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MINUTES OF MEETING OF MTA REVIEW COMMITTEE
HELD DECEMBER 4, 1951
AT BERKELEY, CALIFORNIA

Milton F. Moore

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MINUTES OF MEETING OF MTA REVIEW COMMITTEE
HELD DECEMBER 4, 1951
AT BERKELEY, CALIFORNIA

Present: UCRL: Alvarez, Bradner, Brobeck, Cooksey, Latimer, Norton,
Reynolds, Sewell, Thornton, Twitchell, Van Atta

CR&D: Cope, Hanson, Hildebrand

AEC: Brown, Derry, Fidler, Fleckenstein, Jones, Kolstad,
Moore, O'Donnell

Twitchell stated that delivery of completed drift tubes to Livermore was progressing according to schedule. Drift tubes number 0 and 9 have been sent to Livermore, with number 9 already installed. The number 6 drift tube stem assembly will be delivered this week.

Vacuum leak detection tests on the assembled drift tubes are being conducted before shipment to Livermore. Since to evacuate the area between the copper shell and the magnet proper would collapse the copper shell, helium is forced into this space to replace the air. By evacuating the magnet coils and associated connections, the helium will diffuse into the evacuated area and be detected. It is important that the magnet coil be leak free, because of the possibility of organic vapor getting into the vessel. A leak rate of not over 0.004 micron cu. ft./min. was thought sufficiently low to consider the drift tube vacuum tight.

Drift tube magnets numbers 1, 2, and 3 are being evacuated to allow for out-gassing and leak testing. Tube number 4 is in the first assembly stage. A series of vacuum leaks on drift tube 5 has made it necessary to remove the copper shell to allow the leak to be repaired. Tube number 6 is currently being vacuum tested, with drift tubes numbers 7 and 8 completely assembled and awaiting vacuum test. The first drift tube is scheduled for delivery to Livermore during the week of December 10, with the final tube arriving shortly after the first of the year.

The drift tube stems are all assembled and can be installed immediately.

Five oscillators have been tested and are now ready for delivery to Livermore. The pre-exciter are currently being tested.

The non-lubricated 20-inch Teflon gasket used as a vacuum seal on the rotating pre-exciter transmission line was found to leak. This is the largest rotating high vacuum seal now known, and is intended to operate without lubricants to avoid contamination of the tank vacuum. Work is under way to determine whether a different gasket material will prevent the present trouble, or whether lubricants will have to be used.

The construction completion date for the plant size ion injector is December 15. It is expected that six weeks or less testing time at UCRL will be needed to

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remove the "bugs". Construction on the number two injector is progressing rapidly.

Alvarez stated that since it has not been possible to obtain a good vacuum seal on the rotating transmission line for the pre-exciter, it might be advisable to re-investigate the addition of metal shields around the loops and thus avoid the need of rotating the loops out of the flux path.

Sewell stated that two parasitics at 75 mc and 1000 mc had been found on the oscillator tube. These can be suppressed by using an absorber of transformer iron, but the power loss becomes very high. To reduce the power loss and still suppress the parasitics, suppressors of various types are being tried.

The oscillator transmission lines of the type now installed at Livermore have been arcing on the air side of the insulator on test in B-1. It was found that the copper conductor between the rubber vacuum gasket and the insulator had rough edges, extending beyond the edge of the rubber vacuum gasket, which allowed arcing to the inner conductor. Installation of a new sealing method will eliminate this problem. All transmission lines will be changed, but since all are not needed for starting operations, this change will not delay the completion date.

Hildebrand reported that the vessel has again been evacuated with mechanical pumps to determine whether the welds on the vessel head are satisfactory. Of the 96 strain gauges used, only four had high readings, and none exceeded the yield point. Four cracks were again found on the peripheral weld, after being X-rayed and magnafluxed.

The new model ion pump designed for the B-1 cavity is now being fabricated in the shops.

Van Atta stated that the problem of using D₂O as moderator is being reviewed because of the large quantities needed, namely 500 tons, and the high inventory cost. If a cost figure of \$25/lb. is assumed to be reliable, the heavy water inventory would be 75 megabucks. Using the above quantity of heavy water as moderator in a .45% U²³⁵ depleted uranium lattice and a .5 ampere beam, the plutonium product output would be increased by 50%, or to 10 moles/day of Pu as compared to graphite moderated lattice.

Before it can be decided if a D₂O moderated pile is economically feasible, the available quantity of depleted uranium and also the percent depleted will have to be obtained.

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