34−55 Visualization of Underwater Sympathetic Detonation of High explosives

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The experiment for the sympathetic detonation in water was carried out. The compositionB (the detonation speed 7900m/s) were used as a donor (the thickness was 50mm, the diameter was 31mm) and a receptor charge. We were changed the distance between the donor and the receptor, and changed the thickness (5, 7.5, 10mm) of the receptor in the experiment. In order to investigate the basic characteristics of the underwater sympathetic detonation of high explosive, the sympathetic detonation phenomena were visualized by the steak photograph and the framing photograph taken by a high-speed camera (HADLAND PHOTONICS, IMACON 790). And the pressure in both cases of complete or incomplete explosion was measured by manganin gauge (KYOWA Electronic INSTRUMENTS CO. SKF-21725). The streak velocity was 200ns/mm when the streak photogaphs were taken, The interval was 2μs in the framing photograph. The shock pressure from receptor was measured by the gauge which was set under the receptor. The pressure value in this experiment was found by the liner relationship, which was shown as follow:

$$R/Ro = -0.0329 + 0.0276_{x} \quad (1)$$

Where Ro is zero pressure resistance, $\triangle R$ indicates resistance change, and σ x is a peak of the shock stress.

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