MAR 2 1 1958

K. E. Fields, General Manager

Curtis A. Nelson, Director
Division of Inspection

CURTISS-WRIGHT RESEARCH REACTOR

SYMBOL: IES:PAM

A preoperational inspection was made of the Curtiss-Wright research reactor, Quehanna, Pennsylvania, on March 5, 1958. The report of inspection is attached for your information.

Enclosure:
Ins Rpt CF-46

cc: H. L. Price, DLR
C. K. Beck, DLR
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UNITED STATES
ATOMIC ENERGY COMMISSION

DIVISION OF INSPECTION

REPORT

U. S. ATOMIC ENERGY COMMISSION

DIVISION OF INSPECTION
REPORT
CF-46

By: Peter A. Morris
Inspection Specialist
Division of Inspection

Dated: MAR 1 7 1958

Title: CURTISS-WRIGHT RESEARCH REACTOR

SUMMARY AND RECOMMENDATION

A preoperational inspection was made of the Curtiss-Wright research reactor on March 5, 1958. It appeared that the reactor had been constructed in substantial accord with the provisions of the construction permit and license application, with the exception that no provision is now made for forced circulation cooling.

It is recommended that license to operate be granted, with the condition that the maximum power level allowed be restricted to that which is acceptable with circulation by natural convection only.

DETAILS

The Curtiss-Wright research reactor, located at Quehanna, Pennsylvania, was visited for the second time by Dr. P. A. Morris on March 5, 1958. In addition to visual inspection of the facility, simulated startup operations were observed and discussions were held with the staff.

Simulated startup operations of the reactor were conducted by Mr. G. C. Geisler, who holds a license for operation of the Penn State reactor. These operations, conducted according to written and approved procedures, included check-out of instrumentation, check of the safety circuits, check of trip levels and scram actions, safety rod and regulating rod motions and interlock integrity. In addition, a source of neutrons was used to actuate a slow scram, from the linear level recorder, and also to demonstrate the response of the low level count rate system.

With respect to items incomplete, or subject to discussion, at a previous inspection (CF-45), the current status is the following:

1. The switches for actuation of safety circuit action upon motion of the reactor bridge have been installed.

2. Ion chambers, for control and safety systems, have been calibrated and installed.

3. The reactor pool was full of water.

Distributed to:
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Approved Marvin M. Mann
Marvin M. Mann
Period of Inquiry
March 5, 1958

4. The pneumatic rabbit tube has been pressure tested, with water in the pool (leaks found have been repaired).

5. The building leakage rate (one air change in 32 hours) quoted in the hazards summary report, was the architect's estimate of air change with a 10 mph wind, with all doors and windows closed.

6. An emergency procedure has been prepared for unusual incidents, and drills will be scheduled four times a year.

7. A statement of general organizational responsibilities has been issued by the Manager of the Nuclear Power Department, and a definition given of experiments that will require review by the Curtiss-Wright Reactor Safeguards Committee.

8. A consultant with extensive experience with and knowledge of swimming pool reactors (Dr. Robert Cochran of Penn State University) will be present during the initial loading of fuel and operation of the reactor.

COMMENT

With the exception of equipment to provide forced circulation of coolant, and related instrumentation, the construction of this reactor was observed to be complete. It is believed that the reactor can be operated at a reduced power level (below the design power of one megawatt) in a manner that will present negligible hazard to the health and safety of the public. In particular, it is believed that with the present design and operational procedures, natural convection cooling will be sufficient to allow operation in the range of 100 kw.

The program of preparation for initial startup of the Curtiss-Wright reactor will involve a critical experiment in the Penn State reactor using the Curtiss-Wright fuel elements. It is believed that this test will provide valuable experience for the Curtiss-Wright staff as well as a good check of the Curtiss-Wright fuel elements.

Discussion with Mr. B. J. Metzger, Manager of the Nuclear Power Department, revealed a very active interest on the part of senior management in the construction and operation of this facility. This interest extends to, and is promulgated by, the President and Chairman of the Board, Mr. R. T. Burley.