

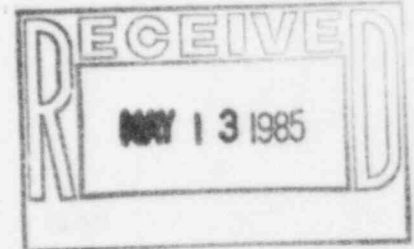
PANHANDLE EASTERN PIPE LINE COMPANY

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OVERLAND PARK, KANSAS 66212
(913) 341-1400

MAILING ADDRESS:
P. O. BOX 12330
OVERLAND PARK, KANS. 66212

May 8, 1985

United States Nuclear Regulatory Commission - Region IV
Attn: C. L. Cain, Nuclear Materials Safety Section
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011



RE: NMSS:DBS
Mail Control No. 17663

Dear Sirs:

Enclosed please find the revisions and additional information requested in your letter dated April 16, 1985 as outlined below.

PANHANDLE EASTERN PIPE LINE COMPANY O&E PROCEDURES

Page	Revision
8	Section 3.0 revised to include - "Note: Any source disposal is to be handled by the vendor in accordance with the vendor's NRC Materials License." (Per paragraph 6. of your letter.)
10	Section 7.1 revised to include additional instructions for calibrating survey instruments - "and shall also be calibrated immediately following servicing or repair." (Per paragraph 2. of your letter.)
11	Section 8.3 revised to include placards for the storage compartment of the truck where sealed sources are stored - "and bears the radiation sign magenta on yellow background 'CAUTION RADIOACTIVE MATERIALS'". (Per paragraph 5. of your letter.)
12	Section 9.1 revised to correct placards on transporting vehicle - "placards on four (4) sides with three inch (3") high black letters on yellow background stating 'RADIOACTIVE'". (Per paragraph 5. of your letter.) Section 10.1 revised to include dosimeter readings at the beginning of the work day - "Dosimeter readings shall be recorded at the beginning and the end of each work day." (Per paragraph 4. of your letter.)
13	Section 12.1 revised to update K. F. L. Dohrman's office telephone number from 913/341-1400 to 913/451-1900.

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PANHANDLE EASTERN PIPE LINE COMPANY O&E PROCEDURES - Cont'd

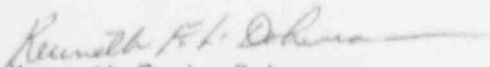
<u>Page</u>	<u>Revision</u>
18	Section 16.4 revised to include "Note: Any source disposal is to be handled by the vendor in accordance with the vendor's NRC Materials License." (Per paragraph 6. of your letter.) Section 16.5 revised to include the retention period for calibration records - "retained in file for a minimum of 2 years." (Per paragraph 2. of your letter.)
20	Section 19.1 revised to specify periodic inspections will be conducted "for each Radiographer and Radiographer's Assistant" and "If a Radiographer or Radiographer's Assistant has not performed radiography for a period that exceeds 3 months, the inspection shall be carried out the first time that person engages in radiographic operations." (Per paragraph 3. of your letter.)

O&E PROCEDURES - RADIOGRAPHER TRAINING PROGRAM

<u>Page</u>	<u>Revisions (Per paragraph 1. of your letter)</u>
1	Added paragraph specifying who will conduct the training program. Under <u>INITIAL TRAINING</u> , first paragraph, added - "These training programs will include approximately 40 hours of 'Fundamentals of Radiation Safety'".
2-3	Page format changed to accommodate additions on page 1.
4	Under <u>ON-THE-JOB TRAINING</u> , paragraph A. revised for personnel with no prior experience "will require on-the-job training under the supervision of a Radiographer for a minimum of 3 months (520 hours) as a Radiographer's Assistant".
6-12	Added section RADIOGRAPHER TRAINING PROGRAM PERSONNEL as referenced in the introductory paragraph on page 1. This section lists the qualified personnel to conduct training in the Radiographer Training Program and outlines each person's qualifications.

Hopefully, these revisions will bring out application up-to-date. Please advise if you require any additional information.

Yours truly,


Kenneth F. L. Dohrman
Radiation Safety Officer
Transmission Department

KFLD:TMM:11j:5550T/0325t

Enclosure: As stated

3.0 CHANGING SOURCES

- 3.1 Source changing for the Gamma Industries Model "Gamma Century" will be accomplished by the use of Gamma Industries Model C-4 or Model C-10 Source Changer. Manufacturer's instructions will be followed. See source changing instructions for C-4 shipping container and source changing instructions for C-10 shipping container attached as a part of this Operating and Emergency Procedure. (EXHIBIT C and EXHIBIT D)
- 3.2 Source changing or replacement for the Technical Operations Exposure Device Model 660, Iridium 192 will be accomplished by using the Technical Operations Source Changer Model 414 or 650. Instructions contained in the Operations Manual for this unit will be followed. See Operations Manual for Model 414 Source Changer and Operating Instructions for Source Changer Model 650 attached as a part of this Operating and Emergency Procedure. (EXHIBIT A and EXHIBIT B)
- 3.3 Source changing or replacement for the Technical Operations Exposure Device Model 900, Iridium 192 will be accomplished by using the Technical Operations Source Changer Model 850. Instructions contained in the Operations Manual for this unit will be followed. See Operating Instructions for Source Changer Model 850 attached as part of this Operating and Emergency Procedure. (EXHIBIT S)

NOTE: Any source disposal is to be handled by the vendor in accordance with the vendor's NRC Materials License.

4.0 SHIPPING INSTRUCTIONS

- 4.1 Use only Gamma Industries Model C-4 or Model C-10 Source Changers when returning old source which was used in a Gamma Century exposure device to Gamma Industries, Inc.
- 4.2 Use only Technical Operations Model 414 or Model 650 Source Changers when returning old source which was used in Technical Operations Model 660 exposure device to Technical Operations, Inc.
- 4.3 Use only Technical Operations Model 850 Source Changer when returning old source which was used in Technical Operations Model 900 exposure device to Technical Operations, Inc.
- 4.4 The step-by-step instructions issued by the manufacturer of the container must be followed in detail and in the sequence presented. These step-by-step instructions are included as a part of this Operating and Emergency Procedure.
- 4.5 Check to confirm that source is securely locked in the fully shielded position by carefully performed and recorded radiation surveys. These surveys shall be taken at the surface of the shipping container and at one (1) meter and recorded on the Shipper's Certification for Radioactive Materials. (EXHIBIT E)

6.0 INSPECTION AND MAINTENANCE PROCEDURE - Cont'd

Maintenance

- (a) Perform complete inspection and maintenance each three (3) months according to manufacturer's procedures. For Gamma Century exposure device, use Gamma Industries Inspection and Maintenance Procedure. (EXHIBIT H)
- (b) Perform complete inspection and maintenance each three (3) months according to manufacturer's procedures. For Technical Operations Model 900 exposure device, follow Section VII "Maintenance" located in Instruction Manual. (EXHIBIT R)
- (c) Perform complete inspection and maintenance each three (3) months according to manufacturer's procedures. For Technical Operations Model 660 exposure device, use Inspection and Maintenance Procedure No. 71-129. (EXHIBIT F)
- (d) Report inspection on "Description of Inspection and Maintenance" forms. (EXHIBIT I)

7.0 RADIATION SURVEY INSTRUMENTS AND METHODS

- 7.1 A calibrated and operable radiation survey instrument must be used by Radiographer to make the necessary physical radiation surveys. Each instrument shall be calibrated at intervals not to exceed three (3) months and shall also be calibrated immediately following servicing or repair. These instruments shall have a range to measure two (2) milliroentgens per hour through one (1) roentgen per hour.
- 7.2 No testing operation shall be conducted unless a calibrated and operable survey instrument is available and used at each site where radiographic exposures are made. Survey instrument must have been calibrated within the last three (3) months.
- 7.3 Each vehicle shall be equipped with a minimum of one (1) radiation survey instrument that has been calibrated and certified in the past three (3) months. Description of radiation detection instruments:
 - Victoreen Model 592-B
 - Eberline Model E510G or E120G SKI
 - Victoreen Radactor Model 500G
 - Eberline Model E130G SKI or equivalent
- 7.4 Instrument calibration will be done by one of the following:
 - Panhandle Eastern Pipe Line Company (EXHIBIT O)
 - Victoreen Instrument Corporation, Cleveland, Ohio
 - Eberline Instrument Corporation, Santa Fe, New Mexico
 - Technical Operations, Radiation Products, Burlington, Mass.

7.0 RADIATION SURVEY INSTRUMENTS AND METHODS - Cont'd

- 7.5 A physical radiation survey shall be made after each radiographic exposure during a testing operation to determine that the sealed source has been returned to its safe, shielded position.
- 7.6 Before locking the radiographic exposure device, make a physical radiation survey to determine that each sealed source is in its shielded position. Keep a record of this survey and maintain it for inspection by the Nuclear Regulatory Commission. (EXHIBIT J)
- 7.7 Each exposure set-up must be roped off (where applicable), barricaded, and posted with four (4) "CAUTION RADIATION AREA" signs designating the radiation area. The high radiation area will be posted at the perimeter with "CAUTION HIGH RADIATION AREA" signs. The use of the survey meter will determine the radiation area to be barricaded and the high radiation area shall be determined by calculations 100 mr/hr level. This is to avoid unnecessary exposure to the Radiographer. Restrict the radiation at the perimeter of the radiation area to 2 mr/hr or less and the high radiation area to 100 mr/hr. The Radiographer in charge must remain in a position to permit continuous surveillance of the radiation area. He will be prepared to secure source if anyone attempts to enter the radiation area.

8.0 SECURITY OF SOURCES IN STORAGE AND TRANSPORT TO FIELD LOCATIONS

- 8.1 The Gamma Century, the Technical Operations Model 660 and the Technical Operations Model 900 exposure devices shall have no radiation level in excess of 50 mr/hr at six inches (6") from any exterior surface of the device. Source Changers Technical Operations Model 414, Model 650 and Model 850, and Gamma Industries Model C-4 and Model C-10 shall have no radiation level in excess of 200 mr/hr at any exterior surface and shall not exceed 10 mr/hr at one meter from any exterior surface.
- 8.2 Each radiographic exposure device and storage container shall be provided with a lock or outer container designed to prevent unauthorized or accidental removal or exposure of a sealed source. They shall be kept in a locked condition at all times except when in use and under surveillance of a Radiographer or Radiographer's Assistant.
- 8.3 When the radiographic exposure device is not in use, the radiographer shall lock the storage container, in which sealed sources are stored, in the compartment on the truck which is designed for this purpose and bears the radiation sign magenta on yellow background "CAUTION RADIOACTIVE MATERIALS". Secure the compartment from entry by unauthorized personnel by locking. The storage compartment shall be locked at all times except when attended.

8.0 SECURITY OF SOURCES IN STORAGE AND TRANSPORTED TO FIELD LOCATIONS -
Cont'd

8.4 Before leaving the vehicle, Radiographer in charge will:

- (a) Lock the exposure device.
- (b) Lock the exposure device in the truck compartment.
- (c) Lock the vehicle in which the device is stored.

9.0 TRANSPORTING SEALED SOURCES

- 9.1 When an exposure unit containing a source is transported to a field location, it must be securely fastened in the transporting vehicle as far from the driver as possible. The transporting vehicle must bear placards on four (4) sides with three inch (3") high black letters on yellow background stating "RADIOACTIVE". (EXHIBIT K)
- 9.2 Add additional shielding, when necessary, to restrict the radiation level reaching the driver of the vehicle to less than one (1) mr/hr and to restrict the level of radiation emanating from any portion of the vehicle to less than two (2) mr/hr. These levels of radiation shall be determined by careful surveys and reading recorded on the daily report. (EXHIBIT J)

10.0 PERSONNEL MONITORING EQUIPMENT

- 10.1 Each Radiographer or Radiographer's Assistant shall wear a film badge and a pocket dosimeter. The pocket dosimeter must be capable of measuring doses from zero to at least 200 milliroentgens. A film badge and dosimeter shall be assigned to and worn by only one (1) person. Pocket dosimeters shall be recharged before each work day. Dosimeter reading shall be recorded at the beginning and the end of each work day. Pocket dosimeters must be read frequently throughout the working day so the Radiographer or Radiographer's Assistant will be aware of the radiation dose he is receiving. Radiographers and Radiographer's Assistants must keep assigned dosimeter and film badge in their possession to avoid theft, tampering, or exposure by other Radiographers. The film badge shall be returned for processing each month.
- 10.2 If at any time the Radiographer or Radiographer's Assistant finds that his pocket dosimeter has gone off scale, the individual shall immediately shut down operation of the work site, clear the area, secure equipment, and immediately notify the Radiation Safety Officer. At such time, the individual's film badge shall be processed immediately.
- 10.3 Dosimeter calibration will be done by one of the following:
- Panhandle Eastern Pipe Line Company (EXHIBIT N)
 - Victoreen Instrument Corporation, Cleveland, Ohio
 - Eberline Instrument Corporation, Santa Fe, New Mexico
 - Technical Operations, Radiation Products, Burlington, Mass.

10.0 PERSONNEL MONITORING EQUIPMENT - Cont'd

10.4 Film badges will be supplied and processed monthly by:

R. S. Landauer Jr. & Co.
Science Road
Glenwood, Illinois 60425

10.5 Each Radiographer will wear a pocket dosimeter and film badge. Daily records will be kept of the dosimeter readings and film badges will be processed monthly. Pocket dosimeters will be supplied by either:

Victoreen Instrument Corporation
Model 541A pocket dosimeter

Bendix Corporation
Model 06-862 pocket chamber

Landsverk Electro Mater Company
Model U-750

11.0 EMERGENCY PROCEDURES

- 11.1 In case of a road accident involving a vehicle, or any type of accident containing byproduct material, the radiographer must immediately conduct a radiation survey to determine if the source container or exposure device has been damaged. If damage has occurred, the same precautions used for a temporary exposure area must be put into effect; i.e., barrier ropes, signs, and continuous surveillance until a safe recovery can be affected. The Radiographer must remain at the scene of the restricted area after all precautions have been set up.
- 11.2 In the event the Radiographer is injured in such an accident and is unable to physically perform the required surveys and area restrictions, he should assist the civil authorities by direction, if possible.

12.0 NOTIFICATION OF ACCIDENTS

- 12.1 The Radiographer, his Assistant, or whomever may be available shall report to K. F. L. Dohrman or S. R. Griffin, as soon as possible by telephone. Mr. Dohrman will notify the cognizant authorities, and if practical, effect the safe return of the byproduct material to a suitable vault or shield.

K. F. L. Dohrman - Office: 913/451-1900 Overland Park, Kansas
- Home: 913/782-3544 Olathe, Kansas

S. R. Griffin - Office: 316/624-7241 Liberal, Kansas
- Home: 316/624-5446 Liberal, Kansas

16.0 CALIBRATION OF SURVEY METERS Cont'd

16.4 Procedure to Calibrate and Use - Cont'd

- (g) Place the 0.25 attenuator in the radiation beam. Repeat Step (f). The actual intensity is 200 mr/hr.
- (h) Remove the 0.25 attenuator from the radiation beam and place a 0.10 attenuator in the radiation beam. Repeat Step (f). The actual intensity is 80 mr/hr.
- (i) Place the 0.25 attenuator in the radiation beam. Repeat Step (f). The actual intensity is 20 mr/hr.
- (j) Remove the 0.25 attenuator from the radiation beam and place the other 0.10 attenuator in the radiation beam. Repeat Step (f). The actual intensity is 8 mr/hr.
- (k) Place the 0.25 attenuator in the radiation beam. Repeat Step (f). The actual intensity is 2 mr/hr.

At the end of calibration operation, use survey meter to insure that source rod is in place. Replace the lock on handle and secure. Remove key.

Calibration Unit will be returned to the vendor for source replacement in accordance with manufacturer's instructions.

NOTE: Any source disposal is to be handled by the vendor in accordance with the vendor's NRC Materials License.

16.5 Records

After each instrument has been calibrated or serviced, a record will be filled out and retained in file for a minimum of two (2) years (EXHIBIT O). A decal shall be placed on instrument indicating the calibration date and calibration due date.

Each qualifying Radiographer will be responsible for performing the function of calibrating instruments.

16.6 Procedure for Leak Testing

The Tech/Ops Model 773 Meter Calibration Kit contains a Cesium¹³⁷ source which must be leak tested at intervals not to exceed six (6) months. This may be accomplished using the Tech/Ops Model 518 Leak Test Kit or Tracer Lab Model LT-2.

- (a) Place the Model 773 calibrator in a restricted area.
- (b) Remove the lock and rotate the handle from the top of the source rod. Remove the shipping cover.
- (c) Moisten leak test seal with EDTA solution. Blot off excess.
- (d) Wipe around the top of the source rod.

18.0 PERMISSIBLE DOSE LEVELS

- 18.1 Limits on radiation dosage per calendar quarter (13 week period)
- (a) Whole body, head and trunk, active blood forming organs, lens of the eyes, or gonads ----- 1.25 roentgens
 - (b) Hands and forearms, feet and ankles -- 18.75 roentgens
 - (c) Skin of the whole body ----- 7.50 roentgens
- 18.2 Radiographers will receive no more than 1.25 roentgens whole body dosage per calendar quarter.
- 18.3 Company considers all radiation dosage to be whole body.

19.0 INTERNAL INSPECTION SYSTEM OR OTHER MANAGEMENT CONTROL

- 19.1 Periodic inspections will be conducted for each Radiographer and Radiographer's Assistant by K. F. L. Dohrman, Radiation Safety Officer, and in his absence, by S. R. Griffin, Assistant Radiation Safety Officer. These inspections will be quarterly and unannounced. If a Radiographer or Radiographer's Assistant has not performed radiography for a period that exceeds three (3) months, the inspection shall be carried out the first time that person engages in radiographic operations. Inspections will cover the following:
- (a) The actual operations
 - (b) Inspecting Radiographers and Radiographer's Assistants to see if they are following the guidelines set forth in the Operating and Emergency Procedures
 - (c) Auditing all procedures of receiving and shipping of sources
 - (d) Auditing and inspecting quarterly maintenance
 - (e) Inspections and inventory of sources and equipment
 - (f) Maintaining and reviewing the utilization logs, personnel monitoring results and surveys
- 19.2 The Radiation Safety Officer will assume control in instituting corrective action of all Radiographers and Assistant Radiographers as set forth in all phases of the Operating and Emergency Procedures and U. S. N. R. C. License.
- 19.3 The Radiation Safety Officer will maintain and keep all records pertaining to the Nuclear Regulatory Commission Licenses.

Attached is the list of Management Personnel who may at any time audit or inspect all the files and records kept and maintained by the Radiation Safety Officer. This shall be done on an annual basis.

RADIOGRAPHER TRAINING PROGRAM

The Radiographer Training Program will be conducted by qualified personnel. See the attached Radiographer Training Program Personnel for a list of personnel and their qualifications.

INITIAL TRAINING

Initial training for Radiographers and Radiographer's Assistants will be accomplished by using the services of Technical Operations, Incorporated, Radiation Products Division, Burlington, Massachusetts, Diano Corporation NDT Products Division, Cleveland, Ohio, or Gamma Industries, Incorporated. These training programs will include approximately 40 hours in "Fundamentals of Radiation Safety".

In addition to the training by the above, each Radiographer and Radiographer's Assistant will be given training in the following:

I. Radiation Detection Instrumentation To Be Used - 3 Hours

A. Use of survey instruments

1. Operation

- a. Units of Measurements and Definitions
- b. Dose Rate Measurements
- c. Geiger Counters

2. Calibration

- a. Internal
- b. Records

3. Limitations

- a. Range

4. Characteristics

B. Survey Techniques

1. Establishing Safe Working Distances

- a. Exposure Limits
- b. Radiation Area
- c. High Radiation Area

2. Checking Exposure Device

- a. Source in shielded position
- b. Return of source to shielded position in exposure device
- c. Check where source has been, to assure it has returned to the shielded position in exposure device.

C. Use of Personnel Monitoring Equipment

1. Film Badge

- a. Use and Assignment
- b. Replacement
- c. Wearing
- d. Processing
- e. Care

2. Pocket Dosimeters

- a. Use and Assignment
- b. Calibration
- c. Recording of Reading
- d. Range
- e. Action to be taken if Dosimeter goes off scale.
- f. Care

II. Radiographic Equipment To Be Used - 4 Hours

A. Radiographic Exposure Devices

1. Design

2. Functions and Components

- a. Source Guide Tube and Fittings
- b. Storage Containers
- c. Capsule and Pigtail
- d. Retainer and Lock
- e. Flexible Cable, Housing and Fittings
- f. Pigtail and Cable Connections
- g. Gear and Housing

3. Preventative Maintenance

- a. Daily Inspection
- b. Three Month Inspection and Maintenance
(EXHIBIT F, EXHIBIT H and EXHIBIT R of Operating and
Emergency Procedures)
- c. Records of Maintenance
(EXHIBIT I of Operating and Emergency Procedures)

4. Malfunctions

5. Operations

B. Storage Containers

1. Design

2. Operating Procedures to Exchange Sources Between Exposure Device and Shipping Container

INITIAL TRAINING - Cont'd

II. Radiographic Equipment To Be Used - 4 Hours - Cont'd

3. Preparation, Packaging, Surveying, Recording, and Shipping of Sources.
 - a. Shipping containers authorized by license
 - b. Step-by-step instructions issued by the manufacturer of the container
 - c. Source security and locking
 - d. Shielded position and recording of surveys to assure source is locked in shielded position
 - e. Permissible levels of radiation at surface of container and at one (1) meter
 - f. Labeling, Certification, and Shipping

III. Calibration Equipment - 4 Hours

- A. Design
 1. Dosimeters
 2. Survey Meters
- B. Use
 1. Operation
 2. Procedure
- C. Maintenance
 1. Leak Testing
- D. Storage
 1. Labeling
 2. Security

IV. The Requirements of Pertinent Federal Regulations - 3 Hours

- A. Rules and Regulations
 1. Parts 19, 20, 30, and 34 of Title 10

V. The Licensee's NRC License - 2 Hours

VI. The Licensee's Operating and Emergency Procedures - 4 Hours

VII. Oral Review - 4 Hours

VIII. Operational Competance Tests - 4 Hours

IX. Written Test - 3 Hours

After satisfactory completion of the Written and Operational Competance Tests, the candidate will be designated as Radiographer's Assistant.

ON-THE-JOB TRAINING

After all newly hired radiographic personnel have received the initial training, they will be assigned to work as a Radiographer's Assistant under the direct supervision of the Radiographer. The minimum duration of On-The-Job Training and Evaluation will be as follows:

- A. Personnel with no prior experience will require on-the-job training under the supervision of a Radiographer for a minimum of 3 months (520 hours) as a Radiographer's Assistant.
- B. Personnel with prior experience shall work as a Radiographer's Assistant for a minimum of five calendar days and shall correctly perform 50 radioactive exposures.
- C. After the above On-The-Job Training has been completed, a performance test will be given by the Radiation Safety Officer or the Assistant Radiation Safety Officer which will include all facets of performance that is required of a radiographer. This will include:
 1. Setting up exposure equipment
 2. Proper survey of exposure equipment
 3. Establishing and posting of radiation area and high radiation area
 4. Surveys of exposure equipment and recording of readings
 5. Proper use of film badge, dosimeter, and survey meters
 6. Security of exposure device on transporting vehicle, survey at driver's location and exterior of vehicle, and levels of these readings and proper recording of same.
 7. Changing sources, requirements for return of sources, labeling, shipping certification, and recording of readings at surface of shipping container and at one (1) meter
 8. Placarding of transporting vehicle
 9. Quarterly maintenance of equipment
 10. Complete review of Company's NRC Byproduct Materials License, Operating and Emergency Procedures, Parts 19, 20, 30, and 34 of Title 10.

A minimum of forty (40) questions on the above will also be given. See attached questions and answers.

RADIOGRAPHER TRAINING PROGRAM PERSONNEL

The following is a list of personnel who are qualified to conduct training in the Radiographer Training Program.

- K. F. L. Dohrman - Radiation Safety Officer
- S. R. Griffin - Assistant Radiation Safety Officer
- C. W. Butler - Radiographer
- L. K. Daugherty - Radiographer
- T. E. Smith - Radiographer
- W. F. Williamson - Radiographer

The following pages list each person's qualifications.

K. F. L. DOHRMAN
QUALIFICATIONS FOR RADIOGRAPHER TRAINING PROGRAM

TRAINING COURSES ATTENDED

<u>Date</u>	<u>Instructor/Location</u>	<u>Subject</u>
March 22, 1971	Conam Inspection, Inc. Kansas City, Missouri	Radiography
May 5, 1972	Picker Corporation Cleveland, Ohio	Isotopes for Industrial Radiography
October 25, 1974	Technical Operations, Inc. Burlington, Massachusetts	The Safe Use of Isotopes in Industrial Radiography
July, 1978	ASNT Educational Council Norwich, Connecticut	Training the NDT Trainer
September 15, 1978	Technical Operations, Inc. Burlington, Massachusetts	Radiation Safety Aspects of Isotope Radiography
October 14, 1982	Technical Operations, Inc. Burlington, Massachusetts	Administration of Isotope Radiography Safety Programs

Additional training in the actual performance of radiography was provided by Picker Corporation, Industrial and Scientific Apparatus Division, Cleveland, Ohio in May, 1972.

ADDITIONAL QUALIFICATIONS

June, 1972 to March, 1979, Mr. Dohrman performed all of the duties of a Radiographer.

September, 1974 to August, 1977, Mr. Dohrman performed all the duties of the Assistant Radiation Safety Officer and the duties of the Radiation Safety Officer in his absence as directed by the Radiation Safety Officer; also met Level III requirement for NDT testing in accordance with SNT-TC-1A.

August, 1977 to present, Mr. Dohrman has performed all of the duties of the Radiation Safety Officer.

Mr. Dohrman conducted the Annual Radiographer Refresher Training as outlined in the Panhandle Eastern Pipe Line Company Operating & Emergency Procedures for Handling of Byproduct Material during the weeks of October 17, 1977, October 10, 1978, October 15, 1979, October 20, 1980, September 28, 1981, September 27, 1982, September 26, 1983 and October 1, 1984.

S. R. GRIFFIN
QUALIFICATIONS FOR RADIOGRAPHER TRAINING PROGRAM

TRAINING COURSES ATTENDED

<u>Date</u>	<u>Instructor/Location</u>	<u>Subject</u>
December 2, 1977	K. F. L. Dohrman Liberal, Kansas	Explanation of the use of film badges, dosimeters and survey meters.
March 17, 1978	DuPont Cronex NDT Houston, Texas	Radiographer, NDT Level II
September 15, 1978	Technical Operations, Inc. Burlington, Massachusetts	Radiation Aspects of Isotope Radiography
October 10, 1978	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
October 15, 1979	K. F. L. Dohrman Overland Park, Kansas	Annual Radiography Refresher Training
October 20, 1980	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
September 28, 1981	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
September 27, 1982	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
October 14, 1982	Technical Operations, Inc. Burlington, Massachusetts	Administration of Isotope Radiography Safety Program
September 26, 1983	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
October 1, 1984	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training

Additional training in the actual performance of radiography was provided by R. W. Coen, Assistant Radiation Safety Officer.

ADDITIONAL QUALIFICATIONS

October, 1978 to present, Mr. Griffin has performed all of the duties of a Radiographer.

August, 1981 to present, Mr. Griffin has performed all of the duties of the Assistant Radiation Safety Officer and the duties of the Radiation Safety Officer in his absence as directed by the Radiation Safety Officer.

C. W. BUTLER
QUALIFICATIONS FOR RADIOGRAPHER TRAINING PROGRAM

TRAINING COURSES ATTENDED

<u>Date</u>	<u>Instructor/Location</u>	<u>Subject</u>
March 22, 1971	Conam Inspection, Inc. Kansas City, Missouri	Radiography
September 14, 1979	Technical Operations, Inc. Burlington, Massachusetts	Radiation Safety Aspects of Isotope Radiography
October 15, 1979	K. F. L. Dohrman Overland Park, Kansas	Annual Radiography Refresher Training
May 16, 1980	DuPont Cronex NDT Houston, Texas	Radiographer, NDT Level II
October 20, 1980	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
September 28, 1981	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
November 16, 1981	Battelle, Columbus Laboratories Columbus, Ohio	Pipeline Welding & Inspection Seminar
September 27, 1982	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
September 26, 1983	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
October 1, 1984	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training

Additional training in the actual performance of radiography was provided by S. R. Griffin-Radiographer, R. W. Coen-Assistant Radiation Safety Officer and K. F. L. Dohrman-Radiation Safety Officer.

ADDITIONAL QUALIFICATIONS

November, 1979 to present, Mr. Butler has performed all of the duties of a Radiographer.

L. K. DAUGHERTY
QUALIFICATIONS FOR RADIOGRAPHER TRAINING PROGRAM

TRAINING COURSES ATTENDED

<u>Date</u>	<u>Instructor/Location</u>	<u>Subject</u>
March 3, 1981	C. W. Butler Alva, Oklahoma	Safe handling and use of radioactive material
July 17, 1981	Technical Operations, Inc. Burlington, Massachusetts	Radiation Safety Aspects of Isotope Radiography
September 28, 1981	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
April 16, 1982	DuPont Cronex NDT Houston, Texas	Radiographer, NDT Level II
September 27, 1982	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
September 26, 1983	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
October 1, 1984	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training

Additional training in the actual performance of radiography was provided by C. W. Butler, Radiographer and K. F. L. Dohrman, Radiation Safety Officer.

ADDITIONAL QUALIFICATIONS

August, 1981 to present, Mr. Daugherty has performed all of the duties of a Radiographer.

T. E. SMITH
QUALIFICATIONS FOR RADIOGRAPHER TRAINING PROGRAM

TRAINING COURSES ATTENDED

<u>Date</u>	<u>Instructor/Location</u>	<u>Subject</u>
April 18, 1975	DuPont Cronex NDT Wilmington, Delaware	Radiographer, NDT Level II
October 17, 1977	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
October 10, 1978	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
September 14, 1979	Technical Operations, Inc. Burlington, Massachusetts	Radiation Safety Aspects of Isotope Radiography
October 15, 1979	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
October 20, 1980	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
September 28, 1981	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
September 27, 1982	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
September 26, 1983	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
October 1, 1984	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training

Additional training in the actual performance of radiography was provided by R. W. Coen, Assistant Radiation Safety Officer.

ADDITIONAL QUALIFICATIONS

December, 1979 to present, Mr. Smith has performed all of the duties of a Radiographer.

W. F. WILLIAMSON
QUALIFICATIONS FOR RADIOGRAPHER TRAINING PROGRAM

TRAINING COURSES ATTENDED

<u>Date</u>	<u>Instructor/location</u>	<u>Subject</u>
July 17, 1981	Technical Operations, Inc. Burlington, Massachusetts	Radiation Safety Aspects of Isotope Radiography
September 28, 1981	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
March 1, 1982	Battelle, Columbus Laboratories Columbus, Ohio	Pipeline Welding & Inspection Seminar
April 16, 1982	DuPont Cronex NDT Houston, Texas	Radiographer, NDT Level II
September 27, 1982	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
September 26, 1983	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training
October 1, 1984	K. F. L. Dohrman Overland Park, Kansas	Annual Radiographer Refresher Training

Additional training in the actual performance of radiography was provided by
S. R. Griffin and R. W. Coen, Assistant Radiation Safety Officers.

ADDITIONAL QUALIFICATIONS

August, 1981 to present, Mr. Williamson has performed all of the duties of a
Radiographer.