

U. S. ATOMIC ENERGY COMMISSION
REGION I
DIVISION OF COMPLIANCE

January 26, 1966

CO REPORT NO. 47/66-1

Title: U. S. ARMY MATERIALS RESEARCH AGENCY - WATERTOWN ARSENAL
LICENSE NO. R-65
Date of Visit: January 7, 1966
By : *N. P. O'Reilly, F.B.I.*
~~John R. Sears~~, Reactor Inspector

SUMMARY

The Watertown Arsenal reactor airlocks have mechanical interlocks. Dr. Robert Cochran is still a consultant on operation. The experimental program using reactor beams is increasing. No violations of 10 CFR 20 were observed in a health physics review. The civilian administration is attempting to increase Arsenal health physics service in spite of an announced Army cut-back. During a recent power failure, the reactor scrambled and emergency battery powered lighting in the containment building came on.

No items of noncompliance and no safety problems were noted.

DETAILS

I. Scope of Visit

An unannounced visit was made to the Watertown Arsenal reactor of the U. S. Army Materials Research Agency at Watertown, Massachusetts, by Mr. John R. Sears, Reactor Inspector, Region I, Division of Compliance, on January 7, 1966. The visit included

(continued)

Scope of Visit (continued)

a tour of the facility, examination of operating and health physics records and discussions with the following personnel:

Mr. John O'Connor, Reactor Director
Mr. Richard Stanton, Reactor Engineer
Dr. Homer Priest, Chairman, Reactor Safeguards Committee
Dr. John Antal, Reactor Safeguards Committee
Mr. Joseph Vella, Reactor Operator

II. Results of Visit

A. Airlocks

There are two personnel airlocks in the Watertown Arsenal containment building. In the original design*, each had been equipped with both mechanical and electrical interlocks. The electrical interlock worked off limit switches which prevented energizing of the drive motor to open one door when the other door was open. The electric motor drive had taken too long a time to open the door, and the electric drive and interlocks have now been disconnected. There is a simple mechanical interlock between the two doors in an airlock. Defeat of this interlock requires the removal of one element of a mechanical linkage.

Each door is equipped with an inflatable gasket. Mr. O'Connor stated that the pneumatic controls are such that, even if both gaskets were to leak, pressure sensing switches would insure a continuous supply of compressed air to keep the gaskets inflated. The inspector observed that the supply line to the door gaskets is equipped with a manual valve. Mr. O'Connor stated that the purpose of the valve is to permit

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*Not defined in the Hazards Summary Report or the application.

Results of Visit (continued)

isolation of one door from the air system while replacing a gasket. He stated that he would remove the handle from the valves as a precautionary measure against inadvertent starving of a gasket of air.

B. Administration

Mr. O'Connor stated that Dr. Robert Cochran is still a consultant for the reactor and that his last visit was after the fall American Nuclear Society meeting in Washington, D.C.

The inspector reviewed the minutes of the Reactor Safeguards Committee meetings. The Committee deferred final approval for installation and approval of a methane cooled experiment until it made a visual inspection of the completed hardware.

The inspector observed that the control room operator's manual now has curves of rod calibration, Xenon buildup and decay, and temperature coefficient to assist in predicting the critical rod configuration.

Mr. O'Connor stated that operation of their preventive maintenance program via the Visirecord Chart, over a period of years, had produced its principal benefit in that experience now permits them to increase the time between checking some components. He said that they had recently replaced their startup chamber simply because it had been in operation for five years, although there had been no history of trouble with the system.

C. Tour of Facility

The inspector observed that a universal, triple axis spectrometer is being installed at a horizontal beam hole.

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Results of Visit (continued)

A helium cryostat is installed on the reactor top as the refrigerator for the methane cooled beam experiment. This system is being checked out, out of pile, before installation of those components which will be located in the pool adjacent to the reactor.

The inspector observed that a scintillation detector has been installed at the entrance to the heat exchanger room. This senses N-16 and reads out on a recorder in the control room.

Mr. O'Connor stated that there has been no problem with fuel, control rods and their drives, or instrumentation since the last inspection visit.

D. Power Outage

Mr. O'Connor stated that during a recent power outage, the reactor scrambled due to the power failure to the rod drive motors. The reactor building is furnished with emergency lighting, in accordance with Massachusetts State law. These lights are battery powered and come on during a power failure. The batteries are on a constant trickle charge.

Mr. O'Connor showed the inspector an M-G set which will be driven by the emergency gas generator located in the adjacent building. The M-G set will furnish power for nuclear instrumentation. He said that he has a work order in to the Arsenal maintenance people to complete the installation of this system.

E. Health Physics

Owing to the unannounced nature of this visit, Mr. Charles Dady, Health Physicist, was not available for interview. The inspector reviewed records of personnel exposures and gaseous and liquid discharges. No violations of 10 CFR 20 were observed.

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Results of Visit (continued)

F. Exit Interview

Mr. O'Connor stated that his civilian management has developed a table of organization for health physics services with two more vacancies on the health physics technician level, which they are presently trying to fill. An Army cut-back on personnel had been announced for July 1966, but they are proceeding with recruitment nevertheless. Mr. O'Connor stated that it is his understanding that the volume of work in the rest of the Arsenal will not be decreased, and if the proposed cut-back is effected, he will attempt to keep Mr. Dady on staff at his present rating by a redefinition of his job description and title.