

## DOCUMENT CONTROL DATA - R&amp;D

1. R. B. Gordon, Dept. of Eng. & Applied Science Yale University, Kline Geology Lab., Box 2161 Yale Sta New Haven, Connecticut 06520		2a. Unclassified	2b.
3. THE ORDER-DISORDER TRANSFORMATION IN $\text{Cu}_3\text{Au}$ AT HIGH PRESSURE			
4.			
5. Franzblau, M. C. and Gordon, R. B.			
6. December 1965	7a. 36	7b. 24	
8a. ONR 609(44)	9a. Technical Report No. 7		
8b. RR-007-01-01	9b.		
10.			
11.	12. Office of Naval Research		
13. The order-disorder transformation in the alloy $\text{Cu}_3\text{Au}$ has been studied at pressures ranging up to 21 kbars by means of electrical resistance measurements made while the sample is at high temperature and under pressure. The rate of change of the critical temperature with pressure is $2.1^\circ\text{K/kbar}$ from zero to 21 kbar. The latent heat of transformation at the critical temperature is 170 cal/mole which is in accord with previous calorimetric measurements. The kinetics of the order transformation below $T_c$ are adequately described by the homogeneous reaction rate equation and an activation volume of $6.8 \text{ cm}^3/\text{mole}$ of atoms. The magnitude of this activation volume indicates that the formation of vacancies on the gold sublattice is the rate limiting step in the homogeneous ordering process. (U)			
14. Kinetics	Homogeneous	Order-disorder transformation	