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Shock Reaction of Two Different RDX Fills in PBXN-109[1]
HAROLD SANDUSKY, JOSHUA FELTS, RICHARD GRANHOLM, Indian Head Division, Naval Surface Warfare Center — Two types of Class 1 RDX from Dyno Nobel, one with reduced sensitivity and the other a Type II, were used in PBXN-109 gap tests. These tests include the large scale gap test (LSGT), the expanded large scale gap test (ELSGT), and a version of the ELSGT in which the acceptor is shortened to 102 mm and the witness plate is replaced with a block. In addition to the usual examination of the witness, instrumentation of acceptor tubes and fragment recovery were quite helpful in distinguishing between reaction levels. It was observed that low velocity detonation could steadily propagate the full length of the acceptor and punch a standard witness plate. At the critical gap, the accelerating growth of reaction that causes shock-to-detonation transition did not occur until near the witness end of the acceptor. These results will be related to a much smaller test with just 7.6-mm diameter samples from the same mixes, as described in another paper at this meeting. Discussion of reaction mechanisms will also include previously reported data from the modified gap test on a standard mix of PBXN-109.

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