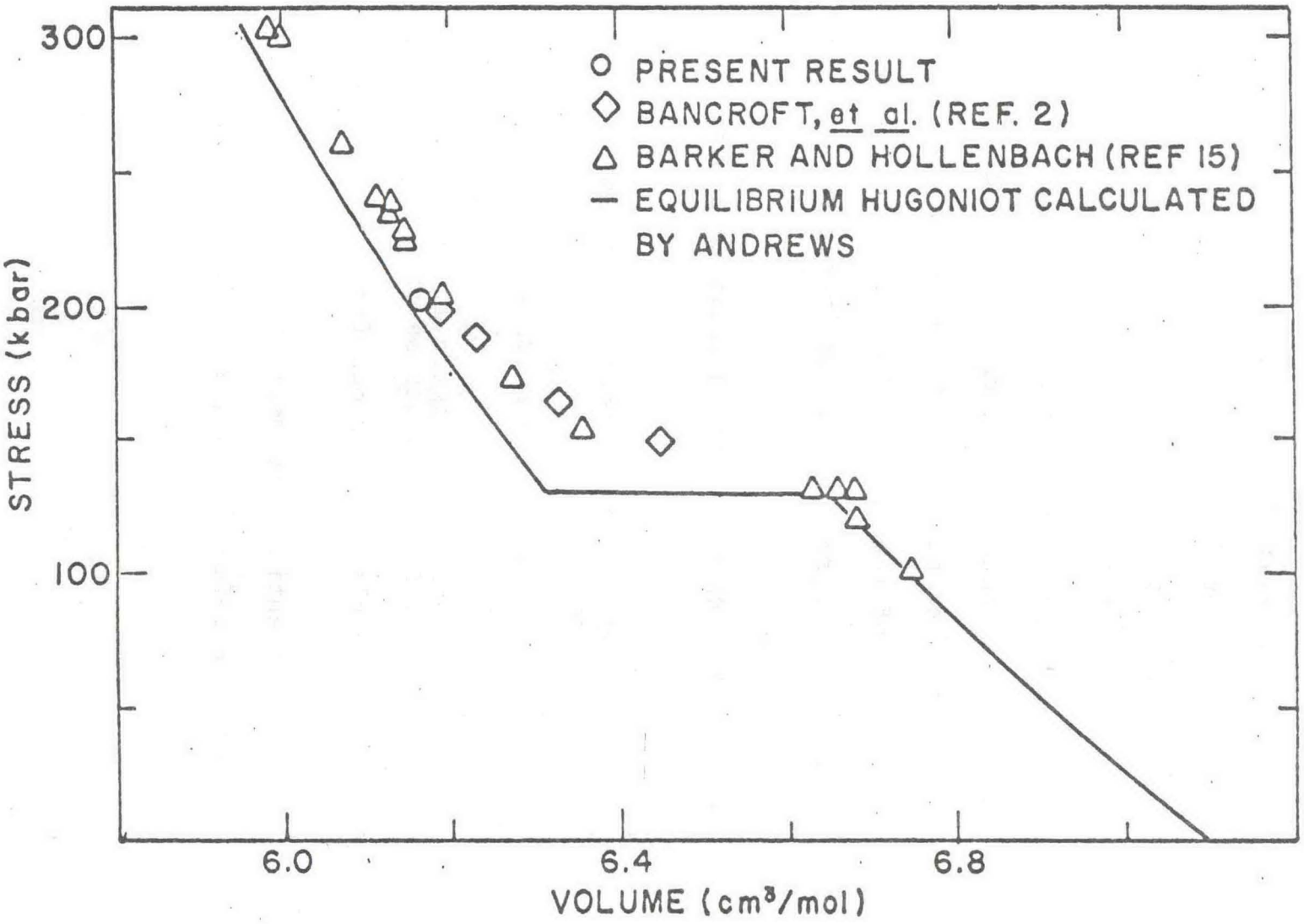

Fig. 4.7.--Iron Hugoniot states.

4.4. Summary

The most significant experimental result of this study is shown in Figs. 4.3 and 4.4: There is little or no variation of plastic I wave amplitude for propagation distances between 0.9 and 6.35 mm. This implies, according to Fig. 4.3, a relaxation time of about 0.05 μsec for onset of the $\alpha \rightarrow \varepsilon$ transition. When the single measurement of 25.4-mm distance is included with close-in data, one infers a slow variation of transition stress with distance, superimposed on the rapid decay below 1 mm. Inference of the initial decay depends on the assumption that initial compression at the impact surface was entirely in the α phase.

Further results, which are essentially corrobative, are that:

1. Elastic precursor amplitude increases as sample thickness is decreased.
2. Transition stress measured in a 25.4-mm-thick sample is 131.4 ± 3.3 kbar.
3. Relative volume behind the plastic II wave is $V_3/V_0 = 0.871 \pm 0.008$ for a stress of 201 ± 8.4 kbar.
4. Rise time in the plastic II shock front is 0.18 ± 0.02 sec.

These results are in essential agreement with those of earlier experiments reported in references 36, 2, 2, and 23, respectively.