

## APPLICATION FOR BYPRODUCT MATERIAL LICENSE

INSTRUCTIONS.—Complete Items 1 through 16 if this is an initial application. If application is for renewal of a license, complete only Items 1 through 7 and indicate new information or changes in the program as requested in Items 8 through 15. Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail three copies to: U. S. Atomic Energy Commission, Washington 25, D. C. Attention: Isotopes Branch, Division of Licensing and Regulation. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. An AEC Byproduct Material License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30 and the Licensee is subject to Title 10, Code of Federal Regulations, Part 20.

1. (a) NAME AND STREET ADDRESS OF APPLICANT. (Institution, firm, hospital, person, etc.)  Shell Oil Company Norco Refinery Norco, Louisiana		(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. (If different from 1 (a).)  Same	
2. DEPARTMENT TO USE BYPRODUCT MATERIAL  Engineering		3. PREVIOUS LICENSE NUMBER(S). (If this is an application for renewal of a license, please indicate and give number.)  None	
4. INDIVIDUAL USER(S). (Name and title of individual(s) who will use or directly supervise use of byproduct material. Give training and experience in Items 8 and 9.)  C. A. Caillet, Senior Instrument Engineer		5. RADIATION PROTECTION OFFICER (Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience as in Items 8 and 9.)  Same as 4.	
6. (a) BYPRODUCT MATERIAL. (Elements and mass number of each.)  Strontium-90		(b) CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM NUMBER OF MILLICURIES OF EACH CHEMICAL AND/OR PHYSICAL FORM THAT YOU WILL POSSESS AT ANY ONE TIME. (If sealed source(s), also state name of manufacturer, model number, number of sources and maximum activity per source.)  70 millicuries in the form of sealed sources U.S. Radium Co., LAB-245 2 sources, 35 mc each	

7. DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. (If byproduct material is for "human use," supplement A (Form AEC-313a) must be completed in lieu of this item. If byproduct material is in the form of a sealed source, include the make and model number of the storage container and/or device in which the source will be stored and/or used.)

The sources are part of an instrument for measuring density of fluids, known as the Shell Development Company, Beta Ray Gravitometer Model 1850.

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## TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	Tracerlab Inc., Richmond, Calif.	2 days	Yes (No)	(Yes) No
b. Radioactivity measurement standardization and monitoring techniques and instruments	Shell Development Company Emeryville, Calif.	2 days	Yes (No)	(Yes) No
c. Mathematics and calculations basic to the use and measurement of radioactivity	Same as b.	2 days	Yes (No)	(Yes) No
d. Biological effects of radiation	Same as a.	1 day	Yes (No)	(Yes) No

## 9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience.)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE (Monitoring, surveying, measuring)
Sr. <sup>90</sup>	30 mc	Shell Development Company	1 day	Removal, storage, shielding, monitoring, and leak-testing of sealed sources.

## 10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary.)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm <sup>2</sup> )	USE (Monitoring, surveying, measuring)
Tracerlab Model SU14A	1	Beta and Gamma	.02 to 20	30	Monitoring and surveying

## 11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE.

The monitor will be calibrated before use.

## 12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED (For film badges, specify method of calibrating and processing, or name of supplier.)

Tracerlab, Inc.

## INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes No

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved.

## CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, 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.

Date July 12, 1960

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Shell Oil Company, Norco Refinery

Applicant named in item 1

By:

Chief Engineer

Title of certifying official

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.

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8. and 9. The individual named in Item 4 also had prior training and experience in radiation measurement and protection at Louisiana State University (1948-9) and General Electric Company X-Ray Division (1950-51).
13. The sealed sources remain in their holders at all times. They are locked in place and sealed with lead and wire seals. If stored away from the instrument they will be kept in a marked and locked container such that external radiation levels are below 1 mr per hour. If removed from the instrument they are retracted into shielded housings.
14. The leak-testing procedure will be to wipe the accessible parts "in situ" with a moist swab, which will be brought within one half inch of the thin window of a geiger counter. If the counter indicates no more than 100 counts per minute above background, the sources will be considered free of leaks.
- The initial survey of radiation levels around the activated Gravitometer will be performed by the individual user named in Item 4. Leak testing, removal or reinstatement of sources, supervision of any servicing of the Gravitometer will be done by this individual. If any servicing, maintenance or repair of the source should be required, it will be returned to the manufacturer.
15. Tracerlab.

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