



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D.C.

7.20.62

LOCKHEED AIRCRAFT CORPORATION, DOCKET NO. 50-172

AND THE DEPARTMENT OF THE AIR FORCE, DOCKET NO. 50-176

FACILITY LICENSE

License No. R-86

1. This license applies to the Radiation Effects Reactor (RER), a heterogeneous pressurized water-type nuclear reactor (Air Force Plant No. 67) (hereinafter referred to as "the reactor") which is possessed by the Department of the Air Force and located on a 10,000 acre site in Dawson County, Georgia, and described in the Lockheed Aircraft Corporation application for license dated February 23, 1962, and amendments thereto dated April 20, 1962, and May 25, 1962, and described in the Department of the Air Force application for license dated March 15, 1962 and April 11, 1962, (hereinafter collectively referred to as "the applications"). The reactor was constructed for the Department of the Air Force as a facility exempt from AEC licensing requirements under Section 91b of the Atomic Energy Act of 1954, as amended.
2. Pursuant to the Atomic Energy Act of 1954, as amended, (hereinafter referred to as "the Act") and having considered the record in this matter, the Atomic Energy Commission (hereinafter referred to as "the Commission") finds that:
 - A. The reactor as constructed will operate in conformity with the application and in conformity with the Act and the rules and regulations of the Commission;
 - B. There is reasonable assurance that the reactor can be operated at the designated location without endangering the health and safety of the public;
 - C. Lockheed Aircraft Corporation, with whom the Department of the Air Force has consummated a lease agreement to use the facility, is technically and financially qualified to operate the reactor, to assume financial responsibility for payment of Commission charges for special nuclear material and to undertake and carry out the proposed activities in accordance with the Commission's regulations;
 - D. The Department of the Air Force is financially qualified, and through its contractual relationship with Lockheed Aircraft Corporation, is technically qualified, to possess the facility;
 - E. Issuance of a license authorizing the Department of the Air Force to possess and Lockheed Aircraft Corporation to use and

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operate the facility and to receive, possess and use the special nuclear material in the manner proposed in the applications will not be inimical to the common defense and security or to the health and safety of the public;

- F. The Department of the Air Force is a Federal Agency and need not furnish proof of financial protection as would otherwise be required by subsection 170a of the Act, and Lockheed Aircraft Corporation has submitted proof of financial protection which satisfies the requirements of Commission regulations currently in effect.
3. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:
- A. Pursuant to Section 104c of the Act and Title 10, CFR, Chapter 1, Part 50, "Licensing of Production and Utilization Facilities", the Department of the Air Force to possess and Lockheed Aircraft Corporation to use and operate the reactor as a utilization facility at the designated location in Dawson County, Georgia, in accordance with the procedures and limitations described in the applications and this license;
 - B. Pursuant to the Act and Title 10, CFR, Chapter 1, Part 70, "Special Nuclear Material", Lockheed Aircraft Corporation to receive, possess and use up to 18.8 kilograms of contained uranium 235 in connection with operation of the reactor; and
 - C. Pursuant to the Act and Title 10, CFR, Chapter 1, Part 30, "Licensing of Byproduct Material", the Department of the Air Force and Lockheed Aircraft Corporation to possess but not to separate, such byproduct material as may be produced by operation of the reactor.
4. This license shall be deemed to contain and be subject to the conditions specified in Section 30.32 of Part 30, Section 50.54 of Part 50, and Section 70.32 of Part 70, Title 10, Chapter 1, CFR, and to be subject to all applicable provisions of the Act, and to the rules and regulations and orders of the Commission, now or hereafter in effect, and to the additional conditions specified below:
- A. Lockheed Aircraft Corporation shall not operate the reactor at power levels in excess of 1,000 kilowatts (thermal) without prior written authorization from the Commission;
 - B. During any work shift change of personnel the reactor shall be lowered into the pool, and no change in this procedure shall be made without prior written authorization from the Commission;
 - C. Lockheed Aircraft Corporation shall comply with the shutdown procedures and precautions described in the application, and the following additional limitations:

- (1) Lockheed Aircraft Corporation shall maintain nuclear control instrumentation in operation and shall assure that such instrumentation is attended and observed at all times during operations which could involve changes in core reactivity when the facility is shutdown.
 - (2) Lockheed Aircraft Corporation shall conduct core loading changes and all other operations which could involve changes in core reactivity when the facility is shutdown only under the direct and personal supervision of a technically qualified and designated supervisor.
 - (3) Lockheed Aircraft Corporation shall not conduct experiments employing cryogenic equipment utilizing relatively large amounts of non-inert gases unless explicit and definitive information relative to explosion hazards has been submitted to the Commission for evaluation, and written authorization from the Commission has been obtained.
- D. The Department of the Air Force and Lockheed Aircraft Corporation shall not permit or authorize any organization other than Lockheed Aircraft Corporation to operate the facility without prior written authorization from the Commission;
- E. Notwithstanding any expiration, modification, cancellation or termination of the Lease Agreement between the Department of the Air Force and Lockheed Aircraft Corporation dated April 4, 1962 (hereinafter referred to as "the Agreement"), Lockheed Aircraft Corporation shall, so long as this license shall be in force with respect to Lockheed Aircraft Corporation, be responsible for assuring that the provisions of this license and Commission regulations for protection of health and safety from radiation hazards are observed with respect to the facility and materials covered by this license. In the event of any expiration, modification, cancellation or termination of the Agreement, Lockheed Aircraft Corporation or the Department of the Air Force, may apply to the Commission for an appropriate amendment of this license to terminate this license insofar as it is granted to Lockheed Aircraft Corporation and upon issuance of such amendment, the aforesaid responsibility of Lockheed Aircraft Corporation shall cease and terminate. Until such amendment is issued, the Department of the Air Force shall in no way prevent Lockheed Aircraft Corporation from observing the requirements set forth in this condition.
- F. Lockheed Aircraft Corporation shall promptly submit a written report to the Commission whenever, during operation of the reactor any of the operating conditions or characteristics of the reactor, which might affect nuclear safety, is observed to vary significantly from its predicted value.

G. As promptly as practicable, but no later than 60 days after the initial criticality of the facility, Lockheed Aircraft Corporation shall submit a written report to the Commission describing the measured values of the operating conditions or characteristics listed below and evaluating any significant variation of a measured value from the corresponding predicted value:

- (1) Maximum excess reactivity of the facility, not including the worth of control rods or other control devices such as burnable poison strips or soluble poison, or any experiments;
- (2) Total control rod worth;
- (3) Minimum shutdown margin both at room and operating temperature;
- (4) Maximum worth of the single control rod of highest reactivity value; and
- (5) Maximum total and individual worth of any fixed or movable experiments inserted in the facility.

Records

H. In addition to those otherwise required under this license and applicable regulations, Lockheed Aircraft Corporation shall keep the following records:

- (1) Reactor operating records, including power levels.
- (2) Records of in-pile irradiations.
- (3) Records showing radioactivity released or discharged into the air or water beyond the effective control of Lockheed Aircraft Corporation as measured at the point of such release or discharge.
- (4) Records of emergency reactor scrams, including reasons for emergency shutdowns.

I. (1) Lockheed Aircraft Corporation shall immediately report to the Commission in writing any indication or occurrence of a possible unsafe condition relating to the operation of the reactor.

- (2) A copy of any notice of intent to terminate or modify the Agreement submitted by either party to the other shall be furnished simultaneously to the Commission. On or before February 4, 1963, the Department of the Air Force and Lockheed Aircraft Corporation shall notify the Commission as to whether the Agreement will expire on April 4, 1963.

Communications

- J. Communications from the Commission with respect to activities under this license shall be directed to the Director, Georgia Nuclear Laboratories, Lockheed Aircraft Corporation, and notice to such individual shall constitute notice to both Lockheed Aircraft Corporation and the Department of the Air Force.
5. Pursuant to Section 50.60 of the regulations in Title 10, Chapter 1, CFR, Part 50, the Commission has allocated to Lockheed Aircraft Corporation for use in connection with the facility 18.8 kilograms of uranium 235 contained in uranium enriched in the isotope uranium 235. Estimated schedules of special nuclear material transfers to Lockheed Aircraft Corporation and returns to the Commission are contained in Appendix "A" which is attached hereto. Shipments by the Commission to Lockheed Aircraft Corporation in accordance with column 2 in Appendix "A", will be conditioned upon Lockheed Aircraft Corporation return to the Commission of material substantially in accordance with column 3 of Appendix "A".
6. This license is effective as of the date of issuance and shall expire on April 4, 1963.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by

S. Levine

Saul Levine, Chief
Test & Power Reactor Safety Branch
Division of Licensing and Regulation

Date of Issuance:

JUL 20 1963

LOCKHEED AIRCRAFT CORPORATION

(AIR FORCE PLANT NO. 67)

FACILITY LICENSE

ESTIMATED SCHEDULE OF TRANSFERS OF SPECIAL NUCLEAR

MATERIAL FROM THE COMMISSION TO LOCKHEED

AIRCRAFT CORPORATION AND TO THE COMMISSION

FROM LOCKHEED AIRCRAFT CORPORATION

<u>(1)</u> Date of Transfer (Fiscal Year)	<u>(2)</u> Transfers from AEC to LAC Kgs. U-235	<u>(3)</u> Returns by LAC to AEC Recoverable U-235 Cold Scrap Spent Hot Fuel		<u>(4)</u> Net Yearly Distri- bution Including Cumulative Losses Kgs. U-235	<u>(5)</u> Cumulative Distribution Including Cumulative Losses Kgs. U-235
1963	17.9	0	0	17.9	17.9
1964	0	0	4.9	(4.9)	13.0
1965	6.8	1.6(a)	4.9	0.3	13.3
1966	6.8	1.6(a)	4.9	0.3	13.6
1967	6.8	1.6(a)	0	5.2	18.8
1968	<u>0</u>	<u>0</u>	<u>4.9*</u>	<u>(4.9)</u>	<u>13.9**</u>
	38.3	4.8	19.6	13.9**	

* Inventory to be returned

** Fabrication and burnup losses

(a) Assumed to be returned by fabricator

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