ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

February 13, 1963

Honorable Glenn T. Seaborg
Chairman
U. S. Atomic Energy Commission
Washington, D. C.

Subject: REPORT ON HALLAM NUCLEAR POWER FACILITY

Dear Dr. Seaborg:

At its 46th meeting, January 31 - February 2, 1963, the Advisory Committee on Reactor Safeguards reviewed the report of operation of the Hallam Nuclear Power Facility through the wet critical phase and a partial power phase. The proposal to operate up to full power was considered. Representatives of Atomics International, the Consumers Public Power District, and AEC staff participated in the discussion. The reports listed were available.

The Committee letter of February 15, 1962 covered the proposed operation up to 15% of full power. In this letter several questions in technical areas were cited upon which data were required. It appears that these questions have been resolved satisfactorily.

During low power operation, below 20 MWt, the following problems have appeared: (a) possible carburization of stainless steel due to carbon in the sodium; (b) fuel element orifice defects; (c) helium entrainment occurring in the secondary loops and in the primary pumps; and, (d) high sodium oxide content in the coolant. It appears the foregoing have been or will be controlled or corrected satisfactorily.

Leakage has appeared in one tube in an intermediate heat exchanger. This leak is so recent that data as to cause are not yet available. The tube has been removed for study and analysis and the tube sheet plugged. Problems of leakage in heat exchangers are common in industrial practice. Leakage in intermediate heat exchangers of liquid metal reactor systems is a cause for some concern since conceivably radioactive sodium could be released into the atmosphere. The applicant and the Regulatory Staff are conducting studies which

should determine the magnitude of this problem and develop adequate measures for its solution. The Committee is of the opinion that such measures, together with appropriate liquid level sensors and alarms such as the applicant has installed, coupled with operational vigilance, will afford adequate protection from a safety standpoint.

It was reported that no nuclear problems appeared during the wet critical phase or subsequent operation up to a power level of 20 MWt or 8% of full power. The reactor reached 15% of full power on January 30, 1963. Operation at this power level is planned to continue for approximately 30 days.

The Advisory Committee on Reactor Safeguards believes that, if continued operation at the 38 MWt power level produces no additional problems which are not resolved to the satisfaction of the Regulatory Staff, operation of the reactor up to full power level (256 MWt) may be conducted without undue hazard to the health and safety of the public.

Dr. John P. Howe did not participate in the Committee's consideration of this project.

Sincerely yours,

/s/

D. B. Hall
Chairman

References:

1. Letter 62AT1032 dated February 19, 1962, subject: "HNPF Primary--Intermediate Heat Exchanger Cells Leakage Tests", w/enclosures.
2. Letter 62AT1853 dated March 12, 1962, with two enclosures: AI-P-1155, "Preoperational Test Completion Report, Dry Criticality; and AI-P-1163, "Preoperational Test Interim Report, Dry Excess Loading."
3. Letter 62AT1869 dated March 9, 1962, subject: "Additional Information for Safety Review of HNPF," w/enclosures, 3 drawings, D-793575, D-795188, D-79306.
4. Letter 62AT2027 dated March 16, 1962, subject: "Safety Review of HNPF - SRE Experience."
5. Letter 62AT2028 dated March 16, 1962, subject: "Safety Review of HNPF - Building Exhaust System High Efficiency Filters."

References: HALLAM NUCLEAR POWER FACILITY

6. Letter 62AT2029 dated March 16, 1962, subject: "Safety Review of HNPF--Reactivity Coefficients."
7. Letter 62AT2182 dated March 22, 1962, subject: "Safety Review of HNPF -- Building Exhaust System Halogen Removal Unit."
8. Letter 62AT2714 dated April 11, 1962 transmitting "Additional Errata for Final Summary Safeguards Report for the HNPF," dated March 1, 1962.
9. Letter 62AT2799 dated April 17, 1962 w/enclosures: Supplement I and Errata for Dry Excess Loading, AI-P-1163.
10. Letter 62AT2800 dated April 20, 1962 w/enclosures.
11. Letter 62AT2663 dated April 23, 1962 w/enclosures: "HNPF - Primary Service and Fill Tank Test Reports."
12. Letter 62AT3090 dated April 27, 1962, subject: "Safety Review of HNPF - Primary Piping Inspection."
13. Letter 62AT3152 dated April 25, 1962, subject: "Safety Review of HNPF - Steam Generator Room Nitrogen."
14. Letter 62AT3585 dated May 16, 1962, subject: "HNPF Reactor Cavity Test Report."
15. Letter 62AT3542 dated May 10, 1962, subject: "HNPF Sodium Draining and Source Relocation Tests."
16. Letter 62AT3414 dated May 15, 1962, subject: "HNPF Steam Generator Feedwater Line Leak Basin."
17. Letter 62AT4356 dated July 7, 1962 transmitting "AI-P-1167, HNPF Preoperational Test Completion Report, Hot Sodium Circulation Test."
18. Letter 62AT5964 dated August 14, 1962, subject: "HNPF Technical Specifications."
19. Letter 62AT5587 dated August 21, 1962, additional information to 62AT2182 dated March 22, 1962.
20. Letter 62AT8022 dated November 26, 1962, subject: "Modifications to HNPF," w/enclosures as indicated.
21. Letter 62AT8386 dated November 26, 1962, subject: HNPF Low Power Testing and Future Plant Surveillance," w/enclosure.
22. Letter 62AT8412 dated November 27, 1962, subject: "HNPF Testing."
23. Letter 62AT8465 dated November 30, 1962, subject: "HNPF Test Summaries," w/enclosure.
24. Letter 62AT8468 dated December 4, 1962, subject: "HNPF Zero Power Test Summary," w/enclosure.
25. Letter 63AT25 dated January 14, 1963, subject: "Summary of HNPF Low Power Test Results," w/enclosure.
26. TWX dated January 22, 1963 re Primary System Sodium Purity.
27. Letter 63AT27 dated January 21, 1963, subject: "Errata for Enclosures Atomics International letter 63AT25, dated January 14, 1963," w/enclosures.