

L+L-20775
030-22060

NRC Form 313 I (12-81) 10 CFR 30		U.S. NUCLEAR REGULATORY COMMISSION		1. APPLICATION FOR: (Check and/or complete as appropriate) 03234	
APPLICATION FOR BYPRODUCT MATERIAL LICENSE INDUSTRIAL				<input checked="" type="checkbox"/> a. NEW LICENSE	
<i>See attached instructions for details.</i> Completed applications are filed in duplicate with the Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety, and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 or applications may be filed in person at the Commission's office at 1717 H Street, NW, Washington, D. C. or 7915 Eastern Avenue, Silver Spring, Maryland.				<input type="checkbox"/> b. AMENDMENT TO: LICENSE NUMBER	
				<input type="checkbox"/> c. RENEWAL OF: LICENSE NUMBER	
2. APPLICANT'S NAME (Institution, firm, person, etc.) Nuclear Energy Services			3. NAME AND TITLE OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION John R. May, Radiation Safety Officer		
TELEPHONE NUMBER: AREA CODE - NUMBER EXTENSION (203) 796-5000			TELEPHONE NUMBER: AREA CODE - NUMBER EXTENSION (203) 796-5308		
4. APPLICANT'S MAILING ADDRESS (Include Zip Code) (Address to which NRC correspondence, notices, bulletins, etc., should be sent.) 1000 Shelter Rock Road Danbury, CT 06810			5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED (Include Zip Code) See Attachment 1		
(IF MORE SPACE IS NEEDED FOR ANY ITEM, USE ADDITIONAL PROPERLY KEYED PAGES.)					
6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL (See Items 16 and 17 for required training and experience of each individual named below)					
FULL NAME			TITLE		
a. Radioactive materials to be used by or under the direct supervision of individuals designated by the Radiological Safety Committee. See Attachment 2.					
b.					
c.					
7. RADIATION PROTECTION OFFICER John R. May			Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15.		
8. LICENSED MATERIAL					
L I N E NO.	ELEMENT AND MASS NUMBER A	CHEMICAL AND/OR PHYSICAL FORM B	NAME OF MANUFACTURER AND MODEL NUMBER (If Sealed Source) C	MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTI- VITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME D	
(1)	Any Byproduct Material with Atomic Numbers 3-83 except as noted below	Any	N/A	50,000 curies total	
(2)	Carbon-14	Any	N/A	25,000 curies total	
(3)	Hydrogen-3	Any	N/A	25,000 curies total	
(4)	Source Material	any except as a gas or liquid	N/A	10,000 kilograms total	
DESCRIBE USE OF LICENSED MATERIAL E					
(1)	See Attachment 3				
(2)	Date: 11/9/84				
(3)	By: [Signature]				
(4)	By: [Signature]				

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06-20775-01
PDR

* License issued for
3N, 4B, 3P, 4C revision
but not authorized. 2 is not called for. 4B is not called for.
3N does not limit to Byproduct

"OFFICIAL RECORD COPY"
03234
ML10 03103

RECEIVED
U.S. NRC
FEE UNIT
BRANCH
P12:07
3N #930
3P #230
4B #400
4C #930
Applicant: 30377
Application #3492.00
11/9/84
Brown

9. STORAGE OF SEALED SOURCES

LINE NO.	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED. A.	NAME OF MANUFACTURER B.	MODEL NUMBER C.
(1)	N/A	N/A	N/A
(2)			
(3)			
(4)			

10. RADIATION DETECTION INSTRUMENTS

LINE NO.	TYPE OF INSTRUMENT A.	MANUFACTURER'S NAME B.	MODEL NUMBER C.	NUMBER AVAILABLE D.	RADIATION DETECTED (alpha, beta, gamma, neutron) E.	SENSITIVITY RANGE (milliroentgens/hour or counts/minute) F.
(1)	See Attachment 4					
(2)						
(3)						
(4)						

11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10

☐ a. CALIBRATED BY SERVICE COMPANY

NAME, ADDRESS, AND FREQUENCY

Eberline Instrument Company
West Columbia, South Carolina
or an equiv. cert. lab ea. 6 mos. or
after repair

☐ b. CALIBRATED BY APPLICANT

Attach a separate sheet describing method, frequency and standards
used for calibrating instruments.

N/A

12. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate.) A.	SUPPLIER (Service Company) B.	EXCHANGE FREQUENCY C.
<input checked="" type="checkbox"/> (1) FILM BADGE	(1) Film Badge: R.S. Landauer & Co.	<input checked="" type="checkbox"/> MONTHLY
<input checked="" type="checkbox"/> (2) THERMOLUMINESCENCE DOSIMETER (TLD)	(2) TLD: Harshaw Industries (See attachment 6)	<input type="checkbox"/> QUARTERLY
<input checked="" type="checkbox"/> (3) OTHER (Specify): <u>Pocket Self-Reading Dosimeters</u> (0-200 mR & 0-1000 mR)	(3) Pocket Dosimeter: Atomic Products Company	<input checked="" type="checkbox"/> OTHER (Specify): <u>Dosimeters on a daily basis</u>

13. FACILITIES AND EQUIPMENT (Check where appropriate and attach annotated sketch(es) and description(s).)

- ☐ a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (Include filtration, if any), ETC.
☒ b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC.
☒ c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC.
☒ d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC. See Attachment 5

14. WASTE DISPOSAL

- a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED Chem-Nuclear at Barnwell, SC or U.S. Ecology at Hanford, Washington
- b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF RADIOACTIVE WASTES AND ESTIMATES OF THE TYPE AND AMOUNT OF ACTIVITY INVOLVED. IF THE APPLICATION IS FOR SEALED SOURCES AND DEVICES AND THEY WILL BE RETURNED TO THE MANUFACTURER, SO STATE.

N/A

INFORMATION REQUIRED FOR ITEMS 15, 16 AND 17

Describe in detail the information required for Items 15, 16 and 17. Begin each item on a separate page and key to the application as follows:

15. **RADIATION PROTECTION PROGRAM.** Describe the radiation protection program as appropriate for the material to be used including the duties and responsibilities of the Radiation Protection Officer, control measures, bioassay procedures (if needed), day-to-day general safety instruction to be followed, etc. If the application is for sealed source's also submit leak testing procedures, or if leak testing will be performed using a leak test kit, specify manufacturer and model number of the leak test kit.

SEE ATTACHMENT 6

16. **FORMAL TRAINING IN RADIATION SAFETY.** Attach a resume for each individual named in Items 6 and 7. Describe individual's formal training in the following areas where applicable. Include the name of person or institution providing the training, duration of training, when training was received, etc.

- a. Principles and practices of radiation protection.
- b. Radioactivity measurement standardization and monitoring techniques and instruments.
- c. Mathematics and calculations basic to the use and measurement of radioactivity.
- d. Biological effects of radiation.

SEE ATTACHMENT 7

17. **EXPERIENCE.** Attach a resume for each individual named in Items 6 and 7. Describe individual's work experience with radiation, including where experience was obtained. Work experience or on-the-job training should be commensurate with the proposed use. Include list of radioisotopes and maximum activity of each used.

SEE ATTACHMENT 7

18. CERTIFICATE

(This item must be completed by applicant)

The applicant and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 30, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our 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.

a. **LICENSE FEE REQUIRED**
(See Section 170.31, 10 CFR 170)

\$3,490.00

b. **CERTIFYING OFFICIAL** (Signature)

c. **NAME** (Type or print)

John R. May

(1) **LICENSE FEE CATEGORY:** 3N 4B
3P 4C

d. **TITLE**

Radiation Safety Officer

(2) **LICENSE FEE ENCLOSED:** \$ 3,490.00

e. **DATE**

November 1, 1984

NRC FORM 3131
ITEM 5
ATTACHMENT 1

Licensed material shall be used only at temporary job sites and work locations of the licensee anywhere in the United States where the Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material.

Managing Headquarters for all licensee job sites is:

1000 Shelter Rock Road
Danbury, CT 06810

NRC FORM 3131
ITEM 6
ATTACHMENT 2

I. RADIOLOGICAL SAFETY COMMITTEE MEMBERS

William J. Manion	President, Nuclear Energy Services (NES)
John R. May	General Manager, Waste Management Services (NES)
Philip M. Lorio	Radiation Safety Officer, Columbia University
Robert Ryan	Director, Office of Radiation and Nuclear Safety, Rensselaer Polytechnic Institute
Arnold Gundersen	Vice President, Engineering Services (NES)

II. The following other individuals will use or directly supervise the use of licensed material. Such use will be under direction of the Radiological Safety Committee (above) or the Radiation Protection Officer.

Francisco Trejo	Manager, Waste Management Services (NES)
Charles J. Marino	Waste Management Engineer (NES)

NRC FORM 313I
ITEM 8
ATTACHMENT 3

- (1) The solidification, treatment, or decontamination of licensed materials at non-part, 50 facilities. This shall include contamination contained within mobile units and cask interiors.
- (2) The handling, packaging, and brokering of solidified, treated, or activated materials for transportation at non-part, 50 facilities.
- (3) Licenses are requested under the following categories to accomplish the above scope of usage:

<u>LICENSE CATEGORY</u>	<u>FEE CATEGORY</u>
- Authorized services for other licensees	10CFR170.31-3N
- Specific by-product material license	10CFR170.31-3P
- Receipt of material for packaging	10CFR170.31-4B
- Receipt of material for transfer	10CFR170.31-4C

RADIATION DETECTION INSTRUMENTS

<u>LINE NO</u>	<u>TYPE OF INSTRUMENT</u>	<u>MANUFACTURER NAME</u>	<u>MODEL NUMBER</u>	<u>MINIMUM NUMBER AVAILABLE</u>	<u>RADIATION DETECTED</u>	<u>SENSITIVITY RANGE</u>
1	Survey Meter SCA	Eberline	PRS-1	1	alpha/beta/gamma	0-1,000 R/hr 0-10,000 CPM
2	Survey Meter	Eberline	PRS-2	1	alpha/beta/gamma	0-1,000 R/hr 0-10,000 CPM
3	Monitor	Eberline	RM-20	1	alpha/beta/gamma	0-10 ⁶ CPM
4	Air Sampler	Eberline	RAS-1	1	N/A	0-4 Ft ³ /Min.
5	Survey Meter	Eberline	E-140N	1	beta/gamma	0-50,000 CPM
6	Survey Meter	Eberline	Teletector 6112D	1	beta/gamma	0-1,000 R/hr
7	Probe	Eberline	AC-3-7	1	alpha	N/A
8	Probe	Eberline	HP-270	1	beta/gamma	N/A
9	Probe	Eberline	HP-290	1	beta/gamma	N/A
10	Probe	Eberline	HP-210	2	beta/gamma	N/A
11	Isotopic Analyzer MCA	Canberra	#85	1	gamma	10-25% EFF. 1.8 - 2.1 Kev FWHM
12	Dosimeter	Atomic Products	019-200	6	gamma	0-200 mR
13	Dosimeter	Atomic Products	019-100	6	gamma	0-1,000 mR

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NRC FORM 313I
ATTACHMENT 5
ITEM 13 b
CONTAINERS

<u>TYPE</u>	<u>DESIGNATION</u>	<u>CAPACITY</u>	<u>SHIELDING</u>	<u>COMMENTS</u>
Type B(U)	NES-5 Docket # 71-9193 QA # 71-0512	1-26.7 Ft ³ /Liner	6½" Pb/min	Cavity is 34" diameter cylinder 63" Height Approx. Wt = 40,000 lb

ITEM 13 c
REMOTE HANDLING TOOLS AND EQUIPMENT

The following list indicates the kind of equipment designed, fabricated, under construction, and/or otherwise employed by the licensee.

<u>ITEM</u>	<u>IDENT. NO.</u>	<u>USAGE</u>
Underwater Cutting Tool	UCT-1	LPRMS
Air-Motored Rotary Saw	ARS	Cask Liner and Drum Segmentation
Hydraulic Press/Shear	HPS	Compaction and Shearing of Drums, Liners, & Other Items Underwater
Fuel Pool Clean-up System	FPCS	Continuous and Spot Pool Cleanup
Hydrolaser Decon System	HDS	Remote Decontamination
Control Rod Blade Cutting System	CRC-1	Control Rod Blade Cutting
Closed Circuit Television	CCTV	Workable surveillance
Remote Manipulators	RM-1	A family of Grippers for Component Handling

NRC FORM 313I
ATTACHMENT 5
ITEM 13 d
RESPIRATORY PROTECTIVE EQUIPMENT

1. Full-Face Respirators: CESCO Products
Model 95 Respirator
Air Purifying Only/NIOSH-MSHA Approved
2. Half-Face Respirators: CESCO Products
Model 96 Respirator
Air Purifying Only/NIOSH-MSHA Approved
3. Respirator Cartridge: CESCO Products
Model RC-80
Radionuclides and Radon daughters
Disposable/NIOSH-MSHA Approved
4. Air Measurement: Eberline Corporation
RAS-1
Portable Air Samplers
0-4 Ft³/Min. rated flow

NRC FORM 313I
ATTACHMENT 6
ITEM 15 - RADIATION PROTECTION PROGRAM

The licensee radiation protection program is described in the following policy manual, quality assurance program plan, manual, and associated procedures, as attached.

82A8001	NES Radiological Safety Program
82A8002	Quality Assurance Program for the Radiological Safety Program
82A8003	NES Radiological Protection Manual
82A8004	TLD Dosimetry Quality Assurance Program Plan
82A8005	Radiological Quality Assurance and Control
82A8006	Radiation Worker Handbook and Training Manual
82A8007	Instrumentation Maintenance Procedure
82A8008	General Radiological Survey Procedure
82A8009	Guidelines for Radioactive Waste Disposal
82A8010	Emergency Actions Procedure
82A8011	General Industrial Safety Procedure
82A8012	Radiation Work Permit Procedure
82A8013	Radiological Sample Shipment Procedure
82A8014	Airborne Safety Assurance Program
82A8015	Guidelines for Facility Decontamination
82A8016	Radiological Environmental Analysis Procedure

ITEM 16 - FORMAL TRAINING

TYPE OF TRAINING	WHERE RECEIVED	DURATION	DATE
A. Principles & Practices of Radiation Protection	Nuclear Engineering Company Newport News Industrial Corp	4 yrs on-the-job training 3 yrs on-the-job training	1972-1976 1976-1979
B. Radioactivity Measurements Techniques & Instrumentation	Nuclear Engineering Company Newport News Industrial Corp	4 yrs on-the-job training 3 yrs on-the-job training	1972-1976 1976-1979
C. Mathematics & Calculations	Nuclear Engineering Company Newport News Industrial Corp	4 yrs on-the-job training 3 yrs on-the-job training	1972-1976 1976-1979
D. Biological Effects of Radiation	Nuclear Engineering Company Newport News Industrial Corp	4 yrs on-the-job training 3 yrs on-the-job training	1972-1976 1976-1979

ITEM 17 - EXPERIENCE

ISOTOPES	MAXIMUM AMOUNT	PERFORMANCE	DURATION
Mixed fission Products	approx. 5000 Ci	Packaging and transporation of PWR/BWR radwaste	7 years
Mixed fission Products	Various amounts	Installation, start-up and operation of radwaste evaporators and solidification systems at PWR/BWR plants	4 years
Ir-192 Co-60	5000 Ci 500 Ci	Developed and directed program for decontamination and waste disposal of nuclear source encapsulation facility	4 months
Various	Various	General Manager of Waste Management & Decommissioning Programs at NES; including low-level waste transport, facility decommissioning and radiation protection programs	1½ years

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ATTACHMENT 7

ITEM 16 - FORMAL TRAINING

TYPE OF TRAINING	WHERE RECEIVED	DURATION	DATE
A. Principles & Practices of Radiation Protection	Combustion Engineering Naval Reactors Program	2 years on-the-job training	1960-62
B. Radioactivity Measurements Techniques & Instrumentation	Combustion Engineering Naval Reactors Program	2 years on-the-job training	1960-62
C. Mathematics & Calculations	United Nuclear Corp.	3 years on-the-job training	1967-70
D. Biological Effects of Radiation	United Nuclear Corp.	3 years on-the-job training	1967-70

ITEM 17 - EXPERIENCE

ISOTOPES	MAXIMUM AMOUNT	PERFORMANCE	DURATION
radiographic, spent LWR fuel	-	As President of NES, holds the corporate responsibility for quality control and safe management of programs ranging from spent fuel rack design to radiographic inspection of operating nuclear plants. Site manager for inservice inspection crew at Nine Mile Point Unit 1.	10 years
LWR fuel	-	Responsible for project management & control of fuel design, fabrication, and utility technical support services.	2 years
fission product contaminants	-	Managed engineering support for the Elk River, BONUS and LACBWR reactor decommissionings.	3 years
fission product contaminants	-	Operations manager for the SI-C reactor including supervision of health physics, radiological & non-radiological chemistry maintenance, operations, and testing.	2 years

NES

ITEM 16 - FORMAL TRAINING

TYPE OF TRAINING	WHERE RECEIVED	DURATION	DATE
A. Principles & Practices of Radiation Protection	Rensselaer Polytechnic Bachelor & Masters Programs	2 years	1970
B. Radioactivity Measurements Techniques & Instrumentation	Rensselaer Polytechnic Bachelor & Masters Programs	2 years	1970
C. Mathematics & Calculations	Rensselaer Polytechnic PSE&G	2 years 1 year on-the-job	1967-1971 1971
D. Biological Effects of Radiation	Rensselaer Polytechnic	2 years	1970-1971

ITEM 17 - EXPERIENCE

ISOTOPES	MAXIMUM AMOUNT	PERFORMANCE	DURATION
LWR fuel	critical facility	Licensed operator by the AEC. Instructor for students and utility reactor operator trainees.	2 years
Gross fission products	-	Performed shielding design of radwaste and auxiliary buildings at Newbold Island Units 1,2.	1 year
Gross fission products	-	Performed radiological health analysis of Montague Units 1,2. Performed environmental radiation survey of Connecticut Yankee.	2 years
LWR fuel and	-	Management at NES of a variety of projects including fuel rack design, waste management, and related LWR support services.	6 years

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TRAINING & EXPERIENCE - FRANCISCO TREJO

ITEM 16 - FORMAL TRAINING

TYPE OF TRAINING -----	WHERE RECEIVED -----	DURATION -----	DATE ----
A. Principles & Practices of Radiation Protection	Knolls Atomic Power Lab Masters Program, Columbia U.	2 months 6 months	2/ 1982 1/ 1975
B. Radioactivity Measurements Techniques & Instrumentation	Nuclear Science & Engineering Masters Program, Columbia U.	8 months	1/ 1975
C. Mathmematics & Calculations	Nuclear Science & Engineering Masters Program, Columbia U.	8 months	9/ 1975
D. Biological Effects of Radiation	Nuclear Science & Engineering Masters Program, Columbia U.	6 months	1/ 1976

ITEM 17 - EXPERIENCE

ISOTOPES -----	MAXIMUM AMOUNT -----	PERFORMANCE -----	DURATION -----
Ir-192 Co-60	5000 Ci. 500 Ci.	Operations Manager for the Decontamination and Waste Disposal in Termination of the Phoenixville Nuclear Encapsulation Facility	4 months
Fission product contaminants & CO-60,Cs-137	700 Ci.	Removal, dewatering, and disposal of 10,000 gal. of liquid radwaste and sludge from the Shippingport Nuclear Station	5 months
		Removal and disposal of control rods from the Dresden Nuclear Station	4 months
Co-60 , Cs-137 activated steel	300 Ci.	Removal and disposal of the S-1G Reactor Pressure Vessel and Shield Tank for the Knolls Atomic Power Laboratory	18 months

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ATTACHMENT 7

ITEM 16 - FORMAL TRAINING

TYPE OF TRAINING	WHERE RECEIVED	DURATION	DATE
A. Principles & Practices of Radiation Protection	Brooklyn College Columbia University	4 years	1946-50
B. Radioactivity Measurements Techniques & Instrumentation	Greater New York Health Physics Society	1 year	pre-1971
C. Mathematics & Calculations	Brooklyn College Columbia University	4 years	1946-50
D. Biological Effects of Radiation	Brooklyn College Columbia University	4 years	1946-50

ITEM 17 - EXPERIENCE

ISOTOPES	MAXIMUM AMOUNT	PERFORMANCE	DURATION
La-140	-	member of ocean current movement study team, designed scintillation equipmt. operator trainees.	1 year
Co-60	biotherapy quantities	RSO for Columbia Presbyterian Medical Center dual Co-60 therapy units.	> 1 year
uranium gross fission products	sub-critical & critical reactors	Health Physics supervisor for a 250 KW Triga and 2 research/training reactors at Columbia University.	> 10 years
byproduct material	source and research strength	Responsible as health physicist for all isotopic labs in physics, chemistry, and biosciences at Columbia University. Responsible as RSO for a number of medical and biological research labs at Columbia Presbyterian Hospital. Certified New York State Radiation Equipment Safety Officer.	> 10 years

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ITEM 16 - FORMAL TRAINING

<u>TYPE OF TRAINING</u>	<u>WHERE RECEIVED</u>	<u>DURATION</u>	<u>DATE</u>
A. Principles & Practices of Radiation Protection	AEC Health Physics Program University of Rochester	11 Months	9/57-8/58
B. Radioactivity Measurements Techniques & Instrumentation	AEC Health Physics Program University of Rochester	11 Months	9/57-8/58
C. Mathematics & Calculation	AEC Health Physics Program University of Rochester	11 Months	9/57-8/58
D. Biological Effects of Radiation	AEC Health Physics Program University of Rochester	11 Months	9/57-8/58

ITEM 17 - EXPERIENCE

<u>ISOTOPES</u>	<u>MAXIMUM AMOUNT</u>	<u>PERFORMANCE</u>	<u>DURATION</u>
Fissionable Material	Critical Quantity	Alco nuclear operations at the SM-1, SM-1A and PM-2A reactors	2 Years
Nuclear Weapons Debris	N/A	Environmental sampling program of bomb debris at Christmas Island	3 Months
Fissionable Material	Critical Quantities	DOE accountability representative at Rensselaer Polytechnic Institute for special nuclear materials; health physics instructor and operator training member.	22 Years

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ATTACHMENT 7

ITEM 16 - FORMAL TRAINING

TYPE OF TRAINING	WHERE RECEIVED	DURATION	DATE
A. Principles & Practices of Radiation Protection	SSES-1,2 ; IP-1,2 NMP-1; ANO-1; CY-1	1-2 week courses each	1978-84
B. Radioactivity Measurements Techniques & Instrumentation	Columbia University Masters Degree Program	1 year	1977
C. Mathematics & Calculations	Columbia University Masters Degree Program	1 year	1977
D. Biological Effects of Radiation	SSES-1,2 ; IP-1,2 NMP-1; ANO-1; CY-1	1-2 week courses each	1978-84

ITEM 17 - EXPERIENCE

ISOTOPES	MAXIMUM AMOUNT	PERFORMANCE	DURATION
Ir-192 Co-60	5000 Ci. 500 Ci.	decontamination, source packaging, and shipment for post-accident disposal at the Phoenixville Nuclear Encapsulation Facility.	3 months
Ir-192	100 Ci.	Site manager for inservice inspection crew at Nine Mile Point Unit 1.	5 months
gross fission products	5 R/hr fields	repair and operation of liquid waste evaporators at Indian Point Unit 2.	6 months
Cs-137, Sr-90, Pu-241	calib. source strengths	calibration of instruments in labs at Columbia University.	6 months
depleted Uranium	sub-critical pile	performed criticality and foil activation studies in lab at Columbia University.	3 months

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