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UNITED STATES ATOMIC ENERGY COMMISSION

MCW [MALLINCKRODT SF] ACCOUNTABILITY PROGRAM

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A Progress Report

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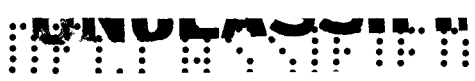
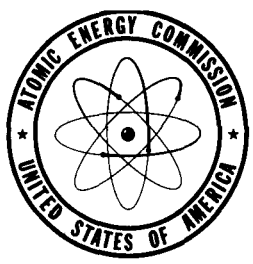
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MCW [MALLINCKRODT SF] ACCOUNTABILITY PROGRAM

A Progress Report

By C. H. Walden

This report covers the progress made in the Accountability Program from April 15th to June 1st, 1950. The subject matter is presented, as in preceding reports, in the following manner:

- A. Production Aspects
- B. Theoretical and Analytical Aspects
- C. Accounting Aspects

A. Production Aspects

In addition to continuing the program of evaluating the uncertainty in the monthly inventory, the following problems, relating to production, have required attention.

1. Check Weighing of OM-2

Due to the fact that certain errors were noted in the weighing of 30 gallon drums of orange oxide, it was necessary to reweigh over 200 drums of this material now the property of the AEC and stored at the range. This check weighing was done by Mr. Emmert of MCW and witnessed by Mr. Sullivan of the AEC. The paper work had already been completed relative to the transfer and payment for this material so the errors in weighing were rectified by actually regrossing the drums to the weight given on the tally sheet. These errors were numerous and large and to guard against future errors of this nature, a printed record of all weights is being obtained from a Printweigh Scale and checked with the tally sheet weight.

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2. Check Weighing of LF-9

All lots of LF-9 are being check weighed on a Toledo Printweigh Scale and these check weights compared to the weights on the tally sheets. Inasmuch as these drums are uniformly packed, all drums show a net weight of 75.00 lbs. on the Tally Sheet. A certain deviation of the net weight from 75 lbs. is allowed ($\pm .1$) and any deviation beyond should call for a regrossing of the drum. The results from some 70 lots indicate that if the operators follow the instructions supplied them, then the net weights of the lot will be, for the most part, 5400 ± 3 lbs. In certain cases, operators have not properly regrossed drums and this deviating from 5400 lbs. has amounted to as much as 10 lbs.

3. Sewer Sampler

The sewer sampler proposed by the Accountability Group is being installed in the main sewer of Plant 6 at the present time. If this sampler performs satisfactorily, a similar one will be installed in the acid sewer.

4. C-3 Sampler

The C-3 Sampler is now in daily use with control samples going to the lab once a day. Two determinations are made on this daily sample: (1) Pounds per gallon of solids and (2) an My determination on a 4-day composite basis. The solids determination serves as a control upon the filtration of the C-3 discard going to the sewer and the My determination assures us that no appreciable amount of radium is lost to the sewer. The 4-day composite seems justified in the light of past experience; no sample having failed on My. A uranium assay is obtained on a filtered sample or the material before it undergoes the final filtration to determine whether enough caustic has been added to precipitate out all of the uranium.

5. Disposal of Plant 6 Scrap

A survey is being made, at the present time, of the disposal of scrap in Plant 6. This involves two forms of scrap: (1) the so-called "hot scrap" and (2) trash. The former of the two presents a serious accountability problem while the latter is really a matter of security and health and to a lesser extent accountability. For the most part, the

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"hot scrap" originates from the various sumps in the plant and is the material retained in the wire basket used to screen the material being pumped to sump recovery. In addition, scrap material coming from repair jobs often gets into this category. The uranium content can hardly be called negligible and it is impossible to evaluate due to the heterogeneous nature of the material. This material may contain, among other things, brick, sand, gravel, welding rod, nuts, bolts, insulation material and varying amounts of uranium. At the present time, there are not facilities available for processing this material here at the plant and the usual means of disposal is to ship it to a "graveyard." This means of disposal will naturally leave a gap in the Accountability Records since it is not possible to even estimate the uranium content of the material. No action has been taken concerning the disposition of this material until all of the facts have been obtained.

The second form of scrap is made up of combustible and non-combustible material. The combustible material is burned in two different categories and the ashes kept separate. The portion deemed contaminated is burned in the plant incinerator and the ashes returned to the process. The so-called non-contaminated combustibles which may contain classified information are also burned in the plant incinerator with the ashes being sent out of the plant. Larger quantities of combustible materials are sent out of the plant for burning. This allows for two chances of error: (1) contaminated material being burned in the plant but ashes going out and (2) contaminated and classified material being sent out of the plant for burning. The non-combustible category is eventually sent to a "graveyard" and any failure to remove uranium-bearing material from this scrap will constitute a loss of material from the project. In addition, a certain amount of combustible material gets mixed in with the non-combustible scrap which should of course be remedied. Here again, the facts are being gathered before any recommendations are made.

B. Theoretical and Analytical Aspects

1. Green Salt Standard Assay

A uranium assay is now being run on weekly composites of green salt lots in order to evaluate the reliability of the standard assay

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presently used. There are not enough results to come to any conclusions but they do show a trend towards a lower assay.

2. Double Sampling and Assay

To evaluate the precision of sampling and assay techniques, a program of double sampling and assaying is necessary and such a program has been initiated now on the various residues of both Plants 6 and 4 as well as the monthly Work In Process Inventory. The laboratory cannot analyze all of these samples at the present time but they will eventually be analyzed and will contribute to the evaluation of the uncertainty in the monthly material balance.

3. Sampling of Plant 6E Residues

Provisions are not being made in the new metal plant to sample the various residues. However, to be able to meet the minimum requirements of the AEC Accountability Program, it is necessary to sample and assay these residues. A letter was sent to Mr. Karl outlining our sampling needs and requesting his reaction to providing adequate sampling facilities. No reply has been received from this letter but Mr. Henton has gone ahead with plans for installing a sampling station in the old boiler house. The main feature of this sampling scheme is a new type of riffle sampler, designed by Mr. Henton, which permits the splitting out of a representative $1/32$ sample. This mode of sampling can be applied to any dry material which will pass through a quarter inch-mesh screen but will not be designed to handle any large volume of material. For this reason, the sampling of C-special and C-liner must be done in a different fashion with more elaborate equipment. The plans for this latter sampling will be drawn up once the AEC indicates their approval of our sampling these residues.

C. Accounting Aspects

For the most part, the progress made during the last six weeks in the Accounting Group has been the incorporation of the various changes recommended by the AEC during their March survey. The New York Accountability Group has indicated that it is well satisfied with these changes. The survey team from this Group expect to be here on June 12th to conduct another, but briefer, survey.

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