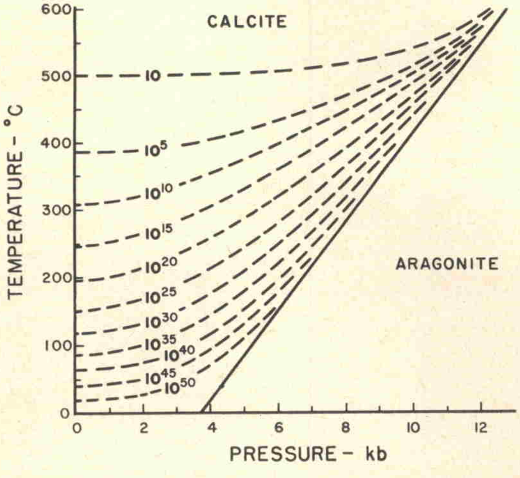

Fig. 6. Isochrons (lines of equal time) for 99% conversion of Kamsdorf aragonite → calcite plotted in the calcite stability field. Isochron values are in minutes.

factor responsible for the difference in the gradient obtained by Brown et al. and by us appears to be the magnitude of the pressure effect on the transition. The former authors allow only a factor of 10 for a pressure effect 1 kb below the phase boundary.

At best such calculations are only approximate inasmuch as they rest on the assumption that the Franciscan rocks were dry during unloading and that the changing of pressure-temperature conditions of the aragonite material down the geothermal gradient (i.e., rate of unloading) was slow enough to allow sufficient time at the higher temperatures for transformation to take place.

Of further interest is the fact that the rates of the calcite → aragonite transformation at 375 to 405°C and 15 ± 1 kb are of the same order of magnitude as those for the reverse transformation at 400°C and 1 bar. It is apparent that the amount of overstepping of the equilibrium pressure has roughly the same effect in rate acceleration as the degree of understepping. One might also expect (although on a less certain experimental basis) that a set of isochrons similar to that proposed for the calcite field is applicable to the aragonite field.

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