kbar. The most energetic explosive is PBX-9404 which is a plastic bonded HMX. It has a detonation pressure of 360 kbar and a detonation velocity of 8.8 km/sec.

The slabs of explosives used in an experiment are machined flat and parallel to tolerances of 0.005 cm over a 30 cm diameter. A large portion of the development work on fabrication and machining of explosives has been done by S-Site personnel at the Los Alamos Scientific Laboratory.

A plane detonation front from point initiation is accomplished by an explosive lens fabricated from two different explosives having different detonation velocities. Fig. 8 is a schematic cross section of the explosive lens used in this research, illustrating the relationship of the two components. The geometry chosen allows the faster detonation wave proceeding along the outer cone to keep pace with that of the inner cone. This condition exists when the angle θ has the relationship

$$\theta = \sin^{-1}(D_s/D_f)$$

where D_s is the slow component detonation velocity and D_f is the detonation velocity of the fast component. The lens of Fig. 8 has an angle of 37 1/2 degrees. The wave arriving at the lens face is plane to within 0.1 μsec over 2/3 of the diameter of a 30 cm diameter lens. Combinations of other fast and slow components are possible in a plane wave lens provided the lens angle is properly chosen. The high explosive pad is initiated over its whole surface as the detonation wave arrives at the lens face. This plane detonation wave propagates through the explosive pad and enters the inert materials of the experimental apparatus as a plane shock wave.