MARTIN MARIETTA CORPORATION
AEROSPACE CHEMICALS CONSTRUCTION MATERIALS

NUCLEAR
DIVISION
Baltimore 3,
Maryland

March 5, 1962

REFER TO:
RHB:W-729

United States Atomic Energy Commission
Division of Licensing and Regulation
Washington 25, D. C.

Attention: Mr. James R. Mason, Chief
Isotopes Branch

Gentlemen:

It is requested that Byproduct Material License No. 19-1398-22 be amended to add Mr. Herman Alderman as a user. In support of this request I am enclosing Form AEC-313 in triplicate.

Should any additional information be required, please contact me or Mr. Richard H. Boutelle at 687-3800 extension 9517.

Yours very truly,

F. G. Myers

F. G. Myers
Assistant General Manager
Administration

RHB:ebc

Enclosures (3)

Form AEC-313 (5-58)

ATOMIC ENERGY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

Form approved. Budget Bureau No. 38-R027.4.

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.)*

Martin Marietta Corporation
Nuclear Division
Baltimore 3, Maryland

(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. *(If different from 1 (a).)*

Radioactive Materials Laboratory in facilities leased from the Pennsylvania State University at Quehanna, Pennsylvania

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Nuclear Chemistry Department
(Reorganization since previous application)

3. PREVIOUS LICENSE NUMBER(S). *(If this is an application for renewal of a license, please indicate and give number.)*

Ammend 19-1398-22

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.)*

Herman Alderman
William S. Stringham

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.)*

James F. Bresson (Previously submitted.) (Quehanna)
Richard H. Boutelle

6. (a) BYPRODUCT MATERIAL. *(Elements and mass number of each.)*	(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.)*	
Sr^{90}-Y^{90}	Any Form	10 mc
Am^{241}	Any Form	10 mc
Cm^{242} + Decay Prod.	Any Form	10 mc
Atomic Numbers 3 - 83	Mixed Fission Products	10 mc

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.)*

To check analytical procedures to be used in connection with future activities at the Quehanna Facility.

DUPLICATED FOR DIV. OF COMPLIANCE

41475

(Continued on reverse side)

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	SEE SUPPLEMENTAL SHEET & AN		Yes No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments	APPLICATION DATED JUNE 9, 1961 IN CONNECTION WITH BYPRODUCT		Yes No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity	MATERIAL LICENSE 19-1398-24 (K61)		Yes No	Yes No
d. Biological effects of radiation			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
		SEE SUPPLEMENTAL SHEET & AN APPLICATION DATED JUNE 9, 1961 IN CONNECTION WITH BYPRODUCT MATERIAL LICENSE 19-1398-24 (K-61)		

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^2)	USE (Monitoring, surveying, measuring)
Proportional Counter NMC Model	1	Alpha Beta	5 d/m 20 d/m	Internal Counter	Measuring
Survey Meter, Geiger counter Eberline, E-500-B	2	Beta Gamma	low 0-0.2 mr/hr high 0 - 2000 mr/hr	30 mgm/cm^2	Survey, monitoring

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE.
Instruments listed above are calibrated once each month and after repairs. Secondary standards calibrated by manufacturer are used for low level calibration. A nominal one curie Co60 source in a calibrated range is used for high levels. (Continued)

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. *(For film badges, specify method of calibrating and processing, or name of supplier.)*
Film badges supplied by Health Physics Services, Baltimore. Bioassay performed by Con-Rad, Cambridge, Mass. Self-reading dosimeters are used when appropriate: Bendix 0-200 mr.

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 PLEASE SEE SUPPLEMENTARY SHEET - FLOOR PLAN

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.
PREVIOUSLY SUBMITTED.

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. PLEASE SEE SUPPLEMENTARY SHEET

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.

Martin Marietta Corporation
Applicant named in item 1

Date March 5, 1962

By: F. G. Myers
F. G. Myers
Assistant General Manager
Title of certifying official Administration

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.

* U.S. GOVERNMENT PRINTING OFFICE : 1961 O—590221

TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4

USER: Herman ALDERMAN

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.

Type of Training	Where Trained	Duration of Training	On the Job	Formal Course
(See A above)	C.C.N.Y., NEW YORK, N. Y.	1 semester		X
	University of Idaho	2 semesters		X
	Associated Nucleonics	Periodic	X	
	Leesona & Moos Labs		X	
	Babcock & Wilcox, Lynchvurg		X	
	Knolls Atomic Power Lab		X	
(See B above)	C.C.N.Y., NEW YORK, N. Y.	2 semesters		X
	University of Idaho	2 semesters		X
	Associated Nucleonics	Periodic	X	
	Leesona & Moos Labs		X	
	Babcock & Wilcox, Lynchburg		X	
	Knolls Atomic Power Lab		X	
(See C above)	C.C.N.Y., NEW YORK, N. Y.	2 semesters		X
	University of Idaho	2 semesters		X
	Associated Nucleonics	Periodic	X	
	Leesona & Moos Labs		X	
	Babcock & Wilcox, Lynchburg		X	
	Knolls Atomic Power Lab		X	
(See D above)	University of Idaho	2 semesters		X
	Associated Nucleonics	Periodic	X	
	Leesona & Moos Labs		X	
	Babcock & Wilcox, Lynchburg		X	
	Knolls Atomic Power Lab		X	

9. Experience with Radiati[illegible]. (Actual use of radioisotopes o[illegible]equivalent experience)

Isotope	Maximum Amount	Where Experience Was Gained	Duration of Experience	Type
Sr^{90}	2 c	Leesona & Moos	1 year (1956)	Chemist: performed work associated with manufacture c isotopic batteries including analysis and encapsulation.
Co^{60}	1 c	Associated Nucleonics (Walter Kidde)	3 years	Chemist: performed work on a R & D program to develop isotopic batteries including analysis and separations experiments, also performed shielding analysis using Cobalt 60.
Sm^{147}	2 c			
Nd^{147}	10 mc			
Pm^{147}	10 mc			
Rb^{86}	10 mc	Babcock & Wilcox	1 year	Instructor: developed and taught course for officers of NS Savannah. Course included use of radiation detectors, decontamination procedures, ion exchange principles.
Mixed Fission Products	25 c	Knolls Atomic Power Laboratory (at Idaho)	1 year	Radiochemist: supervised a program to detect leakage of experimental material into ETR & MTR cooling water as part of a materials irradiati program.

SUPPLEMENTARY SHEET

USER: Herman Alderman

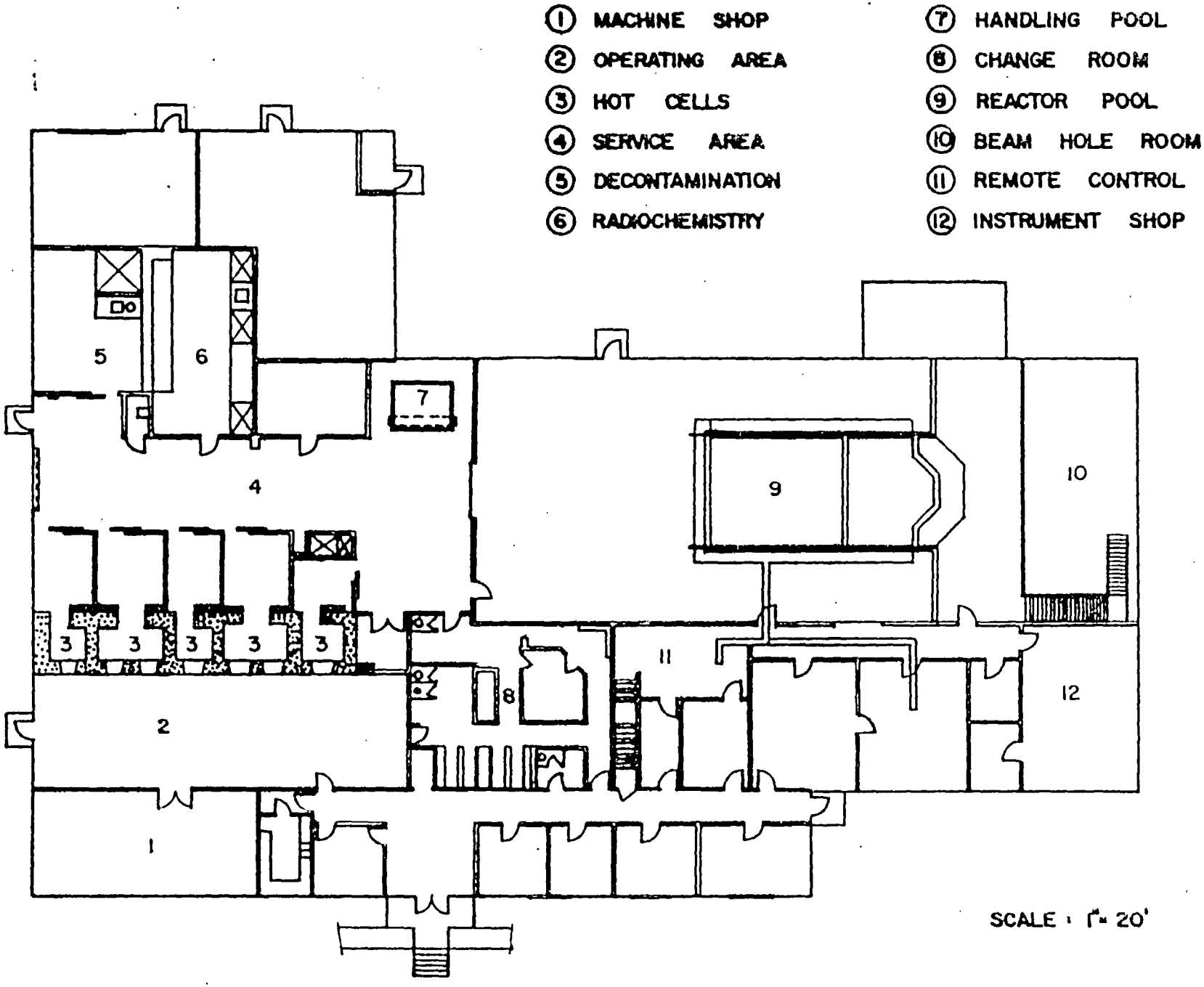
Item 11 - Continued.

The range is calibrated with a secondary standard R-Meter.

Item 13 - Please refer to Supplementary Sheet entitled FLOOR PLAN OF REACTOR AND HOT LABORATORY BUILDING.

The space marked 6 - Radiochemistry is a fully equipped radiochemistry laboratory. The equipment includes three (3) radiochemical fume hoods and one (1) shielded, ventilated dilution bench with remote handling equipment. All air from the laboratory is exhausted through absolute-type filters. The exhausts are monitored at the point of discharge to the environment. Low level liquid wastes are directed to holdup tank where they are monitored, evaporated, and the residue packaged for shipment to the burial ground at Oak Ridge. Higher level wastes are packaged within the laboratory and stored for shipment to the burial ground.

Item 15 - Radioactive wastes will be packaged in complete accordance with I.C.C. regulations and shipped in containers approved by the Bureau of Explosives. The containers will be shipped to the burial ground at Oak Ridge via a common carrier approved by the Interstate Commerce Commission to handle radioactive materials. Complete records of all waste packaged and shipped will be kept by the Health Physics Section. It is estimated that no more than two hundred millicuries (200 mc) total will be shipped as waste under the program described in this application.



FLOOR PLAN OF REACTOR AND HOT LABORATORY BUILDING