

HELIUM BUBBLE CHAMBER MANAGEMENT COMMITTEEPROGRESS REPORT1. Introduction

Since the last report of 6th January, 1966, we have been proceeding with the assembly of the main frame chamber body and shields in the Helium Bubble Chamber annex.

The magnet, the vacuum system and the refrigerator have been commissioned and have been handed over to the Rutherford Laboratory staff for maintenance and running. The Rutherford Laboratory staff have undertaken the task of commissioning and testing the power supplies and electronic equipment for the flash tube units. The Rutherford Laboratory staff have also taken a very major part in testing and assembling components on the main frame.

I have always endeavoured to make the Helium Bubble Chamber a joint project and in writing this report I wish to place on record the very valuable work that has been done by the Rutherford Laboratory professional and technical staff. It has been very largely the initiative and drive of the Rutherford Laboratory which has kept the work going when owing to shortage of Oxford staff and of clean area space at the Rutherford Laboratory, we have had to be in Oxford supervising work there when work was urgently proceeding at the Rutherford Laboratory. We have now had to use the office space in R.51 as a clean area for assembling thermocouples and small optical components.

2. Chamber Assembly

This is being assembled with low quality windows and full instrumentation. The thermometer and pressure transducers have been installed and the windows are in the process of being fitted.

3. Chamber Windows

The first pair have been engraved and bloomed.

4. 4°K Shields

Both upper and lower shields have had their windows fitted and have been vacuum tested.

5. Bellows and Side Wall

This has been installed on the chamber body.



6. Transmission and Drive

The main units have been installed and vacuum tested and are being connected between the top plate and the side wall.

7. Light Sources

As explained above, the Rutherford Laboratory has undertaken the assembly and testing of the flash tubes. The light boxes and condensing systems have been assembled.

8. Small Lenses and Mirrors

Dr. Welford has tested out one channel and adjusted the light stops. These units have been painted and are being assembled on the precondenser optics frame.

9. Camera Magazines

All have been assembled and tested for mechanical performance and light trapping.

Extensive life tests are still proceeding on one magazine. It has so far been cycled more than  $3 \times 10^4$  frames without a failure.

Magazine number 4 has had to have the drive belt pulleys adjusted otherwise the magazines met the specification.

10. Camera Lenses

The prototype aspheric has been tested in a rough mount at Imperial College, and performs as the designer intended.

The Schneider lenses are also at Imperial College being fitted to the lens plate.

11. The Lens Plate

The fine machining has been completed and Dr. Welford has the lens plate and lens mounts at Imperial College.

12. Main Condenser Lenses

One set is at R.H.E.I. after being put in its frame at Imperial College, and is being bloomed.



One complete channel has been demonstrated and the report on its performance received by the Helium Bubble Chamber technical committee.

13. Magnet

This has been moved to the test beam position. Preliminary tuning of the test beam has now been carried out at 2 GeV/C.

14. Refrigerator

The refrigerator is mounted on the magnet and its supplies connected to the fixed plant.

15. Vacuum Vessel

The new lower glass window parts have not arrived. This was a modification to give a longer safety factor on the remote chance of a pressure rise in the vacuum tank. The out gassing has been completed and its vacuum tests are satisfactory.

16. Outer Thermal Shields

These are complete.

17. Piping

This is complete and tested.

18. Controls and Instruments

Testing and interconnecting are in progress. Some electrical wiring is not completed. - *Data Board*

19. General State of the Project

Test assemblies of most components have been carried out. Assembly for the first run is well advanced with full instrumentation and with low quality optics and a mock up of the main condenser lens.

20. Staff

Several post- have been vacant for this period. As



- 4 -

the main contract ends on July 31st, we are not attempting to fill these and are relying on R.H.E.L. and contract staff.

D. Roaf

28th June, 1966.