NRC Form 313 I (12-81) 10 CFR 30

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE
INDUSTRIAL

1. APPLICATION FOR (Check and/or complete as appropriate)

X	a. NEW LICENSE
	b. AMENDMENT TO LICENSE NUMBER
	c. RENEWAL OF LICENSE NUMBER

See attached instructions for details.

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.

2. APPLICANT'S NAME (Institution, firm, person, etc.)

Houston Lighting & Power Company

TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION

(713) 228-9211

3. NAME AND TITLE OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION

P.L. Walker, Senior Licensing Engineer

TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION

(713) 922-2030

4. APPLICANT'S MAILING ADDRESS (Include Zip Code) (Address to which NRC correspondence, notices, bulletins, etc., should be sent.)

P.O. Box 1700
Houston, Texas 77001

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 are to be used by or under the direct supervision of	
b.	individuals designated by the Radiation Safety Committee.	
c.	Gene LeRoy Jarvela	Committee Chairman

7. RADIATION PROTECTION OFFICER

Gene LeRoy Jarvela

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

LINE NO.	A ELEMENT AND MASS NUMBER	B CHEMICAL AND/OR PHYSICAL FORM	C NAME OF MANUFACTURER AND MODEL NUMBER (If Sealed Source)	D MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTIVITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME
(1)	See Attachment 2.			
(2)				
(3)				
(4)				

	E DESCRIBE USE OF LICENSED MATERIAL
(1)	See Attachment 3.
(2)	
	8507100345 850226 REG4 LIC30 42-23140-01 PDR
(4)	

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)	Not applicable.		
(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

See Attachment 5.

☐ b. CALIBRATED BY APPLICANT

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

12. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate.) A	SUPPLIER (Service Company) B	EXCHANGE FREQUENCY C
☐ (1) FILM BADGE ☐ (2) THERMOLUMINESCENCE DOSIMETER (TLD) ☐ (3) OTHER (Specify): _____	See Attachment 6.	☐ MONTHLY ☐ QUARTERLY ☐ OTHER (Specify):

13. FACILITIES AND EQUIPMENT (Check were 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 7.

14. WASTE DISPOSAL

a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED

See Attachment 8.

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.

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 9.

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 9.

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 9.

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)* None	b. CERTIFYING OFFICIAL *(Signature)*
	c. NAME *(Type or print)* G. W. Oprea, Jr.
(1) LICENSE FEE CATEGORY: Not applicable	d. TITLE Executive Vice President
(2) LICENSE FEE ENCLOSED: $ Not applicable	e. DATE

5. South Texas Project Electric Generating Station
F.M. 521
Matagorda County, Texas

Mailing Address: P.O. Box 510
Wadsworth, Texas 77483

8. Licensed Material

a. Element and Mass Number	b. Chemical and/or Physical Form	c. Name of Manufacturer and Model Number	d. Maximum Activity to be Possessed
(1) Any byproduct material with atomic numbers 1 through 83	Any	Not applicable	Total activity not to exceed 3,000 mCi. Activity of any one nuclide not to exceed 1000 mCi, and in addition, up to 600 Ci of Cs-137 (sealed sources).
(2) Pu-239	Any	Not applicable	Total activity not to exceed 8 mCi.
(3) Cf-252	Any	Not applicable	Total activity not to exceed 10,000 mCi.
(4) Am-241	Any	Not applicable	Total activity not to exceed 0.2 mCi.
(5) Th-230	Any	Not applicable	Total activity not to exceed 0.2 mCi.
(6) Po-210	Any	Not applicable	Total activity not to exceed 0.2 mCi.
(7) Np-237	Any	Not applicable	Total activity not to exceed 0.3 mCi.
(8) Uranium (natural or depleted)	Any	Not applicable	Total amount not to exceed 2 kg.
(9) Am-241 (Am Be neutron sources)	Any	Not applicable	Total activity not to exceed 6000 mCi.
(10) Uranium (enriched in U-235 [non-fuel])	Any	Not applicable	Total amount not to exceed 0.1 kg.

8.E. Use of Licensed Material

1. Sealed sources will be used in the calibration of radiation detection instruments, for use as sources for flow or level gauges, and for process control functions.

   Unsealed sources in solid, liquid, or gaseous form will be used in health physics and chemistry support activities, including laboratory procedures development, training, and calibration of laboratory or process monitoring detectors.

2. These sources will be used in calibration of alpha radiation detection instruments.

3. These sources will be used in calibration of neutron radiation detection instruments and dosimeters, and as primary sources for plant startup.

4, 5, 6. Plated sources will be used for calibration of alpha detection instruments.

   Unsealed sources will be used in health physics and chemistry support activities including laboratory procedures development, training, and instrument calibration.

7. These sources will be used in dosimetric devices for the reactor material surveillance program.

8. These sources will be used in dosimetric devices for the reactor material surveillance program.

9. These sources will be used in boron concentration measurement.

10. These sources will be used in power level measurement devices and flux mapping.

10.0 Radiation Detection Instruments

Type	Minimum Number
GM-type Detectors (0.1 to 50 mR/h)	4
Ionization Survey Instruments (1 mR to 5R/h)	2
High Range Instrument (up to 100 R/h)	1
Gas Flow Proportional Detector	1
Geiger Counter (for alpha/beta swipe evaluation)	1
Liquid Scintillation Counter (for H-3, C-14, etc., swipe evaluation)	1
Neutron Survey Instrument	1

The devices listed above will be located at the South Texas Project site.

Sufficient quantities of radiation monitoring and detection instruments will be obtained to provide personnel protection.

11.0 Calibration of Instruments

11.1 Procedures for calibrating radiation detection equipment are documented in the South Texas Project Plant Procedures Manual. The procedures describe the methods to be used to maintain current calibrations for all portable survey meters, radiation detection equipment, and other measuring, sampling, and detection equipment used by the Health and Safety Division. Radiation survey instruments are to be inspected for physical damage, checked for battery strength, and response checked prior to each use. Instruments with any obvious damage will be removed from service and tagged for repair. Weak batteries will be replaced in accordance with the battery replacement procedure for the specific instrument. The instrument shall be source-checked prior to use with the exception of neutron survey instruments. Instrument calibration/standardization shall be performed at the frequency specified for each instrument in the instrument file computer system. Survey instruments that are to be used for quantitative measurements will be supplemented at least every 6 months with at least a two-point calibration on each scale of each instrument. Two of the calibration points chosen will be separated by at least 50% of the scale.

11.2 Radiation detection equipment listed in Attachment 4 will be calibrated semi-annually when in use. The calibration normally is performed in the calibration room using the calibrator and/or other smaller sources. (A shielded instrument calibrator for gamma exposure is used to calibrate most ranges of the portable gamma and beta-gamma portable survey instruments.) With the exception of neutron survey instruments, the instrument response is checked with a source at least daily prior to use to verify that the instrument is functioning properly. Neutron survey instrument response will be checked prior to use. Neutron survey instruments will be calibrated semi-annually by a vendor.

11.3 Instruments may require calibration/standardization more frequently if any of the following occurs:

1. Maintenance, repair, or replacement of detectors or associated electronics.

2. Abnormal or erratic response or operation.

3. Periodic checks indicate operation outside acceptance limits (i.e., survey instrument pre-use source check deviates more than ± 20% from post-calibration value).

11.4 When an instrument is calibrated, the following data will be recorded:

1. Initial instrument condition.

2. As found response to test input or standard.

3. Acceptance criteria, or space provided to insert acceptance range calculated from variable dose rate or input levels.

4. Final response, whether or not adjustment was made.

5. Calculation of any correction factors.

6. After-calibration response to a source or standard.

7. Date and signature of individual(s) performing the calibration/standardization.

11.5 If during calibration an instrument is found to be outside the designated acceptance range, a review will be conducted to determine:

1. Whether the instrument error is significant and/or nonconservative.

2. Whether exposure estimates were made using data from the instrument.

3. If any repeat surveys need to be performed.

4. If any radiation work permit requirements must be modified.

Calibration data records shall be retained to provide a history of instrument maintenance and performance.

11.6 Upon successful completion of calibration/standardization, a sticker shall be affixed to the instrument indicating the following:

1. Date of calibration/standardization.

2. Date next calibration/standardization is due.

3. Initials of individual(s) performing calibration/standardization.

4. Any correction factors required to yield correct response.

5. Check source or standard used and reading achieved in after-calibration response check.

11.7 Instrumentation is normally repaired by HL&P or by a vendor. Maintenance may be performed in place (for fixed instruments) at HL&P facilities, or at the vendor facilities, if necessary. Contractors other than the vendor will be employed at the discretion of the Health and Safety Division Manager.

12.0 Personnel Monitoring Devices

12.1 Personnel monitoring devices will be provided to individuals working near or around radioactive sources that have a potential of delivering doses specified in 10CFR20.202.

12.2 The type of personnel dosimeter provided shall be at the discretion of the Health and Safety Division; generally, however, a direct-reading dosimeter and/or a beta-gamma-sensitive TLD are to be worn. Monitoring services will be provided primarily by HL&P Health and Safety Division staff, although contractors approved by the Radiation Safety Committee may also provide such services. TLD's shall be exchanged for routine evaluation on a monthly basis for individuals badged as described above.

12.3 Pocket dosimeters will be available in various ranges. The 0 to 200 mR range is normally worn. The other ranges are worn as specified in various emergency plans or as specified in the STPEGS Plant Procedures Manual.

Pocket dosimeters and other integrating dosimeters should be evaluated daily when in use or immediately following a job involving more than 100 mrem of exposure.

12.4 TLD's are calibrated at least annually, and direct-reading dosimeters are calibration-checked at least semi-annually to provide accurate personnel monitoring.

12.5 Employees shall have whole body counting performed at least annually while performing permanent assignments at nuclear facilities.

12.6 A whole-body counter will be available to check on internal exposure. Data from the counter will be processed by a multi-channel analyzer. The processed data will be analyzed to determine the radionuclides detected and the percent body burden. Calibration of the whole body counter system shall be current prior to an individual being counted. Individuals being counted should be free of external contamination. A background count of the whole body counter shall be performed at least once during any day in which personnel are body counted. All metal objects shall be removed from the individual prior to being counted. Only qualified personnel shall operate the whole body counting equipment.

12.7 The bioassay program at STPEGS consists of whole body counting and excreta analyses. The specific method to be used shall be determined as described below.

Permanent HL&P employees, contract personnel, visitors, and other temporary personnel assigned work in areas where contamination control measures are used shall have whole body counting performed at the following times:

1. Prior to initial assignment to work in contaminated and/or airborne radioactivity areas.

2. When an individual has been exposed to airborne radioactivity in excess of 2 MPC-hours in one day or 10 MPC-hours in any 7 consecutive days.

3. At the discretion of supervision when there is reason to suspect that an individual may have inhaled, ingested, or absorbed radioactive material.

4. Upon termination of employment or end of assignment.

Excreta samples shall be collected as specified by Health and Safety when there is reason to believe that an individual has inhaled, ingested, or absorbed any of the following radioactive materials:

1. A significant quantity of a pure beta or low energy x-ray emitter such as H-3, Fe-55, or Sr-90.

2. Any alpha emitter such as Am-241, enriched U, or Pu-239.

The method of analysis for excreta samples shall be determined on a case basis.

Whole body counting will be performed using gamma-sensitive bed- and chair-type whole body counters. Excreta analyses may be performed using liquid scintillation counters (beta emitters) and/or low level alpha-beta counters.

If the baseline Body Burden Analysis (BBA) indicates results of $\geq$10% of the Maximum Permissible Body Burden (MPBB), supervisory personnel shall be notified, and he will specify the conditions under which the individual is to be allowed to work in areas where there is a potential for internal contamination.

If routine bioassay results indicate an individual's body burden is less than 5% of the MPBB above the baseline BBA, special action is not required.

If routine bioassay results indicate a body burden between 5% and 10% of MPBB above baseline BBA, then:

1. Repeat bioassays shall be performed to confirm the results found on the routine bioassay.

2. Supervisory personnel shall determine possible cause and determine work assignment limitations.

If routine bioassay results indicate a body burden in excess of 10% of MPBB above baseline BBA, then:

1. The individual shall be barred from work in the Controlled Area pending further evaluation and estimates of internal radiation exposure.

2. Repeat bioasseys shall be performed to confirm the results found on the routine bioassay.

3. The HSDM shall initiate an investigation to determine, if possible, the location, time, and cause of the uptake.

4. Based on the data available, supervisory personnel shall calculate, or have calculated, the whole body and/or organ dose to the individual resulting from the uptake.

5. The calculated whole body dose delivered in each calendar quarter shall be entered on the individual's NRC Form-5 or equivalent and shall be added to any other whole body exposure incurred during the same quarter. Exposure from organ uptakes shall be maintained on a separate NRC Form-5 or equivalent for the individual with applicable whole body exposure contributions added to the NRC Form-5 equivalent on which whole body exposures are recorded.

6. Following the investigation, the HSDM shall specify the conditions under which the exposed individual may resume normal duties.

Action taken as a result of bioassay results shall be documented and retained in the individual's permanent dosimetry file. Results of whole body counts and excreta analyses shall be retained in the individual's permanent dosimetry file. Any calculations used to estimate dose from internally deposited radionuclides will be retained in the individual's personal dosimetry record.

13.0 Facilities and Equipment

13.1 South Texas Project Electric Generating Station

13.1.1 The health physics facilities and equipment to be provided at the South Texas Project Electric Generating Station (STPEGS) include:

1. An access control facility, health physics offices, personnel decontamination rooms, storage room, laundry, health physics and chemistry laboratories, counting room, calibration room, and equipment decontamination room.

2. Protective clothing, radiation detection equipment, and decontamination equipment.

13.1.2 Until the facilities at STPEGS are completed, activities involving the use of radioactive materials shall be controlled by approved procedures and equipment requirements to keep personnel exposure ALARA.

13.1.3 Temporary storage of radioactive materials will be provided in warehouses on the STPEGS site. Access to the stored materials will be controlled. Procedures and equipment requirements comparable to those to be used in the regular storage area will be implemented and in place to keep personnel exposure ALARA. Currently, temporary storage is provided on the upper level of Warehouse 32.

13.1.4 The Radiation Safety Committee is authorized to approve additional temporary or permanent facilities for storage and use of radioactive materials as necessary.

13.2 Categories of Use

13.2.1 Facilities will be provided for use of low-level tracers, alpha-emitters, and radioiodine. Basic criteria for these categories of use are as follows.

13.2.2 Low-Level tracer laboratories shall store all radioactive material in unsealed containers of greater than 1 nanocurie per cc in a designated fume hood. Sealed or plated sources can be stored in cabinets or other storage facilities. Up to 10 millicuries of any single isotope (elements 1 through 83) can be maintained in the laboratory if it is in an unsealed container.

13.2.3 Alpha-emitting radioisotopes, not in a sealed or plated source, will not exceed 10 microcuries activity for any individual isotope.

13.2.4 Radioactive iodine that is stored in solutions shall be maintained in a chemically reduced state. The nominal concentration will be maintained below ten (10) microcuries per cc. All radioactive iodine that is utilized out of the hood will be at concentrations of less than 1 nanocurie per kilogram of matrix.

13.3 Minimum Physical Plant Requirements for Each Category of Use

The Radiation Safety Committee will establish the minimum physical plant requirements for each category of use. Equipment requirements in combination with approved procedures will keep personnel exposure ALARA. Fume hoods, glove boxes, waste receptacles, special sinks, ventilation and containment systems, and effluent filter systems will be obtained when deemed necessary by the Radiation Safety Committee.

13.4 Explanatory Sketches

Existing facilities for storage and/or use of radioactive materials are described on the attached figures. Figure 1 depicts Warehouse 32, which provides temporary storage of radioactive materials at the STPEGS site.

Figure 1
Warehouse 32
STPEGS

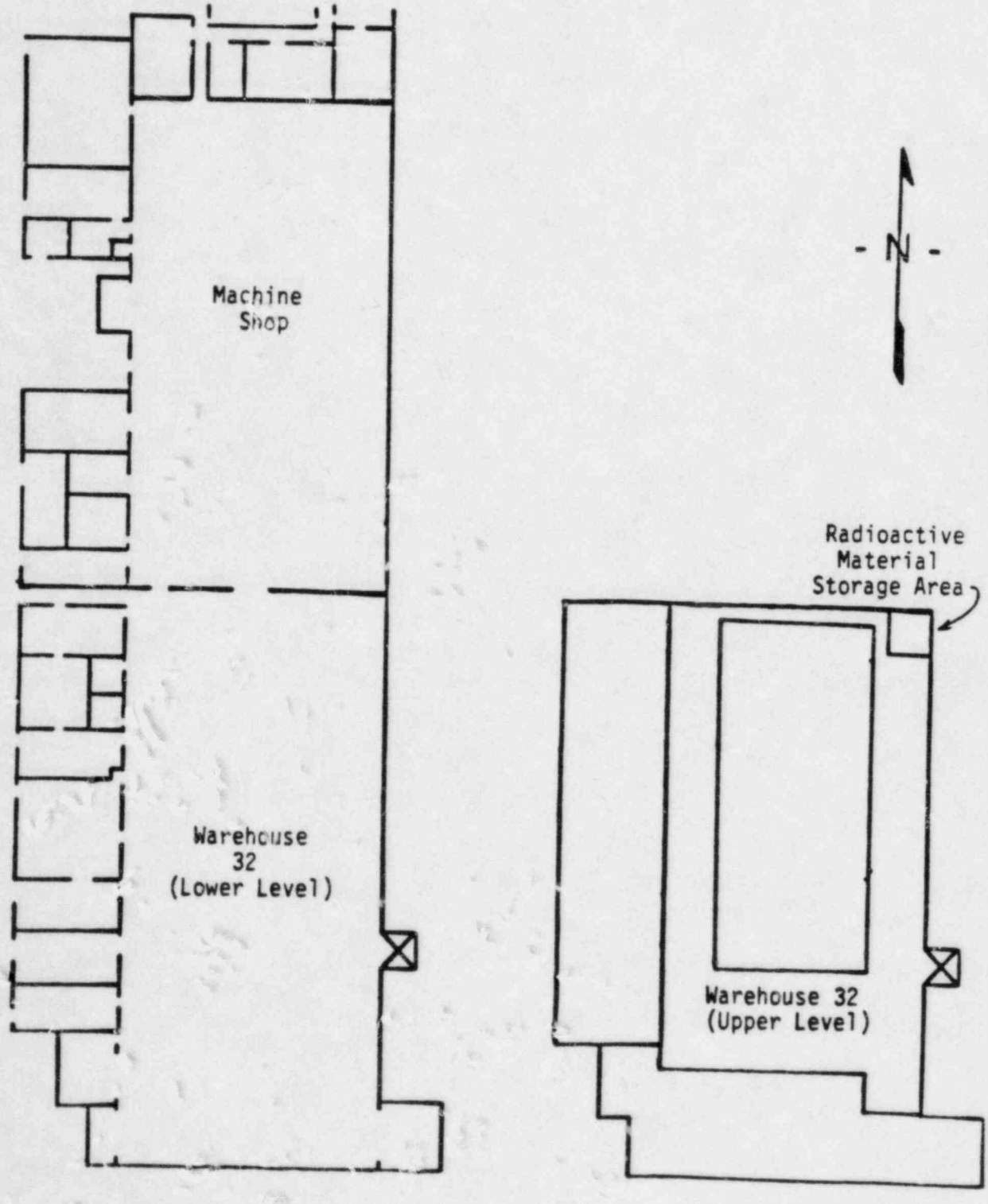

Figure 2 has been deleted

Figure 3 has been deleted

14.0 Waste Disposal

14.1 Radioactive waste material will be disposed of as follows:

14.1.1 Liquid waste will be disposed of as provided by 10CFR20 or by consigning it to a commercial waste disposal firm.

14.1.2 Gaseous waste may be diluted and released at monthly average concentrations not to exceed those of 10CFR20.

14.1.3 Solid waste, including solidified liquid, will be transferred to a commercial waste disposal firm.

14.1.4 Radioactive sealed sources, when no longer needed, will be returned to the manufacturer or transferred to a commercial waste disposal firm for burial.

14.1.5 The commercial waste disposal firm will be selected by the Health and Safety Division Manager.

14.2 A current set of DOT and NRC regulations concerning the transfer, packaging, and transport of radioactive waste material shall be maintained in the Document Control Center at the STPEGS site.

14.3 Radioactive waste is not currently being shipped. When it is shipped, it will be collected by a contractor for packaging and shipment to a burial site. Verification of the contractor's documentation will be obtained before any waste is collected.

14.4 The Health and Safety Division Manager is responsible for the safe transfer, packaging, and transport of radioactive material commensurate with the division of responsibilities between HL&P and the waste collection contractor.

14.5 The Health and Safety Division will provide management-approved, detailed operating procedures to all HL&P personnel involved in the transfer, packaging, and transport of radioactive material.

14.6 HL&P will provide training in DOT and NRC regulatory requirements, the waste burial license requirements, and HL&P operating procedures for all personnel involved in the transfer, packaging, and transport of radioactive material. Initial training and periodic retraining will be provided. The Health and Safety Division Manager will maintain a record of training dates, attendees and subject material.

14.7 Processing of radioactive waste will be provided by the waste contractor.

14.8 A management-controlled audit of all transfer, packaging, and transport activities will be established and implemented once such activities begin.

14.9 A management-controlled audit of activities associated with the transfer, packaging, and transport of radioactive waste will be performed semi-annually. A record of all such audits will be maintained for future inspections by NRC or DOT inspectors.

A. Radiation Safety Committee

A.1 HL&P has established a committee to administer the HL&P radioactive material program. The group performing this function is the Radiation Safety Committee. The Committee is comprised of the following individuals:

Health and Safety Division Manager	-	G. L. Jarvela (Chairman)
Radiation User Representative	-	J. D. Sherwood
Safety Representative	-	E. E. Cordray, Jr.
Quality Assurance Representative	-	J. E. Geiger

Additional members will be added to the committee as required.

A.2 Resumes for the Radiation Safety Committee members are appended to this attachment.

A.3 The Radiation Safety Committee is a management function which will review the program for compliance with all license requirements, and assure that proposed operations involving licensed radioactive material are carried out safely in a manner that will protect the health of the workers and minimize the hazard to property. The duties of the Radiation Safety Committee include:

1. Review and act upon recommended revisions or additions to the STPEGS Plant Procedures Manual which affect operations under this license at the STPEGS.

2. Review the qualifications and confirm individuals who are temporarily placed on the list of those authorized to use radioactive sources.

3. Review the proposed purchase and use of radionuclides requested by the various STPEGS facilities. A quorum of the Committee must approve each purchase of a source. Once initial approval has been given for a specific nuclide and specific use of this nuclide, it is not necessary for the Committee to approve each order of the nuclide. For routine reordering of a nuclide, such as a short-lived source used for calibration of counting instruments, approval by the Health and Safety Division Manager (HSDM) or his designee is sufficient. For new nuclides, unusually large quantities of previously approved nuclides, or for unreviewed uses of approved nuclides, committee approval is required. Purchasing is then notified and the HSDM can sign the purchase order.

4. Verify that the radiation protection program related to the security, storage, use accountability, leak testing and disposal of licensed radioactive material is being properly conducted. These items are checked against the applicable regulations and specific procedures to verify compliance. The adequacy of the program will be verified through reviews or audits performed by members of the staff and/or outside consultants. Review or audit reports relating

to the radiation protection program or to licensed material will be reviewed by the committee to ensure that a safe program is maintained and to identify situations which if uncorrected, could lead to a hazard or infraction of regulations.

5. Review any abnormal occurrence relating to the security, storage, use, accountability, leak testing, shipping or disposal of licensed radioactive material. The committee will review the incident report and the recommendations in the report, if any; make additional recommendations, if necessary; and take the necessary actions to see that the selected recommendations are implemented to prevent a recurrence.

6. Review any new facilities, areas, rooms, etc., where licensed radioactive materials will routinely be handled or used, or review modifications to existing facilities or equipment in which licensed radioactive material will routinely be handled or used. This review applies to areas or systems where the material is stored or used, or which could be affected by the radioactive material but does not necessarily mean the entire facility will be reviewed for this purpose. The committee will have the design reviewed and will accept the design or indicate where modifications are needed before it can be approved.

7. Document meetings held and actions taken.

A.4 Meetings of the Committee will be held at least quarterly. Meetings may be held more frequently as required. A quorum consists of the Committee chairman (or co-chairman) and two members.

A.5 The Committee will review the experience, training, and past performance of potential users of radionuclides. Interim approval may be granted by the HSDM provided the individual meets the qualifications required by the full Committee. Before the HSDM's interim approval is confirmed, the Committee must determine that the individual has had adequate training and experience in the handling of radioactive materials to assure that the sources will be used in a safe manner that will protect health and minimize the hazard to property.

A.6 The safety evaluations of proposed uses of radioactive material will be based on the criteria of the physical facilities, quantity of radioactive material, physical form of radioactive material, and the health physics practices described in the procedures.

A.7 As part of the general employee training, each member of the permanent operating organization whose duties entail using licensed material or directing the activities of others who use licensed material will be instructed in the fundamentals of health physics and must pass an examination. These same personnel will also be required to attend a retraining program in health physics at least annually.

A.8 Health and Safety Division personnel (technicians and trainees) will receive formal classroom training in accordance with their individual level of experience.

A.9 In addition to classroom training, Health and Safety Division personnel will receive on-the-job training.

A.10 Health and Safety Division personnel will be required to attend an annual 8-hour radiation protection refresher training course at their level of qualification in the event they do not complete a qualification training course within a calendar year. Once fully qualified in any level and further training is not desired or required, an annual 8-hour radiation protection refresher course at the level of qualification will be required.

A.11 Documentation of training for Health and Safety Division personnel shall be retained in appropriate files. Documentation of training in procedural or regulatory changes shall be permanently retained in a designated location and shall contain the signatures of the trainee and trainer. Documentation of all other training shall be retained in the training files of each Health and Safety Division employee with notification and additions to permanent files to be made as directed by the appropriate Health and Safety Training Coordinator.

A.12 Inventory of radioactive materials shall be controlled and maintained as follows:

1. When radioactive sources are received, all appropriate identifying data shall be noted. The item will be given a sequential control number that will be used to account for that item until final disposition.

2. Each licensed source shall be accounted for quarterly, when initially received, and when shipped offsite, by a physical inventory when possible.

   a. Verify the identity of the source.

   b. Verify the presence of the source by visually checking that it is present. If the source cannot reasonably be checked visually, check by other means available.

   c. Record the date the source was inventoried.

   d. Notify the HSDM or his representative if a licensed source is missing and cannot be located or accounted for.

A.13 All requests for procurement of radioactive materials are forwarded to the Radiation Safety Committee for approval. Approval by the committee is required before the order can be placed. The approval process includes verifying that HL&P is licensed to possess the radioactive material being purchased.

A.14 The total possession limits for the radioactive materials at STPEGS are given in Table 9-1.

A.15 Transferring radioactive material from one HL&P facility to another HL&P facility:

1. The packaging must be able to withstand the normal handling that might reasonably be expected for that transfer, with no loss of integrity of the package.

2. The labeling on the outside of the package and placarding of the vehicle must conform with DOT regulations.

3. The initiator of the transfer is responsible for verifying that adequate storage or holding facilities exist at the destination and that a qualified individual will be present to receive the item prior to starting the transfer.

Transferring radioactive material offsite to a licensed facility:

1. Health and Safety Division shall review packaging procedures and verify compliance with regulations.

2. Health and Safety Division shall conduct all radiological surveys associated with packing and make shielding recommendations as necessary.

3. Health and Safety Division shall review labeling and marking procedures and verify compliance with requirements.

Transferring equipment and/or components to an unlicensed facility/shop for repair:

1. Prior to the transfer, the HSDM or his designee will inspect the facility/shop and prepare a specific written temporary procedure for establishing the radiological controls for the job and the unconditional release of the facility/shop when the repair is completed. The temporary procedure will ensure that radiological exposures are kept ALARA.

2. Appropriate equipment and documentation for the transfer will be provided.

3. Health and Safety Division personnel will accompany the equipment if the task is expected to last for an extended period of time. Coverage by Health and Safety Division personnel will be required on a 24-hour-a-day basis for the full time the equipment is off the STP site.

A.16 Records of proceedings of the Radiation Safety Committee and safety evaluations of proposed uses of radioactive material will be maintained by the HSDM at the STPEGS.

A.17 The safety program, including records required to be maintained, will be periodically reviewed under supervision of the Radiation Safety Committee.

B. Radiation Safety Officer

B.1 At STPEGS, the Radiation Safety Officer (RSO) is the HSDM or his designated alternate. He has overall responsibility for the day-to-day aspects of health physics (radiation protection) at STPEGS facilities. He performs certain functions directly related to health physics which include:

1. Implementing the radiation safety program that integrates radiation protection philosophy and regulatory requirements;

2. Establishing an effective measurement system to determine the degree of success achieved by operations with regard to the radiation safety goals and specific objectives;

3. Seeking the resources needed to achieve the radiation protection program goals and objectives;

4. Ensuring that periodic reviews of the program are made and that corrective actions are taken to assure compliance with the radiation protection program; and

5. Ensuring that the procedures and practices by which the specific goals and objectives will be achieved are developed.

6. Providing consulting services on all aspects of radiation protection at all levels of responsibility at STPEGS.

7. Supervising the personnel monitoring program, including distribution, processing, and maintenance of all associated records.

8. Providing training programs, including refresher training, and personalized instruction to individuals working in special locations or on special projects.

9. Supervising and managing the leak test program.

10. Controlling and managing all radioactive material not in use, including radioactive waste.

11. Maintaining and controlling all radiation safety records.

B.2 The RSO is responsible to the Radiation Safety Committee to see that their recommendations, as they apply to the use of licensed radioactive material, are implemented. He has the responsibility to stop any operation which he has reason to believe will lead to injury of personnel or property damage if continued. In addition, if in the opinion of the RSO an action by the Committee may be detrimental to the overall radiological protection program, he has the option of requesting a review of the decision by higher management.

C. Radiation Protection Procedures

C.1 The Health and Safety Division has prepared a procedures manual that specifies procedures to be followed in health physics activities associated with the STPEGS. All of the procedures necessary for proper conduct of the radiological protection program will be in place prior to initiation of activities related to radioactive materials under this license.

C.2 Summaries of the existing applicable rules and procedures have been included with this application. Certain portions may be revised without prior notification of the NRC staff. HL&P will make the following changes without notifying the NRC:

1. Changes dictated by NRC rule changes;

2. Changes in internal management forms or specific dates;

3. Changes in contractors for bioassay or waste disposal services or for servicing and calibrating personnel dosimeters;

4. Changes in references to particular pieces of equipment.

Radiation Safety Committee Resume

Gene L. Jarvela
Health and Safety Division Manager

Education:

a. U.S. Navy Schools
   1) X-ray Technician Course
   2) Radioisotope Course
   3) Basic Nuclear Power School
   4) Specialized Radiation Control and Health Physics Course

b. Public Health Service Courses
   1) Basic Radiological Health
   2) Occupational Radiation Protection
   3) Radionuclide Analysis by Gamma Spectroscopy

c. Other Short Courses
   1) Respiratory Protection - LASL
   2) Packaging and Transportation of Radioactive Materials - NEWC
   3) Electronic Training - Eberline

Experience:

1950 - 1970 - U.S. Navy
While stationed at the Oakland Naval Hospital, Mr. Jarvela served as an x-ray technician instructor at the x-ray Technician School and as a technician and instructor in deep and superficial x-ray therapy. He was a nuclear submarine trained Hospital Corpsman for 12 years assigned to two submarines through their entire construction phase and through 2 to 3 years of their subsequent operational phase. His duties included first aid, radiation protection, chemistry, photo dosimetry and radiation monitoring onboard submarines. He also qualified and served as Diving Officer on both submarines. Mr. Jarvela left the Navy as a Chief Hospital Corpsman.

1970 - 1980 - Wisconsin Public Service Corporation
Mr. Jarvela was employed as Assistant Radiological-Chemistry Supervisor at Wisconsin Public Service Corporation. In this position, which he held for 12 months, he was involved in preparing the Kewaunee Radiation Protection Manual, Emergency Plan, Security Manual and the first Environmental Report. He also collaborated on departmental staffing activities,

Gene L. Jarvela
Health and Safety Division Manager

equipment purchase, procedure development, set up of the environmental monitoring program, resolution of design problems from a radiological aspect, and plant training of both licensed and non-licensed personnel in the areas of radiation protection, rad systems, safety, and first aid. He was then promoted to the position of Radiological Specialist as a member of the Nuclear Engineering Group. He served in this capacity for six months where he was responsible for ensuring the implementation of the Kewaunee Radiation Protection Manual, Security Plan, and Emergency Plan, and for coordinating the assistance of outside agencies and groups in relation to these plans and manuals. In addition, he served as a consultant to the Kewaunee Plant Superintendent in the areas of startup testing involving radiation monitoring systems, industrial and radiation safety areas involving training and retraining and training of local outside groups in radiation protection/safety procedures. Mr. Jarvela was then promoted to the position of Health Physics Supervisor on the Kewaunee Plant staff. He served in this position through initial plant startup and 7 years of plant operation including five refueling outages. In this capacity he supervised and was responsible for all site personnel associated with work or evolutions involving radiological controls, safety and certain facets of the Emergency Plan. He was responsible for the immediate supervision of a Rad Protection Leadman and seven Technicians assigned the responsibility for training of personnel in the area of radiological controls; respiratory protection; first aid; security; health physics procedure writing and updating; personnel dosimetry; radiological surveys; operation, maintenance and calibration of portable and laboratory radiation counting equipment; radioactive material receipt, storage and transfer; and personnel and material decontamination.

1980 - Present - Houston Lighting and Power Company
Mr. Jarvela joined HL&P as the Radiation Protection Supervisor at the South Texas Project. He is now the Health and Safety Division Manager.

Radiation Safety Committee Resume

J. Darrell Sherwood
Radiological Laboratory Supervisor

Education:

1967 A.S., Chemistry/Math - Paris Junior College

1970 B.S., Chemistry/Physics - East Texas State University

1975 PhD., Chemistry - University of Arkansas

Experience:

1970 - 1974 - University of Arkansas
Research Assistant - Analyzed environmental and geological samples for fission products.

1974 - 1975 - University of Kentucky
Post Doctoral Intern - Used instrumental technique to determine major and minor element distribution in lunar, meteoritic and terrestrial samples. Participated in the teaching program for graduate and undergraduate chemistry students.

1975 - East Texas State University
Robert A. Welch Fellow - Derived equations for utilizing xenon and krypton isotopic abundances to quantify the nuclear fission modes since the geological formation of uranium ores.

1975 - 1976 - University of Illinois
Assistant Research Chemist - Developed preconcentration techniques for analysis of environmental water samples. The preconcentrates were analyzed by neutron activation and energy dispersive x-ray fluorescence. The assay results of these multi-elemental techniques were compared against those obtained by spark source mass spectroscopy and correlated with organic pollutants measured by gas chromatograph-mass spectroscopy techniques.

1975 - 1978 - Babcock & Wilcox
Supervisor, Non-Destructive assay - Developed and applied radiochemical techniques for non-destructive assay systems to measure special nuclear material in three nuclear fuel processing facilities. Evaluated and recommended improvements in air and liquid effluent monitoring systems. Planned and coordinated R&D projects for improvement of non-destructive assay techniques.

J. Darrell Sherwood
Radiological Laboratory Supervisor

1978 - 1980 - Babcock & Wilcox
Manager, Nuclear Material Control - Planned, coordinated and administered Nuclear Material Control activities for controlling and safeguarding special nuclear material (commercial nuclear fuel, highly enriched uranium fuel, and plutonium breeder fuel) in accordance with federal regulations and NRC license requirements. Maintained adequate systems, procedures, and methods for controlling, measuring and minimizing losses of special nuclear material. Planned and coordinated R&D efforts for Regulatory Technology Development Program.

1980 - Present - Houston Lighting & Power Company
Radiological Laboratory Supervisor - Responsible for development and application of various measurement systems of the Radiological Laboratory. Prime responsibilities are in the areas of dosimetry, radiochemical purification, low-level background, alpha beta counting.

Radiation Safety Committee Resume

E. Everett Cordray, Jr.
Safety Representative

Education:	1968	Radiation Protection Course - Public Health Service
	1968	A.S., Radiation and Nuclear Technology - Oklahoma State University
	1973	B.S., Engineering Technology - Oklahoma State University
	1975	Fire Protection Course - University of Kansas
	1977 - 1978	Introductory Health Physics Chemistry Course - Houston Lighting & Power Company (included 3 weeks Health Physics laboratory training at Texas A&M University)
Experience:		
	1968 - 1969	North Carolina State Board of Health - Inspection of Agreement-State licensees for compliance with North Carolina regulations, surveys throughout North Carolina of equipment producing ionizing radiation.
	1969 - 1977	Kerr-McGee Nuclear Corporation Cimarron Facility - Health Physics and Industrial Safety supervision, training and support in uranium fuel fabrication plant, Health Physics and Industrial Safety training and support in plutonium mixed oxide fuel fabrication plant. Health Physics and Industrial Safety support included industrial safety, fire safety, procedure preparation, bioassay program, environmental program, air sampling program, smear sampling program, decontamination guidance, criticality safety equipment testing, first aid, and emergency equipment maintenance.
	1977 - 1980	Houston Lighting & Power Company, South Texas Project - Safety Advisory Committee Chairman, PWR design review, Health Physics procedure preparation, Health Physics training and support. Kewaunee refueling April-May 1978; Oconee Unit 1 refueling August-September 1978; Three Mile Island Unit 2 recovery April-May 1979; Trojan steam generator repair October-November 1979.
	1980 - present	Houston Lighting & Power Company, Limestone Project - Safety Representative.

Radiation Safety Committee Resume

J. E. Geiger, P.E.
Manager, Quality Assurance

Education:

1961 BSIE - State University, Sacramento, California

Experience:

1957 - 1972 - Aerojet General Corporation, Sacramento, CA

1960 - 1964
Manager, Receiving Inspection Planning and Data

1964 - 1968
Manager, Document Center

1968 - 1972
Manager, Quality Systems

1972 - 1974 - Self Employed

1974 - 1976 - Vayo Inc., Sacramento, CA
Freelance Quality Assurance Engineer

1976 - 1978 - Argonne National Laboratory (Illinois)
Quality Assurance Engineer

1978 - 1981 - Los Angeles Power Division BPC
Senior Engineer, Quality Assurance Staff and Supervisor, Field Activities

1981 - 1982 - Houston Lighting & Power Company
Quality Assurance Manager, South Texas Project

1982 - Present
Manager, Quality Assurance

Table 9-1

Possession Limits

Isotope	Total
Elements 1 to 83	1000 mCi per isotope
Cs-137 (sealed sources)	600 Ci
Pu-239	8 mCi
Cf-252	10,000 mCi
Am-241	0.2 mCi
Th-230	0.2 mCi
Po-210	0.2 mCi
Np-237	0.3 mCi
Uranium (natural or depleted)	2 kg.
Am-241 (Am Be neutron sources)	6000 mCi
Uranium (enriched in U-235 [non-fuel])	0.1 kg.

Question and Response

1. The Energy Development Complex (EDC) activities should come under the jurisdiction of the State of Texas, not the NRC. Only those activities conducted at the South Texas Project Electric Generating Station (STPEGS) can be covered by an NRC broad license.

   Delete any material from the application that is pertinent to the EDC or other facilities that are not located within the restricted area of STPEGS.

   Response

   The application has been revised accordingly.

2. Describe your bioassay program, including the type of bioassay (thyroid counts, urine counts, whole body counts, etc.), the criteria, the frequency for performing bioassays, the type of equipment used to conduct bioassays, and the type of action to be taken when positive results are obtained.

   Response

   See revised Item 12.7 (Attachment 6).

3. A statement should be included in your application addressing the following Houston Lighting and Power Company (HL&P) Radiation Safety Officer duties, responsibilities, and authority for carrying out the radiation safety program:

   a. Commitment to furnish consulting services on all aspects of radiation protection to personnel at all levels of responsibility within HL&P.

   b. Supervision of the personnel monitoring program, including distribution, processing, and maintenance of all associated records.

   c. Provisions for providing training programs, including refresher training, and personalized instruction to individuals working in special locations or on special projects.

   d. Supervision and management of leak test program.

   e. Control and management of all radioactive material not in use, including radioactive waste.

   f. Maintenance and control of all radiation safety records.

   Response

   See revised Item B.1, Attachment 9.

Question and Response (Cont')

4. Provide HL&P's written radiation safety procedures given to all personnel under the jurisdiction of the HL&P Radiation Safety Committee addressing the following items:

   a. Emergency procedures and instruction concerning spills, fires, release or loss of materials; accidental contamination of personnel, including decontamination procedures; and person(s) to be notified in an emergency.

   b. Requirements for material storage and safeguarding; labeling containers; processing and storing contaminated articles, including glassware; and identifying areas where radioactive material are used and stored.

   c. Availability, care, and use of personnel monitoring devices.

   d. Procedures for providing bioassay samples; and procedures for conducting bioassay analysis.

   e. Acceptable and unacceptable levels of contamination (fixed and removable) for equipment, facilities, clothing, skin, etc., in both restricted or unrestricted areas; protective action (i.e., in both restricted or unrestricted areas; protective action (i.e., decontamination, disposal, etc.) to be taken with respect to unacceptable levels of contamination; and procedures for determining levels of contamination.

   f. Requirements, procedures, and equipment for conducting leak tests of sealed sources.

   g. Requirements, procedures for picking up, receiving, and opening packages containing radioactive material.

   Response

   Copies of approved and unapproved written radiation safety procedures are appended to this submittal as requested. These procedures are typical; they may be revised as required to meet specific needs of the Radiation Safety Program at STPEGS. However, amendments to this application as a result are not expected since the attached procedures should continue to substantially describe the program. Any revisions to the procedures are expected to be minor.

   STPEGS radiation safety procedures which address the above items are as follows:

   a. PRP1-ZA-19, "Radiological Emergency Team Actions & Responsibilities"
      PGP3-ZR-04, "Radiological Incident Reporting"

   b. PRP2-ZX-07, "Radiological Control - Posting and Warning Devices"
      PRP3-ZR-12, "Radioactive Material Control Program"

Question and Response (Cont')

c. PRP2-ZX-02, "Use of a Direct-Reading Pocket Dosimeter"
PRP2-ZX-03, "Use of Integrating Dosimeter Devices"
PRP2-ZX-04, "Personnel Extremity Monitoring"
PRP2-ZX-11, "Use of Thermoluminescent Dosimeters (TLD)"
PRP2-ZX-14, "Storage and Handling of Personnel Dosimeter"

d. PRP2-ZB-01, "Internal Dosimetry Program"
PRP5-ZO-45, "Spectra Acquisition Using the WBC-6000"

e. PRP2-ZB-04, "Radioactive Contamination and Airborne Radioactivity Guides and Limits"

f. HP 12.220, "Controls for Radioactive Sources"
PRP5-ZI-32, "Standardization of the Tennelec Counter LB1000 and LB5110 Systems"
PRP5-ZO-32, "Operation of the Tennelec LB5100 Automatic Alpha/Beta Counter"

g. PGP3-ZR-14, "Receipt of Radioactive Material"

Note: "Radiological Services Division" has been changed to "Health and Safety Division"