Progress in the analysis of the Forest Fire model. SHIRISH
CHITANVIS, Los Alamos National Laboratory — Asymptotic analysis underly-
ing Bdzil's Detonation Shock Dynamics (DSD) theory is used to obtain mesh-
independent results for the Forest Fire burn model. Using the published burn rate
for PBX 9501 as given by the Forest Fire model, and standard mixture rules for the
products (pressure and temperature equilibrium), we obtain a $D_n - \kappa$ relation for
PBX 9501. It provides a reasonable estimate for the failure diameter for PBX 9501.
However, the deficit is extremely small even in the vicinity fo failure I.e., (D_{CJ}-
D_n-)/D_{CJ} $\sim O(10^{-4})$, where $D_{CJ}$is the Chapman-Jouguet (CJ) detonation speed
when compared to experimental results. It is pointed out that ameliorating the
Forest Fire burn rate at pressures above 100 kbars leads to much improved results
for the $D_n - \kappa$ curve.

Shirish Chitanvis
Los Alamos National Laboratory