FORM AEC-374 (12-57)

U. S. ATOMIC ENERGY COMMISSION

BYPRODUCT MATERIAL LICENSE NO. 4-4292-1 Amendment No. 4 (K62)

Pursuant to the Atomic Energy Act of 1954 and Title 10, Code of Federal Regulations, Chapter 1, Part 30, Licensing of Byproduct Material, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, own, possess, transfer and import byproduct material listed below, and to use such byproduct material for the purpose(s) and at the place(s) designated below. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. Name: Rocketdyne, A Division of North American Aviation, Inc.	In accordance with application received October 28, 1960
2. Address: 6633 Canoga Avenue, Canoga Park, California	3. License number 4-4292-1 is amended in its entirety to read as follows:
	4. Expiration date: November 30, 1962
	5. Reference No.

6. Byproduct material (element and mass number)	7. Chemical and/or physical form	8. Maximum amount of radioactivity which licensee may posses at any one time
A. Strontium-90	A. Sealed source (Nuclear-Chicago Model RC-33)	A. 10 millicuries
(See page 2)	(See page 2)	(See page 2)

9. Authorized use

A. For use in Cenco Beta-Ray H/C meter (No. 27625) to determine hydrogen-carbon ratio in hydrocarbons.

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CONDITIONS

10. Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.

11. Byproduct material may only be used at North American Aviation, Inc., Rocketdyne Division, Propulsion Field Laboratory and Chemistry Laboratory, Santa Susanna, California.

12. The licensee shall comply with the provisions of Title 10, Part 20, Code of Federal Regulations, Chapter 1, "Standards For Protection Against Radiation".

13. Byproduct material licensed under Items 6A, 7A, 8A and 9A shall be used by, or under the direct supervision of, E. F. Cain.

14. Byproduct material licensed under Items 6B, 7B, 8B and 9B shall be used by, or under the direct supervision of, Robert B. Kimball.

15. Byproduct material licensed under Items 6C, D and E, 7C, D and E, 8C, D and E and 9C, D and E shall be used by, or under the direct supervision of, James T. Dicus.

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Supplementary Sheet

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6. Byproduct material (element and mass number)	7. Chemical and/or physical form	8. Maximum amount of radioactivity which licensee may possess at any one time
B. Strontium-90	B. Sealed source (Industrial Nucleonics Model 2B-0010)	B. 300 millicuries
C. Cobalt-60	C. Sealed sources (U. S. Nuclear Corp. Type 3142 or Isotopes Specialties Co. Type 38)	C. 20 millicuries (No single source to exceed 5 millicuries)
D. Iron-55	D. Sealed source (U. S. Nuclear Corp. Type 3112)	D. 1 millicurie
E. Carbon-14	E. Sealed source (U. S. Nuclear Corp. Type 3111)	E. 1 millicurie

9. Authorized Use

B. For use in Industrial Nucleonics Model DH-3 gauge to measure the density of a chemical mixture.
C. To be used in shielded source holders for the measurement of liquid levels in closed vessels.
D. & E. To be used in the development of liquid level measuring systems.

CONDITIONS

16. Byproduct material as sealed sources shall not be opened or removed from the H/C meter or the DH-3 gauge by the licensee.

17. Except as provided otherwise by this license, the licensee shall possess and use byproduct material described in Items 6, 7 and 8 of this license in accordance with statements, representations, and procedures contained in his application dated August 27, 1959; application received December 11, 1959 and in his letters dated October 29, 1958 and February 2, 1960, from J. M. Shropshire and P. H. Milham, respectively.

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CONDITIONS

18. Each sealed source containing Strontium 90, Iron 55, Carbon 14 or Cobalt 60 shall be tested for leakage and/or contamination in accordance with the following:

A. An appropriate test for leakage and/or contamination shall be performed on the sealed source surface, or on the accessible surfaces of the device in which such a sealed source is permanently or semipermanently mounted. The test shall be performed upon receipt of a source from another person, unless the licensee receives certification from the person making the transfer that the sealed source had been tested within thirty (30) days prior to transfer and found free of any removable radioactive material.

B. Following completion of the test prescribed in A, each sealed source shall be tested for leakage and/or contamination at intervals not to exceed six (6) months.

C. The test performed pursuant to A or B shall be sufficiently sensitive to detect 0.05 microcurie of removable beta and/or gamma emitting radioactive material. Records of leak test results shall be maintained by the licensee.

D. If the test performed pursuant to A or B reveals removable radioactive material, the licensee shall take immediate action to prevent spread of contamination and shall notify the Isotopes Branch, Division of Licensing and Regulation, U. S. Atomic Energy Commission, Washington 25, D. C., within thirty (30) days after completion of the test.

E. Repair of sources shall be performed by the manufacturers of the sources or by persons specifically licensed by the Commission to perform such repairs.

F. Tests for leakage and/or contamination shall be performed by the Health Physics Group, Atomics International, by the procedure described in letter dated October 29, 1958, from J. N. Shropshire, or by other persons specifically licensed by the Commission to perform such tests.

For the U. S. Atomic Energy Commission

Original Signed By
James R. Mason

Date November 17, 1960

DUPLICATED
FOR DIV. OF COMPLIANCE

by Chief, Isotopes Branch
Division of Licensing and Regulation
Washington 25, D. C.

JJ / Cooper

REB 11/18/60