

the P-T points indicated in Fig. 1. The collection time for the KCN measurements ranged from 28 to 88 hours.

The phase changes in our pressure system were clean and sharp with complete disappearance of phase I at 25 kbar and room temperature and complete disappearance of phase IV at 74°C and 22 kbar. The disappearance of phase IV had not begun at 66°C and 22 kbar. These are indications of a good quasi-hydrostatic environment which is necessary in order to get meaningful intensity data from a powder sample for which one requires there be no preferential orientation of the crystallites.

III. RESULTS AND ANALYSES OF THE DIFFRACTION PATTERNS

Time-of-flight (TOF) neutron diffraction patterns with scattering angles of 60° are compared in Fig. 2 and Fig. 3 for KCN III and KCN IV. The data were initially analyzed by fitting the peaks individually by a least squares analysis to determine peak position and intensity. Tables I and II show that the positions of the diffraction peaks observed for KCN III are accurately indexed in a simple cubic lattice while some of the peak positions for KCN IV are displaced slightly from their exact rhombohedral values. This indicates that the actual structure of KCN IV is distorted from the rhombohedral.

To further analyze the TOF data we wrote a computer program that would simultaneously fit all the peaks with a Maxwellian background plus a time independent background using a least squares technique. The function of the count rate y_i in the i^{th} time channel is