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MOUND LABORATORY

Operated by
MONSANTO CHEMICAL COMPANY
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Miamisburg, Ohio

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To Dr. R. A. Staniforth

Date February 13, 1952

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Subject Trip to Oak Ridge, January 21-22, 1952
by J. F. Michelberger and D. L. Timma

MOUND DECLASSIFICATION REVIEW	
1ST REVIEW DATE: <u>9/19/57</u>	DETERMINATION (CIRCLE NUMBER(S))
AUTHORITY: <u>DAOC DAAC DADD</u>	1. CLASSIFICATION RETAINED
NAME: <u>H. Anderson</u>	2. CLASSIFICATION CHANGED TO: _____
2ND REVIEW DATE: <u>1/21/98</u>	3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: <u>DD</u>	4. COORDINATE WITH: _____
NAME: <u>M. R. R. R. R.</u>	5. CLASSIFICATION CANCELLED
	6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY): _____

Monday morning was spent talking with Dr. Roth concerning the beta-ray spectrometer and other related topics. The original meeting planned with P. R. Bell and Dr. Hayes of Vanderbilt could not be held because of their inability to come to Oak Ridge.

A number of miscellaneous facts were gleaned from our talks with Dr. Roth. Dr. Vander Weyden is taking over some of the responsibilities that were Dr. Roths, particularly in the field of chemistry. Dr. Roth is, for the time being, retaining contact with the physics and electronics research fields. Dr. Roth felt that Mound Laboratory should be thinking now in terms of training shift supervisors for the PPR. Dr. Haynes at Vanderbilt now has a National Research Council Fellow (Dr. Boils) who has "Q" Clearance and who might be available to do some beta-ray spectrometry at Vanderbilt. It was felt that unless some work was sent to him that Dr. Boils might soon leave Vanderbilt. We received the impression that Dr. Roth would prefer to have the fundamental work on characterization of the beta spectrum of the actinium family and mixtures of the radium, actinium and thorium families done by the people at Vanderbilt. He suggested that preliminary work on beta or gamma pulse-height analysis be done by P. R. Bell's group at X-10.

Monday afternoon J. R. Parks accompanied us on a visit to observe the laboratory containing the pulse-height analysis equipment at X-10. The equipment there included a twenty-channel pulse height analyzer and a single-channel pulse-height analyzer. Both analyzers used the same Na I detector. The single-channel analyzer was arranged so that it would automatically record the time required to detect a predetermined number of counts falling within a given energy range and then reset on the next higher energy increment. Because of the automatic features of the instrument it was normally allowed to operate overnight. The sensitivity of this instrument could be adjusted to determine the energy of the particles with a precision of about one per cent.

The twenty-channel pulse-height analyzer simultaneously recorded the number of pulses which fell within each of twenty energy channels.

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It also recorded the number of counts of energy higher than the twentieth channel and the grand total of counts on the twenty-one indicators. Data obtained on the two instruments were comparable, the chief difference being in the time required to accumulate the data. They showed us energy plots of simple spectra, simple mixtures, mixed fission products, and actinium. The data on actinium was only preliminary and had been obtained using a sample of actinium from the second run at Chicago sealed in a small platinum capsule. They considered the sample to be in a very undesirable mount and were planning on mounting the sample on a thin plastic film to obtain better data. They have quantities of various gamma emitters that they use for energy calibration studies. Since the absolute quantity of material on the slides is extremely small, there was some indication that they might be willing to supply us with slides with small quantities of the active materials already mounted on them for use as standards.

Tuesday morning was spent touring the LITR (Low Intensity Training Reactor). This was a mock-up for the MTR at Arco. It has been made critical, however the flux obtained has been lower than that planned for the MTR. Some bismuth slugs which had been sent to Oak Ridge for irradiation had been placed in the reactor in September and removed in November. They will soon be replaced in the reactor. We indicated to J. A. Cox that a letter would be written to him concerning what disposition of the slugs should be made. This situation was called to the attention of Mr. D. L. Scott. Dr. Haring had been handling the matter. We talked some concerning the problems of loading cans containing radium into the LITR. The opinion was that five curie quantities of radium could be handled readily since they have satisfactorily loaded thousand curie samples of cobalt.

Tuesday afternoon was spent in visiting Dr. J. R. McNally at Y-12 and discussing the status of the report on the cooperative X-ray experiment. He has finished assembly of the reports from the two sites and will forward the proposed rough draft to Mound Laboratory. Some time was spent in visiting his laboratories and in discussing new spectrographic equipment.

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