limit and the phase transition point are estimated to be 84 ± 8 kbar and 203 ± 11 kbar, respectively. Details of these data have been given in ref. (9) and (10). Measurements on resistivity of transition metal oxides under very high shock pressure have also been made and described in ref. (9).

V. Summary

In the present study, small-scale explosive plane wave generators 40–78 mm in diameter have been developed to perform shock wave experiments at pressures up to 1 Mbar. The planarity of the shock wave front has been tested with a high-speed streak camera: the in-contact method gives the planarity of ±20 ns over the 80 per cent of the diameter of the generator, while the planarity in the flyer method is worse than that in the in-contact method by a factor of 10.

Several experimental sets and techniques are used in the present investigation: the pin-contactor method is the simplest technique for measuring the shock and free surface velocities with usual synchroscope, and the streak-photographic method is a standard technique to obtain reliable and informative data on the equation of state. Among various streak-photographic methods, the argon flash gap technique and the inclined mirror technique are utilized to obtain shock compression curves of some materials.

Acknowledgments

The present authors are indebted to Mr. H. Moriya and Miss Y. Fujita for their assistance. Their thanks are due to members of the workshop who manufactured the experimental devices used in the present study. The present work was supported by the Grant-in-Aid for Scientific Research from the Ministry of Education.