

DECLASSIFIED

UCRL 747

~~SECRET~~

C2

UNIVERSITY OF
CALIFORNIA

*Radiation
Laboratory*

TWO-WEEK LOAN COPY

*This is a Library Circulating Copy
which may be borrowed for two weeks.
For a personal retention copy, call
Tech. Info. Division, Ext. 5545*

BERKELEY, CALIFORNIA

UCRL-747

C2

DISCLAIMER

This document was prepared as an account of work sponsored by the United States Government. While this document is believed to contain correct information, neither the United States Government nor any agency thereof, nor the Regents of the University of California, nor any of their employees, makes any warranty, express or implied, or assumes any legal responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by its trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof, or the Regents of the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof or the Regents of the University of California.

~~SECRET~~

DECLASSIFIED

~~RESTRICTED DATA~~

SECRET

AB-443

UCRL-747

This document is as defined in the Atomic Energy Act of 1946. Its transmission or the disclosure of its contents in any manner to an unauthorized person is prohibited.

THIS DOCUMENT CONSISTS OF 3 PAGES.
NO. 12 OF 13 COPIES. SERIES A.

MINUTES OF MTA PROGRESS MEETING
TUESDAY, JUNE 6, 1950

Present: UCRL: Brobeck, Cooksey, Farly, Gordon, Latimer, Lawrence, Lofgren, Longacre, Martin, Powell, Reynolds, Sewell, Thornton, Twitchell, Street

CRDC: Cope, Hildebrand, Kent, Maker, Powell

UCLA: Byron Wright

AEC: Ball, Fidler

CLASSIFICATION CANCELLED
BY AUTHORITY OF THE DECLASSIFICATION
BRANCH USAEC
BY B. Brobeck 4-18-57
SIGNATURE OF THE PERSON MAKING THE CHANGE DATE

Cope said the bid has been awarded for the accelerator building excavation at Livermore and the contract for this work should be signed by the end of this week. The 30,000 KVA transformer at Oak Ridge is being made available to us and will be removed by Westinghouse. The specifications for both the foundation and building will go out for bid this week or next. The foundation should be completed by September 1, 1950 and the building should be finished by December 1, 1950. The contract for the tank fabrication should be signed tomorrow.

Brobeck said that the details of the liner design which met objections at the last meeting (two weeks ago) have been revised. Maker presented a description of the main elements of the liner design. The main objection to the original design was the provision for joining adjacent sheets of the tank using rivets and soft solder with the sheet edges of the following design,



the projection being on the inside of the tank. This has now been revised to provide a welded joint as follows



the welding being done on the under side which will be toward the outside of the tank.

Copper tubing will be hard soldered to the outside of the liner with spacings varying from 5-3/8 to 7-1/8". Approximately 30,000 feet of copper tubing

SECRET

~~SECRET~~

~~SECRET~~

DECLASSIFIED

-2-

MINUTES OF JUNE 6 MEETING

will be required for this purpose. Maker raised the point that the copper tubing of the desired type is available either in coils of approximately 300 feet or as straight sections of approximately 60 feet. Fewer soldered joints would be required if the longer sections were used but the fabricators feel that there would be considerable workhardening of the tubing resulting from uncoiling it which would make it difficult to bend it as required for installation. Thornton said he saw no reason to go to much trouble to minimize the number of soldered joints. It was generally agreed that the 60 foot straight lengths of tubing would be satisfactory.

Brobeck again presented for discussion the proposal to provide for heating of the liner with hot water so as to save time on the initial bakeout. A water temperature of 90° C has been suggested. The hot water required can be made available from the present boiler. He felt that a week or more of time might be saved by this means. Both Lofgren and Thornton expressed doubts as to the effectiveness of this procedure in the light of project experience. Professor Lawrence felt that there is sufficient probability of time saving on the initial bakeout to warrant the rather nominal expense of the system. This latter opinion was generally agreed to. Maker said that he would explore the magnitude and effects of liner and tank expansion which would accompany the bakeout to see what limiting temperature rise can be tolerated.

Sewell reported on recent work on the 1/10 scale model of the accelerator. Preliminary tests have been run to determine the positions of the drift tube supports. The BB test has also been run and a field plot obtained along the axis of the tank. Tests will be run to determine the location of undesirable modes which might exist because of oscillating currents in the supports. It was generally felt that these modes would be far removed from the main one. These preliminary tests seem to indicate that the supports will join the drift tubes at their midpoint and will be perpendicular to the axis of the tank. Tests are also planned to measure the power loss from currents in the drift tube supports.

Gordon reported on the design of the coils for the focusing magnets. Square copper conductor with a circular hole for cooling water will be used. Five different cross sections utilizing 100 tons of conductor at an approximate cost of \$80,000 will be required. Recent improvements in the design of the first two drift tubes together with a reduction in the required magnetic field strengths have reduced their power requirements to 130 KW and 203 KW respectively. The required field in the first drift tube was reduced from 8800 to 6000 gauss while that for the second has dropped from 6400 to 6000 gauss.

The copper conductor will be wound in radial pancakes with glass tape as insulation. These pancakes will be joined in pairs with the members of the pair wound in opposite directions. They will then be joined in the center, thus providing for all electrical and mechanical connections on the exterior of the pancakes. All focusing magnets will be made up of an integral number

~~SECRET~~

~~SECRET~~

-3-

DECLASSIFIED

MINUTES OF JUNE 6 MEETING

of such pairs.

Wilson Powell suggested that provision be made to circulate dry nitrogen through the drift tube interior to prevent the condensation and collection of water vapor on the water-cooled windings. He also suggested vacuum impregnation of the assembled coils with a polymerizable material for improved mechanical rigidity.

Lofgren reported on the status of his work on ion sources. He is working on both d.c. and r.f. modulated sources. From the d.c. source the best beam thus far obtained is 60 ma (total ion current) as a 1" diameter beam. This beam has not been resolved into its components but is considered to consist of 80 - 90% H⁺. With the r.f. source, which is essentially a modified calutron source with the r.f. applied to the first accelerating slit, typical results are as follows:

Ave. Beam	r.f. component *	% modulation **
45 ma	(no r.f.)	--
35 ma	20 ma	35%
20 ma	22.5 ma	56%

* the r.f. component is measured from peak to peak.

** modulation = 1/2 r.f. component/avg current.

The following data illustrate the variation in beam composition as a function of arc condition:

75-amp pulsed arc, 900-volts gave 40 ma D⁺ and 3.5 ma D₂⁺

30-amp " " , 375-volts " 30 ma D⁺ and 7. ma D₂⁺

Latimer said that the recent trip to Oak Ridge by himself and representatives of UCRL and CRDC resulted in agreement by the Oak Ridge group under Weinberg to begin preliminary investigation of metallurgical problems connected with the target design. The MIT group will also be undertaking some studies along this line in connection with their normal program.

Russell H. Ball

CC: W. B. Reynolds, UCRL
Information Division, UCRL
W. Brobeck, UCRL
J. Norton, UCRL
J. Q. Cope, CRDC
Alex Hildebrand, CRDC
A. Tamaro, COO
K. S. Pitzer, WO

H. A. Fidler, BAO
W. E. Elliott, BAO
R. H. Ball, BAO (3 file copies)✓

~~SECRET~~