

temperature limit for hot-pressing  $\text{CrO}_2$  at higher pressures for the preparation of dense compacts. (2-6) Investigations by Goto and Kitamura, (7) by Somiya, Yamaoka, and Saito, (8) and particularly by White and Roy (9-11) have defined the equilibrium stability range to 5 kb and  $650^\circ\text{C}$ . Later data by these authors (11) to about 5 kb under probably very nearly equilibrium conditions are plotted in Fig. 1. Fukunaga (12) has recently completed an equilibrium study using a single-stage piston cylinder cell with sealed metal capsules to define the  $\text{CrO}_2$ - $\text{Cr}_2\text{O}_3$  P-T curve to 35 kb and  $1400^\circ\text{C}$ . He has very kindly made his results available prior to publication. The present study extends the data to 60 kb and about  $1500^\circ\text{C}$  (but not entirely at equilibrium) and are sufficiently interesting to warrant comparison of results from the two different experimental conditions.

#### Experimental

Two types of internally heated high-pressure cells were used: (1) a pyrophyllite cell with an  $\text{Al}_2\text{O}_3$  liner, (13) and (2) a cell with an NaCl inner liner similar to that described by Hanneman and Strong. (14) Most of the data are from runs on the second cell and for which the starting material was  $\text{CrO}_2$  (Table I). A few higher temperature runs were made in the first cell with either  $\text{CrO}_3$ ,  $\text{Cr}_2\text{O}_5$ , or  $\text{CrO}_2$  as the starting composition (Table II). All the compositions in the  $\text{Al}_2\text{O}_3$ -lined cell were wrapped with Pt foil while both wrapped and unwrapped samples were used in the NaCl-lined vessel with little or no difference in results. The starting materials were pressed into cylindrical pellet form (about 3 mm diameter by 3 mm height).