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.

S E C R E T

UCRL-1020
Technology - Materials
Testing Accelerator

DECLASSIFIED

UNIVERSITY OF CALIFORNIA
RADIATION LABORATORY

Contract No. W-7405-eng-48

CALIFORNIA RESEARCH & DEVELOPMENT COMPANY
Contract No. AT(11-1)-74

Classification cancelled by
authority of the Office of
Classification 5-12-54.
Date

MINUTES OF MTA PROGRESS MEETING
HELD NOVEMBER ~~14~~, 21 1950

Russell H. Ball

RESTRICTED DATA
This document contains restricted data as defined in the Atomic Energy Act of 1946. Its transmittal or the disclosure of its contents in any manner to an unauthorized person is prohibited.

Berkeley, California

S E C R E T

A-2692
~~2691~~

DECLASSIFIED

STANDARD DISTRIBUTION: Series A	Copy Numbers
Atomic Energy Commission, Washington	1-4
Oak Ridge National Laboratory, X-10 Site	5
Oak Ridge National Laboratory, Y-12 Site	6
Patent Branch, Washington	7
Technical Information Service, Oak Ridge	8-12
University of California Radiation Laboratory	13-26

RESEARCH SERVICE BRANCH
Atomic Energy Commission
Berkeley Area
Berkeley, California

DECLASSIFIED

MINUTES OF MTA PROGRESS MEETING
HELD NOVEMBER 21, 1950

Present: UCRL: Alvarez, Brobeck, Brown, Byerly, Cooksey, Cork, Farly, Gow, Hanson, Judd, Kilpatrick, Lawrence, Longacre, Martin, Norton, Reynolds, Sewell, Twitchell, Van Atta, Wallace

CRDC: Cope, Crandall, Gleason, Hansen, Maker, Powell, Waithman

AEC: Ball, Fidler

G.E.: Smith, Webster

Westinghouse: Hulse, Kresser

Brobeck said that bids have been received for the power supply for the L-1 cavity and that they are now in the process of being analyzed.

Sewell reported on the recent work to study the 15% discrepancy between the measured and calculated values of Q for the 1/10th scale model of Mark I. In order to determine the source of the discrepancy the drift tubes were removed from the 1/10th scale model and the Q was directly measured and also calculated from measurements of the field. The determination of the field was done much more carefully than before and the results were integrated over the entire volume of the cavity, whereas previously assumptions had been made as to the effect of the tapering cavity on the field contour. With these more refined measurements the calculated value of Q was improved from 89,000 $\pm$ 5,000 to 90,000 $\pm$ 3,000, while the new measured value of Q was 88,000 $\pm$ 2,500. From these figures it is evident that the unexplained losses in the cavity are associated with the drift tube structures. The drift tubes will be cleaned, sanded, and silver plated before being reinstalled, at which time the Q will be determined again. The Q will be determined at this time with and without pumping holes in the liner and with and without skirts on these pumping holes. It will also be determined with and without a simulated section of the vacuum tank wall adjacent to the pumping holes.

Brobeck said work is being done on an electric method of hard soldering the cooling tubes to the liner plates. The method consists of placing a graphite block behind the liner plate and one in contact with the copper tubing and conducting a high current through the copper to melt the solder. It is hoped that this method will allow soldering to be accomplished at the speed of about one foot of tubing per minute.

Hanson said that a proposal from the Oscar Krenz Company has been received to fabricate the liner on a cost-plus-fixed-fee basis. The fee requested is greater than normally allowed by the Commission. The contract is now under negotiation. He added that Krenz is considering use of a furnace in which

the soldering of all 28 cooling tubes to a section of the liner can be accomplished simultaneously.

Brobeck said that a short meeting will be held at 8:30 tomorrow morning on the design of the periscopes prior to sending the engineering drawings out for bid.

Longacre said that calculations of X-ray production by Mark I have been made using an impedance for the machine which is too low by a factor of 2. This means that the X-rays measured were produced by a higher field gradient than had previously been thought. The surface of the drift tubes was thought to be at 0.78 megavolts per foot, whereas it was actually at 1.01 megavolts per foot. This correction reduces the estimated X-ray production of Mark I by a factor of 10, placing the present best estimate of loading from this cause at about one megawatt. Alvarez said that little reliance can be placed upon a specific figure for this loading but it is true that our estimate of its severity have been reduced by a factor of 10. He said it is not yet possible to accurately predict the X-ray loading, since the fundamental process of field emission and the scaling laws applicable are not known. He added that with a given cavity and with a given surface the X-ray production is dependent upon the sixth or seventh power of the field gradient. Much valuable information on X-ray loading will be obtained from the B-1 test cavity when it is operated under vacuum. It was pointed out that there is no provision for heating the ball in the B-1 cavity but Twitchell said that if it were required heating units could be installed in about 2 or 3 weeks. Lawrence said that it would be worthwhile to study this X-ray production problem in the XC machine since its size is such as to simplify the installation of heating units. Alvarez pointed out that there will be a large difference in multipactoring between B-1 and XC because of the difference in geometry.

Hansen said that due to weather 4 work days have been lost at Livermore in the past week. Ten of the reinforcing ribs have now been installed; the eleventh has been assembled on the ground and is ready for erection. The last two rings, which are end flanges, will not be erected for a week or two. The vessel is now about 26% assembled. About 18% of the welded joints have been freon tested and no vacuum leaks have been detected on the manifold. The south basement is complete except for back-filling and the east-west tunnel on the south of the building. Fabrication of piping for the refrigeration system is underway in the A & R building. Work on trenches and transformer foundations for the electric distribution system is underway. The 40,000-KVA transformer arrived on Friday and is being trucked to the site. P.G. & E. power poles are all installed and stringing of the highline cable will begin shortly. A contract has been let for the power supply building and construction will begin as soon as weather will permit.

SECRET