

III. APPARATUS

The high pressure studies of the rare earth diantimonides were carried out in the tetrahedral anvil apparatus, T-2, at Brigham Young University designed by Dr. H. T. Hall (23), (24). With 3/4 inch anvils this press is capable of generating 70 kilobars and 2000 °C in the sample geometry used.

The press consists of four 200 ton hydraulic rams driven along lines normal to the faces of a tetrahedron by an air-actuated pump. Cemented tungsten carbide anvils with 3/4 inch triangular faces are mounted in steel binding rings and are aligned by an anvil guide device. The anvils press against the face of a one-inch tetrahedron made of pyrophyllite, a hydrated alumina silicate, in which the sample is contained. The pyrophyllite tetrahedron is 25 per cent larger than the tetrahedron outlined by the anvil faces so that a gasket of extruded pyrophyllite will be formed as the anvils are advanced. The pyrophyllite has a high internal friction but is compressible so it contains the sample inside the tetrahedron and the gasket still allows compression and consequential pressure generation on the sample.

The press and control panel are shown in Figure 2