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- 8/3/49 HW-14078
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To: T. Prudich

From: J. B. Work *JW*

Subject: PROCESSING OF RUNS X-9-07-9 AND X-9-07-27

THIS DOCUMENT CONSISTS OF 3 PAGES

This will confirm our conversations concerning the processing of Run X-9-07-9 and X-9-07-27. The boats containing the fluorides in these runs were found to have a layer of water above the powder at the completion of the hydrofluorination cycle. The water was presumably sucked back into the boats from the gas aspirating system.

On the basis of the Process Development Laboratory reduction on a 10-gram scale of the fluoride of Batch X-9-07-9 to the metal and a careful evaluation of the purity of the metal produced, it was felt safe to process these two batches through the rest of the process.

This in no way indicates that future occurrences of this type of unusual incident can be processed without careful consideration. For each incident it will be necessary to evaluate the quality of the fluoride to be certain that satisfactory metal can be produced from it.

The analytical results of the spectrographic analysis on the Plutonium produced in the laboratory by the reduction of the fluoride from Run X-9-07-9 are given below. A typical analysis of buttons produced from laboratory plutonium fluoride (made from oxalate) is also given.

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MASTER

ANALYSIS OF PU BUTTONSRun X-9-07-9
ppm - Pu BasisTypical Analysis-
Laboratory Runs
ppm - Pu Basis

Al	40	30
Ba	< 20	< 20
Be	< 0.02	< 0.1
Ca	40	30
Cd	< 40	< 40
Ce	< 200	< 200
Hg	< 100	< 100
In	< 100	< 100
La	1,000	200
Li	< 1	< 1
Mg	10	30
Mn	20	30
Na	< 100	10
Ni	40	200
Pb	< 100	< 100
Sr	< 4	< 4
Tl	< 20	< 20
Zn	< 100	< 100

A preliminary spectrographic analysis of the water above the fluoride, which was estimated to have a volume of 250 ml, showed the following amounts of impurity (based on the weight of water) to be present:

Al 10 ppm
Ca 2
Cr 20
Fe 200
Mg 0.5
Mn 0.5
Na 2
Ni 50
Pu Trace

The relatively high iron content of the water amplified the necessity of making a laboratory trial reduction of the fluoride after the evaporation of the water from the boat.

The Analytical Development Group has not analyzed buttons to date routinely for iron, since health hazard considerations have limited them to the Cupferron method of analysis. A rough quantitative analysis of the button produced from Run X-9-07-9 and of two buttons produced in the production line in the 234-5 Building showed that each of the three samples had from 500 - 1000 ppm of iron.

A recently received modification of the Specification Manual for the final piece gives as a typical analysis - 400 ppm of iron in the Los Alamos production. Based on this comparison and on the levels of other impurities, it was decided that the above batches of fluoride could be safely processed in the 234-5 Building.

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