FORMULATION AND PROCESS SAFETY

G. T. West

DEVELOPMENT DIVISION

OCTOBER - DECEMBER 1976

Normal Process Development
Endeavor No. 216

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Pantex Plant

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96

ABSTRACT

Additional shock tests were performed on TATB/water mixtures. Testing completed to date has included 100, 94, 85, 80, 75 and 70 weight percent TATB. In the geometry tested, TATB/water mixtures fail to detonate at or below 75% TATB, and detonate at or above 80% TATB.

DISCUSSION

Additional TATB/water mixtures were tested as reported previously(1,2). Concentrations tested were 94, 85, 80 and 75 weight percent TATB. All tests were done as previously described(2), but in the 10.2 cm diameter test device only.

A summary of the test data together with those data previously reported(2) are shown in Table I. Again, there was no question whether or not detonation occurred, both from the physical appearance of the firing site wall (TATB covered the wall after a NO-GO) and the wall behavior of the Plexiglas cylinder, and the observed propagation velocities.

In the geometry tested, TATB/water mixtures detonate at and above 80% TATB and fail to detonate at and below 75% TATB.

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- (1) Darrell Kite, Jr., Safety Hazard Classification of Water-Wet Explosives, Technical Report 3223, Picatinny Arsenal, Dover, NJ (1975).
 - (2) G. T. West, "Formulation and Process Safety," MHSMP-75-40L (July-September 1975).

Table I. TATB/Water Shock Test Data

<u>Approximate TATB Wt. %</u>	<u>Qualitative Result (GO or NO-GO)</u>	<u>Observed Shock Velocity (m/sec)</u>	<u>Test Device Inside Diameter (cm)</u>
100 ^a	GO	7900	4.4
94	GO	5500	10.2
85	GO	6700	10.2
80	GO	5800	10.2
75	NO-GO	< 2000	10.2
70 ^a	NO-GO	2700	4.4
70 ^a	NO-GO	< 2000	10.2

^aPreviously reported, reference 2 of this report.