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UNION CARBIDE CORPORATION
NUCLEAR DIVISION
P. O. BOX Y, OAK RIDGE, TENNESSEE 37830

May 1, 1972

United States Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee 37830

Attention: Mr. W. A. Keller

Gentlemen:

Storm Sewer Measurements

As mentioned in our telephone conversation, an unusual storm sewer measurement for uranium occurred during the routine sample period of March 30 to April 6, 1972, in the Y-12 Plant amounting to 350 grams per day of oralloy. The normal expected daily variation is from 10 to 25 grams. Continuous sample stations are in operation on each of the two storm sewer laterals which service the oralloy processing areas. All known discards from the oralloy processing areas into the storm sewers are measured for uranium accountability prior to discard. The storm sewer results have not been used for accountability purposes but is a control measurement to detect material unaccounted for in the storm sewer stream.

This unusual result occurred at the west sampling station for the seven-day period ending at 8:00 a.m., April 6, 1972. The east station measurement for the same time period was normal.

The unusual result generated an immediate response in the oralloy processing areas to review discard records and evaluate procedures and monitoring equipment to locate any possible source of material unaccounted for. The sampling frequency was also increased from a week to a two-day period.

The oralloy foundry in Building 9212 experienced a stack discharge of 600 grams on March 27, 1972. This stack, although physically located nearer the east sewer laterals, was considered as a possible source of contamination. The prevailing wind on the day of the stack discharge was from the west at 2.8 mph; however, closer scrutiny revealed a storm front passed during the day causing the wind direction to change. In

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the morning hours during the stack discharge the wind was from the east at 3 - 4 mph. There was recorded rainfall on March 27, 28, 29, and on April 1, and 7. The storm sewer samples collected for the seven-day period ending March 30, 1972, were normal. Based on this information there is no conclusive evidence that the stack discharge influenced the sewer sample.

The opportunity for sample contamination was also reviewed. The sampling station consists of a 90° "V" notch weir, flow sensing and recording instruments, a sampling pump, a 55-gallon drum, and an evaporator. The flow sensing and recording instruments are equipped to provide a pneumatic signal to the pump controller so that a sample is taken which is linearly proportional to the flow. The sample is collected in the 55-gallon drum, evaporated, and drained into a 6 1/2-gallon carboy. The drum is flushed, and rinsing solution is added to the sample in the 6 1/2-gallon carboy.

Even though the operator is conscious of the strict cleanliness requirements, the many handling operations may have introduced contamination which in union with the large calculation factors can produce unusual results. The sample represents approximately 5,000,000 gallons of water which flowed through the west sampling station during the seven-day collection period. The sample collected on April 6 weighed 24,540 grams. The laboratory analysis of a portion of this sample indicated the sample contained 18 ppm uranium at an enrichment of 17.78% U-235, resulting in a total weight of less than 0.08 grams of U-235 contained in the total sewer sample.

In summary, the investigation did not reveal any positive source of material unaccounted for during the week of concern. Subsequent samples returned to normal expected variations.

If further information is desired, please advise.

Very truly yours,

Original Signed By
J. M. Case

J. M. Case, Superintendent
Oak Ridge Y-12 Plant

JMC:wb

cc: G. A. Keller
G. R. Jenny
R. F. Hibbs
R. R. Vanstrum
W. J. Wilcox, Jr.
R. D. Williams
File (NOY-12RO)