HW-10595

Cover Sheet for a Hanford Historical Document Released for Public Availability

Released 1995

Prepared for the U.S. Department of Energy
under Contract DE-AC06-76RLO 1830

Pacific Northwest Laboratory
Operated for the U.S. Department of Energy
by Battelle Memorial Institute

Battelle

DISCLAIMER

Red label

300

HW-10595

CC: 1. O. H. Greager - J. B. Work
2. T. W. Hauff
3. R. E. Curtis - W. A. Briggs
4. R. J. Hale - D. F. Shepard
5. 300
6. 700
7. Pink
8. Yellow

This Document consists of [redacted] Pages No. [redacted]

July 20, 1948

R. J. Hale
TECHNICAL DIVISIONS

PROGRESS REPORT
ANALYTICAL DEVELOPMENT 234-5 PROJECT

[redacted]

Personnel

As of June 15, 1948, the following members of the Analytical Development Group were assigned to analytical development problems for the 234-5 Project:

L. F. Kendall
C. W. Pollock
J. T. Mitchell
G. J. Alkire
C. H. Ice
E. W. Christopherson
D. F. Shepard
W. W. Mills
G. J. Behling

Mills and Behling have been engaged in analytical development activities since January 1, 1948. A separate progress report covering the results of this work is being prepared.

General

L. F. Kendall visited the Los Alamos Scientific Laboratory during the period June 14 to June 26 to confer on analytical methods used in the Los Alamos Analytical Section. Primary attention was given to the latest development in spectrochemical work.

A meeting of the Analytical Development Group and the Process Chemistry Development Group was held on June 23. The following information was requested of the process group:

1. A table of analytical requests giving the details on each process stream or sampling point; e.g. the chemical composition with the approximate concentration and analyses desired with the sensitivity and accuracy required.
2. An estimate of the priority of the specific analyses required.
3. A list of literature references that would give further information on the analytical requirements and aid in the development of analytical methods.

Final adjustment of the spectrograph and source was made by an Applied Research Laboratory engineer on a two day visit. Later, a light leak developed in one of the cameras which has since been remedied. Preliminary work to establish the optimum conditions for the copper spark technique was initiated but cannot be completed until the next shipment of film has been received (a request to expedite this shipment has been made). The present enclosed source for use with active samples is not satisfactory; consequently a new enclosed source with an optical electrode alignment system is being designed by the Instrument Department and it will be fabricated in our experimental shops.

Analytical Methods

Considerable work has been done on the analysis of boron in calcium metal. This method is the same as that used for the determination of boron in plutonium. As yet no plutonium samples have been analyzed since once active samples are used it will be impossible to decontaminate the special apparatus used in this determination.

Sulfate

The method recommended by Los Alamos in LA-416 for the determination of sulfate in plutonium solutions was found to be satisfactory in the range of from 0.05 to 10 milligrams of S. The procedure used was the same as the one in LA-416, however the apparatus has been modified to conform to the health regulation in force at this site. This modified apparatus has been designed and is being constructed by the experimental shops. When completed it will be tried on an AT sample or diluted sample can solution.

Sulfide

For the development of a method for the determination of sulfide sulfur in Pu metal a standard sample of steel containing 180 ppm of S is being used. This work is still in the preliminary stages.

Iron and Phosphates

Spectrophotometric methods for iron and phosphates are now in use in the 231 control laboratory.

Reagent Purification

A special all quartz still is required for the purification of water and other reagents. The specifications and a drawing of this still have been submitted to vendors for bids on the construction of two of these stills. Purchasing will be based primarily on date of delivery.

Preparation of standard solutions and purification of reagents for the cupferron procedure is now underway.

D. F. Shepard
Analytical Section
Technical Divisions

DFShepard/lh

[redacted]