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SUMMARY OF MEETING ON MATERIALS TESTING ACCELERATOR

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UCRL 721

SUMMARY OF MEETING ON MATERIALS TESTING ACCELERATOR

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Meeting held at 2:00 P.M., February 15, 1950 in Building 50, University of California Radiation Laboratory.

Present: E. O. Lawrence, W. B. Reynolds, E. M. McMillan, L. W. Alvarez, E. J. Lofgren, W. H. K. Panofsky, M. Martin, R. Serber, W. M. Brobeck, J. S. Norton, W. Baker, R. Thornton of University of California Radiation Laboratory. John J. Cope and James Kent of California Research. Andrew Longacre of University of Illinois. G. Farly, Radiation Laboratory of Univ. of Calif.

Increase of energy from 25 to 27 Mev and tank diameter from 30 to 36 ft. is estimated to increase the cost by about \$220,000. This was considered satisfactory.

Use of motor-generators rather than pulse lines was considered highly desirable even though cost may be \$100,000 greater. Use of pulse lines for high power introduces new and probably serious problems of protection of equipment against fault.

There is a good possibility that no step in diameter along the tank will be required if suggested drift tube shapes prove satisfactory in model tests.

Alvarez stated that the use of a saw tooth wave form for the buncher, which should be possible at the frequency planned, should practically eliminate parasitic beam load.

It appeared to be the general opinion that shielding would be required. The use of 4 ft. of concrete around the vacuum tank for combined shielding and reinforcement is to be investigated.

A request has gone to Washington to obtain the Camp Shoemaker (Livermore) site from the Navy Department. Power at this site will be limited to 10,000 KW without bringing in an additional transmission line. However, this appears just sufficient for the 27 Mev plant and in other respects the site is very satisfactory.

Baker advised against the use of two tubes per oscillator as trouble has occurred in all attempts to use such an oscillator here. He believes reliance on development of better tubes to handle higher power.

Reynolds stated that the 18 month schedule started February 14, making the completion date August 14, 1951.

The list of personnel now working on the project is as follows:

Physicists -

Alvarez and Panofsky - General physics of process including cavity RF design, beam dynamics, buncher
McMillan - Beam dynamics
Lofgren - Injector
Serber - General theory
K. McKenzie - Consultant on oscillators

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Engineers -

- Brobeck - Project engineer - engineering coordination and mechanical design.
- Norton - Electrical coordination (including vendor contacts).
- Baker - RF oscillators, pre-exciter, transmission lines.
- Farly - All major power supplies, protection and regulator problems.
- Kilpatrick - Controls, installation, electrical production.
- Gordon - Drift tube mechanical design.
- Martin - Tank and pumping system design.

Professor Lawrence is in overall charge of the project and Mr. Reynolds is responsible for the business management.

The following test programs and their status were reported:

Injector - Lofgren.

- Ion source in 4" pyrex tube being built in shop.
- Larger source to be built in building 16 together with high current test power supply of 200-300 KV without restriction on ripple or regulation and low pulse repetition rate.
- Bevatron ion gun to be completed as soon as possible for experience applicable to higher output.

RF. Models - Alvarez, Panofsky.

Single drift tube model for 800 MC is in the shop due for completion February 16. This will determine need for step in tank and approximate size of drift tubes.

Model of entire tank will be started shortly to check overall power requirements and drift tube stem shapes.

Later a model is planned to accelerate electrons to check beam dynamics.

Oscillator Tests - Baker.

Using an existing 1000 KW power supply an oscillator test set-up is to be made in building 52 with an air cavity 37 ft. in diameter by 5 - 7 ft high as a load.

Target - Martin.

Development of an electric pump with associated piping, valves and flow measuring equipment started for the 25 Mev cyclotron project will be continued.

W. M. Brobeck

WMB:FP
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