

CRYSTAL PREPARATION

Eleven c-axis compression specimens of the zone leveled material (SR-11) have been given final orientation, lapping and electropolishing and are available for testing. Present plans are to test five of these in the Harwood apparatus and five in the FIRL equipment. The 11th crystal will be tested at ambient pressure in the existing c-axis compression test apparatus.

About 20 specimen blanks have been spark machined from the high purity 12 zone pass material, designated SR-3. Eleven of these specimen blanks are in the process of final orientation, lapping and electropolishing and will be tested with the same breakdown as the SR-11 material.

TEST RESULTS

Four c-axis compression tests were conducted this quarter, three on ingot S.R. material (designated ISR) and the fourth on zone leveled SR-11 material. The tests were conducted using the axial loading subpress constructed for the Bridgman-Birch type 30 kilobar apparatus at FIRL (mfg. by the Harwood Engineering Co.).

Load was measured on an internal load cell consisting of four foil gages mounted on a load bearing member in full bridge configuration. The load cell operated entirely within the pressure chamber and directly sensed the load applied to the specimen. Calibration of this load cell with a proving ring was carried out in the pressure chamber at ambient pressure before and after the pressure tests. Calibration after the tests showed that the load cell was within 1% of the original calibration.

Compression testing is accomplished by loading with the high pressure piston. The chamber pressure increases continuously during the compression test. Table I shows the loading pressure range and the stress