

## PROGRESS REPORT ON R C B C

## 1. CHAMBER AND VACUUM ENCLOSURE

A detailed re-assessment of the overall design has been carried out, few significant changes are anticipated.

The main optical window has been specified, is now 930 mm diameter, 170 mm thick, and will be tempered to be in compression up to the design pressure of 13 bars.

The inflatable gasket is giving some problems in that deflectional stresses in the bubble trapping screen are high.

Provisional enquiries have been made for the various large stainless steel forgings. Although no interest was shown in 316 LN we have received offers for the smaller forgings in 316 L which are broadly in line with our original cost estimates.

The more detailed stress analysis preparatory to production of machining drawings has started.

## 2. OPTICAL SYSTEM

The first telecentric lens design has been received from Professor Wynne. It consists of 8 elements of similar diameter and has an overall length of 42 cms. The telecentricity is everywhere better than  $1.6^\circ$  and the bandwidth is  $0.070 \mu\text{m}$  centred at  $0.550 \mu\text{m}$ . The entrance pupil is about 1.2 cm diameter but is some 14 cm behind the front surface of the lenses, rather more than we had anticipated, necessitating some changes in the window geometry, also the back focal length is only 8 cm which raises some problems for the data board and puts the capstan drive into a higher field region. This could be improved but only at the expense of more and longer elements.

Tests on LED's at Plesseys have shown that short exposure times compatible with the specified camera operating frequency of 15 Hz are feasible. Further tests are to be carried out at RL.

## 3. CHAMBER TEMPERATURE CONTROL SYSTEM

The valve vessel design is almost complete. Prices have been obtained for a fully detailed prototype control valve complete with ~~alternator~~.

actuator

#### 4. EXPANSION SYSTEM

Prices have been obtained for the bellows moulds and the manufacturer selected. Preparations are being made for the testing of the bellows in the 'MAQUETTE'.

The piston design is now being looked at in detail.

#### 5. VACUUM SYSTEMS

The system has been simplified by the removal of two pumping sets.

It is proposed to build the mechanical pumps into modules containing valves and gauges and a provisional layout has been prepared to assist in discussing the installation.

#### 6. ACCESSORIES FOR CONTROL AND MONITORING SYSTEM

Detailed lists of instrumentation are being prepared for the vacuum, chamber and temperature control systems.

#### 7. IRON SUPPORT STRUCTURE

Tender documents have been prepared and sent out. Replies are called for by 12 July.

Now that both the iron and the coils have been specified stray field plots down to the level of 1 gauss have been calculated to assist in installation discussions.

#### 8. PROGRAMME

With the possible exception of the bellows all major systems are on schedule. But the final piston-bellows assembly does not appear to be affected by the delay because of slack within the complete system network.

#### 9. FINANCIAL

So far no commitments other than for R & D have been made but it is expected that during the next three months some substantial orders will be placed, including the iron structure and the large optical window.

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