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MOUND LABORATORY

OPERATED BY

MONSANTO CHEMICAL COMPANY

MIAMISBURG, OHIO

BW

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PROGRESS MEMORANDUM

July 16, - August 15, 1952

CONTROL SECTION

Personnel

Mrs. M. E. Burns terminated August 15.

Abstract

Group 20

One hundred ninety-one purity determinations were made, nineteen resamples were required.

A silver analysis was run on a sample of bismuth from lot Po #18683.

Ten bismuth and two platinum calorimetric determinations were made.

The two new weighing cylinders were received from the machine shop for use in the Macro Assay method. Initial runs with the cylinders have proved disappointing. The reproducibility of the cylinder weights were poor, this was probably due to a faulty sealing of the cylinders.

Group 22

A shipment of spent initiators was received and will be stored until the investigation of high neutron and their relationship to processing spent initiators is completed by the Process Section.

MOUND DECLASSIFICATION REVIEW	
1ST REVIEW DATE <u>11/24/81</u>	DETERMINATION (CIRCLE NUMBER) <u>1</u>
AUTHORITY <input type="checkbox"/> AOC <input checked="" type="checkbox"/> ADC <input type="checkbox"/> ADD	1. CLASSIFICATION RETAINED
NAME <u>Tim F. AO 89AW</u>	2. CLASSIFICATION CHANGED TO _____
2ND REVIEW DATE <u>11/31/98</u>	3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY <u>ADD</u>	4. COORDINATE WITH _____
NAME <u>Bob Ratay</u>	5. CLASSIFICATION CANCELLED
	6. CLASSIFIED INFO BRACKETED
	7. OTHER INFO _____

~~GROUP 1~~
~~Excluded from automatic~~
~~downgrading and~~
~~declassification~~

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~~Restricted Data~~

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Progress Memorandum

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Group 24

Operations proceeded on schedule. The work load was increased abnormally by the necessity to backlog material for the week of curtailed operations plus the large numbers of high neutron material.

Group 33

Mr. K. Busch will make a tour of duty through the various operating groups in the Division. During his tour Mr. Busch will note such phases of operations that he feels might warrant statistical examination.

DETAILED REPORT

Group 20 - Electrolytic Purity Assay

During this period 191 product solutions were assayed, 19 required resampling. The total of 210 production runs during this period is the fourth highest monthly total run by Group 20 since coming to Mound Lab. To date 965 products have been assayed; 52 or 5.4 per cent have required resampling.

Ten bismuth analyses were run for R. W. Endebrook. Two platinum analyses were run for the Process Group. Determinations for Silver in very low concentrations were made on one sample of bismuth - FO #18683.

EQUIPMENT AND MAINTENANCE

One foil and one basket were lost and recovered.

No maintenance was required on the balances during this period.

Thirty-five foil holders were serviced this month. Three new spirals, one new collet assembly and three new tweezer assemblies were installed. Twenty-eight holders were given routine cleaning.

Investigation to determine the cause for the unusual number of replacement parts required for foil holder maintenance this month, revealed the opening of the foil-chamber wall on LGAC Pat to be undersized. As the tweezer tips were passed through this opening, they were apparently binding and distorting the spirals. The opening was drilled to the proper size.

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No appraisal of the corrective measure taken, is made at this time.

The Dubrovin gauge on LGAC Mike was broken and replaced.

The Friden Calculator U.S.A. #1926, was sent to the warehouse for repair on July 23 and returned July 31. Approval has been given to purchase a replacement for this machine.

Positions five and seven in Hood 2 yielded bad purities for about two weeks. This condition was corrected when the power supply and potential controller were replaced by our stand-by unit. The Electronics Group is repairing the replaced unit.

DEVELOPMENT

Colorimetric Determination of Silver in Low Concentration in Bismuth

Test runs on the completed installation were finished and determinations were made on one bismuth sample, PO #18683.

Macro-Assay Method Development

Two new weighing cylinders were received from the Machine Shop on August 1. Considerable difficulty was experienced in sealing the thermal neutralizing salt into the cylinders. As a result the cylinders do not approach constant weight, as nearly as is desirable.

Purity determinations were run on eight guns. The results, presented in Table I, illustrate the necessity of obtaining a more constant cylinder weight, before proceeding with additional weighings.

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TABLE I

<u>DATE</u>	<u>AMPULE</u>	<u>N/SEC/CURIE</u>	<u>CYLINDER</u>	<u>CAL. VALUE</u>	<u>WT. (MG)</u>	<u>MICRO</u>	<u>MACRO</u>
8/4/52	Y-2248	54.6	A	29.07	5.62	96	115.1
8/4/52	Y-2248	54.6	B	29.07	5.22	96	123.9
8/4/52	Y-2249	64.1	A	27.57	5.30	96	115.7
8/5/52	Y-2262	208.9	¹ A	28.14	5.75	99	108.9
8/5/52	Y-2263	203.9	¹ A	26.76	5.26	99	113.2
8/6/52	Y-2285	81.3	A	28.19	5.57	95	112.6
8/6/52	Y-2286	66.3	A	28.81	5.87	95	109.2
8/7/52	Y-2303	29.4	A	28.73	5.53	97	115.6
8/7/52	Y-2304	28.7	A	26.26	5.04	97	115.9

1 - Above specified maximum count for production material.

Group 22 - Inventory

Operations

Work during the period has been largely concentrated on routine matters due to the imminence of the shut-down of the building during the week of August 25. Plating has been at an accelerated rate to build-up stock sufficiently to carry over the enforced shut-down period. As a result it has been necessary to delay the Bradley-Calorimeter cross-check program; this will be resumed as soon as operating schedules permit.

A meeting was held on July 16 with interested members of the Y-Section and the Accounting Department at which it was decided to change the inventory reporting date to the last day of each calendar month, with the completed monthly inventory report to be in the hands of the typist by 4:30 p.m. of the second working day of the subsequent month. The change was successfully made for the month of July; it requires the Inventory Group to work to a tight schedule and the other operations sections to cooperate fully in meeting the deadline. At this time also the duty of reporting unit costs for the Operations Division was turned over to the

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Accounting Department. With the new closing date, it is impossible to deliver data for the month to the Accounting Department in time for them to make the necessary calculations for inclusion in the report. In this situation the Inventory Group agreed to prepare an estimate of the data required by the Accounting Department and to have it in their hands late in the current month; this will in no way affect the calculation of true costs, but will be used exclusively for the monthly report of operations which is delivered to the Commission in Washington on the 10th of each month.

In times past, the "Through-Put" figure has been used as a basis of arriving at unit cost for purposes of the Monthly Report. Under the new situation where the Accounting Department works from an estimate of production figures to arrive at unit cost, the "Through-Put" figure loses much of its usefulness. A recognition of this fact lead to a discussion of the advisability of examining the entire report in the light present conditions. The format of the report has not been changed since its inception in 1947 except in minor respects; better and more complete data now exists relative to operations and it is probable that some of this could be reported monthly to reflect more accurately the position of the 210 program. An informal discussion of the possibility of revamping the report was held with Mr. E. A. Walker of the A. E. C. and he stated that they were thinking along the same lines. It is probable that a meeting will be called by the A. E. C. in the near future in which the matter will be discussed between Mound and ORNL personnel.

A shipment of over-age initiators was received from Los Alamos during the first week of August. The shipment consisted of approximately 60 items aggregating about 200 curies. These are being held pending a decision by the processing section relative to a method of destruction. The section is reluctant at present to put these into processing lines due to the possibility that a recent period of production of high-neutron material is traceable to the presence of beryllium in the system.

Group 24 - Calorimetry and Counting

Operations

Assay work was rather heavy, especially during the later part of this period, due to the unusually large amount of "high neutron" products received. At the time of this writing it would seem that the difficulty is being rectified.

As a result of the personnel shortage, coupled with the large influx of products, it was agreed that the gamma value, rather than the calorimeter value, on the XY-guns would be acceptable for inventory and activity transfer purposes.

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All activity requests for this period have been filled on schedule. It should be noted, however, that because of the neutron problem and the scheduled suspension of operations for one week, the stockpile of guns is not quite as complete as usual.

In addition to regular production work, the following assays were made for other groups during this period:

<u>No.</u> <u>Assays</u>	<u>Type</u> <u>Sample</u>	<u>For</u> <u>Group</u>
2	Neutron Source	Neutron Source
8	Prod. Gun	Micro-Assay
1	Prod. Gun	Neutron Source

Maintenance and Repair

The neutron counters in T-318 continue to require more frequent servicing than in the past. A standard model Counter and Scaler has been adapted to the T-29 neutron counting geometry.

Calorimetry equipment operated satisfactorily with the exception of a stirring motor which had to be serviced.

Group 33 - Special Problems

Some of this period was spent helping Kenneth Busch develop a perspective of the operations in the Operations Division. This included some discussion of possible applications of statistics to the division work.

Considerable time was spent studying the data collected on the 10 batches made up of calorimetered slugs. This included some study of the assay methods of the Inventory and Counting groups and a study of the work of the Research Division on the counting problem. A preliminary report was submitted on these studies.

Some study and discussion was made with Capocéfalo on the flow sheet of the division he is working on.

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Copy - 1 - Mr. E. C. McCarthy
2 - Mr. P. J. Lowry
3 - Central Files
4 - Central Files

P. J. Lowry

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