



SEQUOYAH FUELS
CORPORATION

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Mr. Robert D. Martin
Regional Administrator
Region IV
U.S. NUCLEAR REGULATORY COMMISSION
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

RE: License No. SUB-1010; Docket No. 40-8027
Incident of May 11, 1991
10 CFR 20.405 Report

Dear Mr. Martin:

On May 11, 1991 Sequoyah Fuels Corporation (SFC) notified the NRC Operations Duty Officer that an incident had occurred, and subsequently, SFC notified NRC Region IV by facsimile of the incident. At about 0815 in the morning of Saturday, May 11, 1991 an SFC operator observed uncontained uranium in the area around the feed to the first stage A-line hydrofluorination reactor. Further investigation found that uranium had been discharged from the reactor cooling exhaust to the roof of the main process building. The associated process was shut down until the situation could be assessed and corrective measures taken. It is believed that no significant quantities of material were released. A 10 CFR 20.403(b)(3) notification was made because of the potential for this section of the process to be down for repair for more than 24 hours.

The attached report is submitted pursuant to the requirements of 10 CFR 20.405(a)(1)(iv). Should you have any questions on this matter, please contact me at 918/489-3207.

Sincerely,

Lee R. Lacey

Lee R. Lacey
Vice President
Regulatory Affairs

LRL:nv

cc: Keith E. Asmussen, General Atomics
Charles J. Haughney, NRC - NMSS

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SEQUOYAH FUELS CORPORATION

INCIDENT OF MAY 11, 1991

(10 CFR 20.405)

1. Estimate of each individuals exposure:

The SFC Health and Safety staff has evaluated the situation and determined that it did not contribute any exposure to personnel above normal operating conditions.

2. Levels of radiation and concentrations of radioactive materials involved:

In-situ radiation measurements were performed to characterize the areal extent of contamination on the main process building roof. The maximum direct alpha reading was 74,576 disintegrations per minute per one hundred square centimeters (dpm/100 cm²). The maximum removable readings were 13,820 dpm/100 cm² alpha and 17,952 dpm/100 cm² beta.

During decontamination activities both area air samples and breathing zone air samples were collected. The highest air sample result from a fixed station air sampler was 0.43 MPC and occurred on the fourth level of the reduction-hydrofluorination area. The maximum breathing zone air sample recorded 0.064 MPC-hours.

The fenceline air samples did not reveal the presence of airborne radioactivity above normal operating levels.

3. The cause of exposure, levels, or concentrations:

The cause of the leak is attributed to a crack starting at the bottom of the junction of the screw inlet nozzle (UO₂ feed) ~~with the A-line HF reactor shell and extending~~ down about one and one-half inches. Based on leak checks, repairs were also made at two other welded junctions on the reactor shell. The cause of the crack in the reactor wall is thought to be metal fatigue brought on by movement of the UO₂ seal bin (up and down on load cells) in relation to the stationary reactor, and by the temperature difference between the reactor wall and the UO₂ feed conveyor.

4. Corrective steps taken or planned to prevent recurrence:

The crack was repaired and the metal in the vicinity was stress-relieved. In order to provide for more adequate detection of these events, a system will be installed to detect leaks of uranium into the cooling ducts. The

system is being designed to provide the capability to detect uranium leaks into the cooling system commensurate with the level of monitoring performed elsewhere at SFC. A work order has been issued to install air sampling heads on the cooling duct exhaust. A solution being investigated to mitigate future cracking is the use of a stress relieving fitting at the conveyor/reactor junction to alleviate stress on the reactor shell. A fitting has been procured and will be tested in the near future. Considering the similarity between this incident and the incidents of April 3 and April 24, 1991, SFC has placed a high priority on resolving the problem and implementing corrective actions.