the Model 773 Instrument Calibration Device is as follows:

1. Place the Model 773 calibrator in a restricted area.
2. Remove the lock and rotate the handle from the top of the source rod. Remove the shipping cover.
3. Moisten the leak test swab with EDTA solution. Blot off the excess.
4. Wipe around the top of the source rod.
5. Standing away from the beam port, raise the source rod to the open position and wipe the exposed source rod thoroughly.
6. Place the leak test swab in the plastic envelope.
7. Set the survey meter on its most sensitive range and place the meter in a low background area. Move the swab, in its plastic envelope, to the meter, not the meter to the swab.
8. If the meter indication is less than 0.2 mr/hr above background, place the plastic envelope with the swab into the mailing box and mail to Amersham Corporation, Burlington, Massachusetts. BE SURE TO FILL OUT AND RETURN THE IDENTIFICATION SHEET.
9. If the swab should show more than 0.2 mr/hr. DO NOT MAIL. Contact Amersham Corporation for specific instructions.

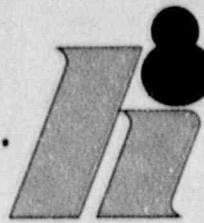
The assay of the wipe test will be performed by Amersham Corporation and a copy of the assay results must be retained in our files.

Item 11

Waste Management

Source changes and disposal will be performed by our supplier
Amersham Corporation.

HIGH STEEL STRUCTURES, INC.



1905 Old Philadelphia Pike
P. O. Box 1526
Lancaster, Pennsylvania 17603
Phone 717/299-5211

A Subsidiary of High Industries, Inc.

TO: U.S. Nuclear Regulatory Commission
ADDRESS Region 1, Nuclear Material Section B
631 Park Avenue
King of Prussia, PA 19406

Date June 17, 1988
Subject Byproduct Material
License 37-17534-01
Location Renewal Application
Cont. No. _____

Gentlemen:

We are sending herewith:

Dwg. No.	No. of Copies	REMARKS	
		<p>two (2) copies of our Byproduct (radioisotopes) material license renewal application for review.</p> <p>Please address your response to:</p> <p>High Steel Structures, Inc. P. O. Box 1526 Lancaster, Pennsylvania 17603 Attention: Mr. Jere D. Long Assistant Radiation Safety Officer</p>	

Very truly yours,

HIGH STEEL STRUCTURES, INC.

Per Jere D. Long

Jere D. Long
Assistant Radiation Safety Officer

109120

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

: PROGRAM CODE: 03310
: STATUS CODE: 2
: FEE CATEGORY: 30
: EXP. DATE: 19880731
: FEE COMMENTS: -----
:.....

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED

APPLICANT/LICENSEE: HIGH STEEL STRUCTURES, INC.
RECEIVED DATE: 880623
DOCKET NO: 3012926
CONTROL NO.: 109126
LICENSE NO.: 37-17534-01
ACTION TYPE: RENEWAL

2. FEE ATTACHED

AMOUNT: 700.00
CHECK NO.: 267088

3. COMMENTS

SIGNED BP
DATE 6/30/88

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED 1-7)

1. FEE CATEGORY AND AMOUNT: 30 \$700

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
AMENDMENT -----
RENEWAL
LICENSE -----

3. OTHER -----

SIGNED S. Kimberley
DATE 7/7/88