

A-85-012

INTER-OFFICE MEMORANDUM

DATE

TO: E.R. Jette - R.W. Spence - R.P. Hammond

December 8th, 1947

FROM: James R. Lilienthal

SUBJECT: Report of Oak Ridge Inspection Trip - December 1st to December 4th, 1947
LAB-CMR-26

1. Three and one-half days were spent at the Clinton Laboratories inspecting their facilities.

2. Upon arrival I reported to Mr. James C. Stewart, Chief of Division, Clinton Laboratory X-10, representing the AEC. Mr. Stewart turned me over to Dr. Edgar J. Murphy, Assistant Director of Research and Development representing the Monsanto Chemical Company.

3. Dr. Murphy was most helpful in arranging meetings with personnel of the Clinton Laboratory who have had experience with the design and operation of remote control equipment. I was also able to personally inspect all their facilities.

4. The following is an outline of major groups and facilities visited:

A. Radiochemistry Group:

The men in this group with whom I discussed the remote control problem were Mr. Paul C. Tompkins and Mr. John Swartout. In this discussion it was brought out that the chemistry of the process was the governing factor in the design of the equipment. This led to a discussion of the probable chemistry that would be used to separate the lanthanum and barium. They were enthusiastically in favor of a solvent extraction process with which they have had considerable success. They felt that if they could devote two weeks work to our problem they would have an answer for the separation by this means. References referring to this process can be found in:

PUBLICLY RELEASABLE
LANL Classification Group
7/19/96

Journal of American Chem. Society for

November, 1947.

Report CN-2563, CC-2867, Mon-C-34, Monsanto Quart. Chem. Reports for 1947

B. Instrumentation Group:

The discussion with this group included Mr. Bigler, Mr. Boyd and Mr. Novak. They have designed and made various types of electronic equipment for measuring and recording radiation. They have given me a complete list of drawings for nine assemblies which can be used in our work. Complete sets of blueprints for the manufacture of these instruments have been made and will be forwarded through official channels.

VERIFIED UNCLASSIFIED

Marked for release 7/19/96

This document contains information affecting the national defense of the United States within the meaning of the Espionage Laws, Title 18, U.S.C., Sec. 793 and 794, the transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

CLASSIFICATION CANCELLED
PER DOE REVIEW JAN. 1973

UNCLASSIFIED

INTER-OFFICE MEMORANDUM

DATE

TO:

FROM:

SUBJECT:

- 2 -

The list of assemblies is as follows:

Model Q-280	Monitron
Model Q-527	Vibrating Condenser Monitron
Model Q-558	Pocket Screamer
Model Q-319	Cutie Pie
Model Q-635	Cutie Pie
Model Q-276-C	Voltage Regulator for Electro- plating Control
Model Q-490-A	Brown Amplifier
Model Q-631	Squid
Model Q-648	Fish Pole

The above units include improved amplifier circuits for use with ionization chambers, pocket meters with audible alarm, portable instruments, etc.

C. Radium-Beryllium Group

Mr. Sissman has designed a concrete chamber fitted with remote control apparatus for the preparation of radium-beryllium sources. A discussion of the general aspects of the problem showed some common features of design. A type of periscope used in this building appears to be suitable for our use. This design is simple but it has the added advantage of using known cataloged lenses. Heretofore all lens information has been lacking on any previously designed periscopes for which we have drawings. Arrangements have been made to obtain complete information for manufacture of this periscope.

D. 706-D Process Group

This group prepares the radiobarium for Los Alamos Bayo group. The working of the process was discussed with Mr. Witkowski, Mr. Whitney, Mr. Blaver and Mr. Reynolds. This group feels that the present facilities can be used to produce much higher radioactive sources; that is, over 5000 curies. It will mean that slugs from Hanford must be used. It was pointed out that a much larger shipping pot would be necessary. In this case they have a construction problem in enlarging the opening through which the pot is removed from the concrete chamber. The modifications required by our remote control process must tie in with the facilities they have for evaporating the barium chloride in the cone. It was agreed that any such design would be checked with them.

E. 706-A Isotope Group

Mr. George W. Parker and Mr. R.T. Jones have had the necessary experience with various periscopes used to inspect the interior of concrete cells. All the periscopes for the project have been designed by Dr. George S. Monks who is a consultant on optics for Clinton Laboratory.

CLASSIFICATION CANCELLED
PER DOC REVIEW JAN. 1973

~~SECRET~~

UNCLASSIFIED

INTER-OFFICE MEMORANDUM

DATE

TO:

FROM:

SUBJECT:

- 3 -

The periscopes used by this group are the ones for which we have drawings, less lens information. Due to procurement difficulty and the reluctance of manufacturers to manufacture lenses in small quantities, the general procedure for this group is to obtain various kinds of surplus lenses and then arrange them in a suitable array for the work. If the periscope used by the radium-beryllium group is satisfactory, we will not have to go through the trial and error process.

5. Various other facilities were visited but the major ones related to the Bayo redesign and, therefore, are the only ones outlined above. Certain general conclusions and opinions have been useful. It is generally considered that a concrete cell which can become contaminated should be completely lined with welded stainless steel sheet. For ease of construction and low cost ordinary concrete is superior to any abnormal concrete mix, i.e., lead ore, iron, or barium aggregate. If necessary, openings in walls can be filled with dense clear liquids; such as, acetylene tetrabromide (which is expensive) or a zinc bromide-solution. The recommended method for decontaminating a hot chamber is the use of live steam, directed by a nozzle, if possible.

6. As a result of this trip a great deal of information pertinent to the Bayo chemistry redesign has been obtained.

James R. Lilienthal
James R. Lilienthal

JRL:AZ

CLASSIFICATION CANCELLED
PER DOC REVIEW JAN. 1973

UNCLASSIFIED

~~SECRET~~