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April 10, 1961

AEC 785/65

COPY NO. 8

ATOMIC ENERGY COMMISSION

ANNUAL INDEMNITY REPORT TO THE JCAE (CLASSIFIED PORTION)

Note by the Secretary

The General Manager has requested that the attached letter to the Chairman, JCAE, be circulated for the information of the Commission.

W. B. McCool

Secretary

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

March 31, 1961

Honorable Chet Holifield
Chairman
Joint Committee on Atomic Energy
Congress of the United States

Dear Mr. Holifield:

The Commission's report dated March 31, 1961 to the Joint Committee on operations under section 170 of the Atomic Energy Act of 1954, as amended, describes the status of unclassified reactor projects reviewed and reported on by the Advisory Committee on Reactor Safeguards during the year ended March 31, 1961.

There is set forth below similar information on classified reactor projects reviewed by the Advisory Committee during the same period. Copies of the Advisory Committee's reports to the Commission on these projects have heretofor been furnished to the Joint Committee.

Limited Melt Experiment (LIME). The objective of this experiment was to obtain information on the mechanical damage which might occur to a developmental aircraft reactor core in the event of coolant air blockage during full power operation. For this experiment a specially designed ceramic core assembly was inserted in the central experimental facility of the HTRE-2 reactor at the ANP site of the National Reactor Testing Station in Idaho. The ACRS reviewed the plans for the experiment in July 1960 and concluded that under the most pessimistic conditions the radiation exposure both to NRTS personnel and to off-site residents will be acceptable. The experiment was satisfactorily conducted during August 1960.

Advanced Core Test Reactor (ACT). The ACRS in December 1960 reviewed the preliminary design of an advanced design ceramic core direct cycle aircraft reactor at the ANP site of the National Reactor Testing Station in Idaho. The Committee made a number of recommendations concerning the confinement-filtering system, a secondary reactor shut-down device and further studies and tests to be conducted, and concluded that operation of the proposed reactor could be carried out without undue hazard to the health and safety of the public provided the design work is successful and the various tests turn out favorably.

This material contains information affecting the national defense of the United States within the meaning of the espionage laws, Title 18, U.S.C., Sec. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

THE PROVISIONS OF
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Savannah River Production Reactors. The Commission staff and the ACRS have reviewed several aspects of the Savannah River Production reactors during the past year. In June 1958, the ACRS had recommended that du Pont explore methods of obtaining a higher degree of confinement for the reactors. In July 1960, the status of studies to improve the confinement was discussed with the Committee. The ACRS recommended that these studies be carried to completion as a matter of urgency.

In September 1960, a modified reactor fuel element (Mark VI-B) was reviewed and the Committee concluded that the change would not significantly affect reactor safety. The progress of the confinement studies was also discussed, and the ACRS reiterated their recommendation of July 1960. Meanwhile, confinement equivalent to that being provided at Hanford is being installed at Savannah River.

At the January 1961 meeting, for the general information of the Committee, a presentation was made by du Pont of the operating experience of the production reactors over the preceding two-year period. The Committee expressed appreciation for the insight du Pont has furnished into the problems of long-term operation of nuclear installations.

Hanford Production Reactors. Proposals to increase the power levels of all Hanford reactors were considered by the Commission staff and the ACRS in March 1960. The ACRS concluded that the higher power level ceilings did not appear to offer any significant increase in the overall hazards of the Hanford operations. On the other hand, the Committee in its report of March 14, 1960 to the Commission urged that the Hanford building confinement program be accorded high priority in view of the importance of the program. At this writing, the installation of confinement provisions is 90% completed. This subject has been scheduled for further review by the ACRS in the near future.

Naval Nuclear Surface Ships. The Committee reviewed the design and proposed testing procedures for the U.S.S. Long Beach (C1W) and U.S.S. Enterprise (A2W) and concluded that the dockside testing program was an acceptable risk in relation to exposure to the health and safety of the public. Sea trials of both ships are expected to be held in 1961.

Naval Nuclear Submarines. The Advisory Committee reviewed the design of the Tullibee (SSN-597) and the SEAWOLF (SSN-575) power plant conversion, and concluded that operation of these ships would represent no greater

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risk to the health and safety of the public than that already found acceptable for the several earlier nuclear powered submarines. Both ships have now completed their sea trials. The study of methods to improve the integrity of reactor compartment door latches mentioned by the Committee has not yet been completed.

Reactor Experiment Facility - NRTS. The suitability of constructing the lithium-cooled aircraft reactor experiment at the ANP area of the NRTS site was considered by the ACRS in September 1960. As now conceived, this reactor will be designed to permit operation at 200 Mw thermal, although it is planned initially to limit the power level to 10 Mw. The Committee advised the Commission that the site selected was suitable for the proposed facility; however, operation at higher power would require additional containment. Construction of the reactor has not yet commenced.

Sincerely yours,

R E Hollingsworth

Acting General Manager

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