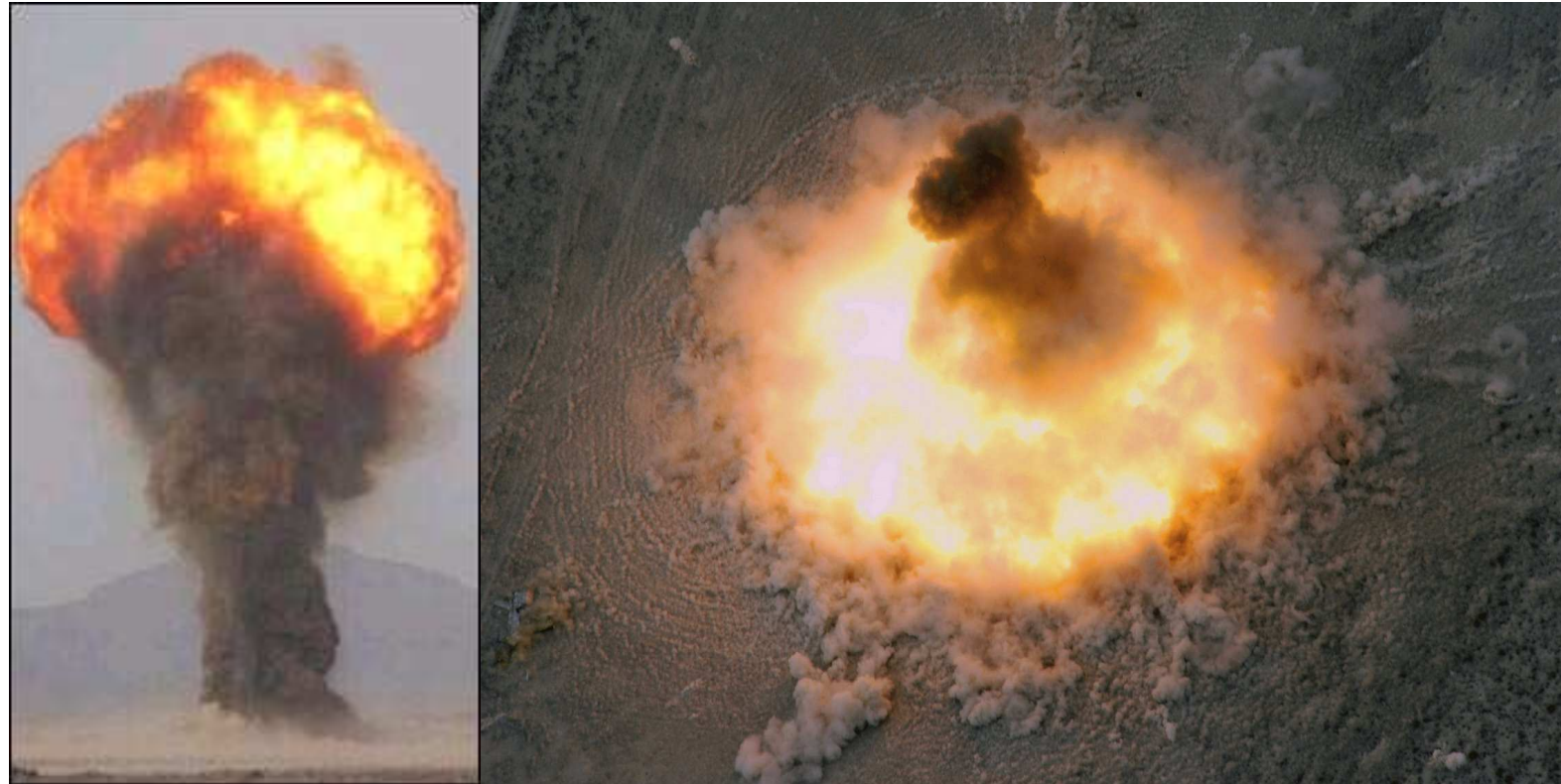


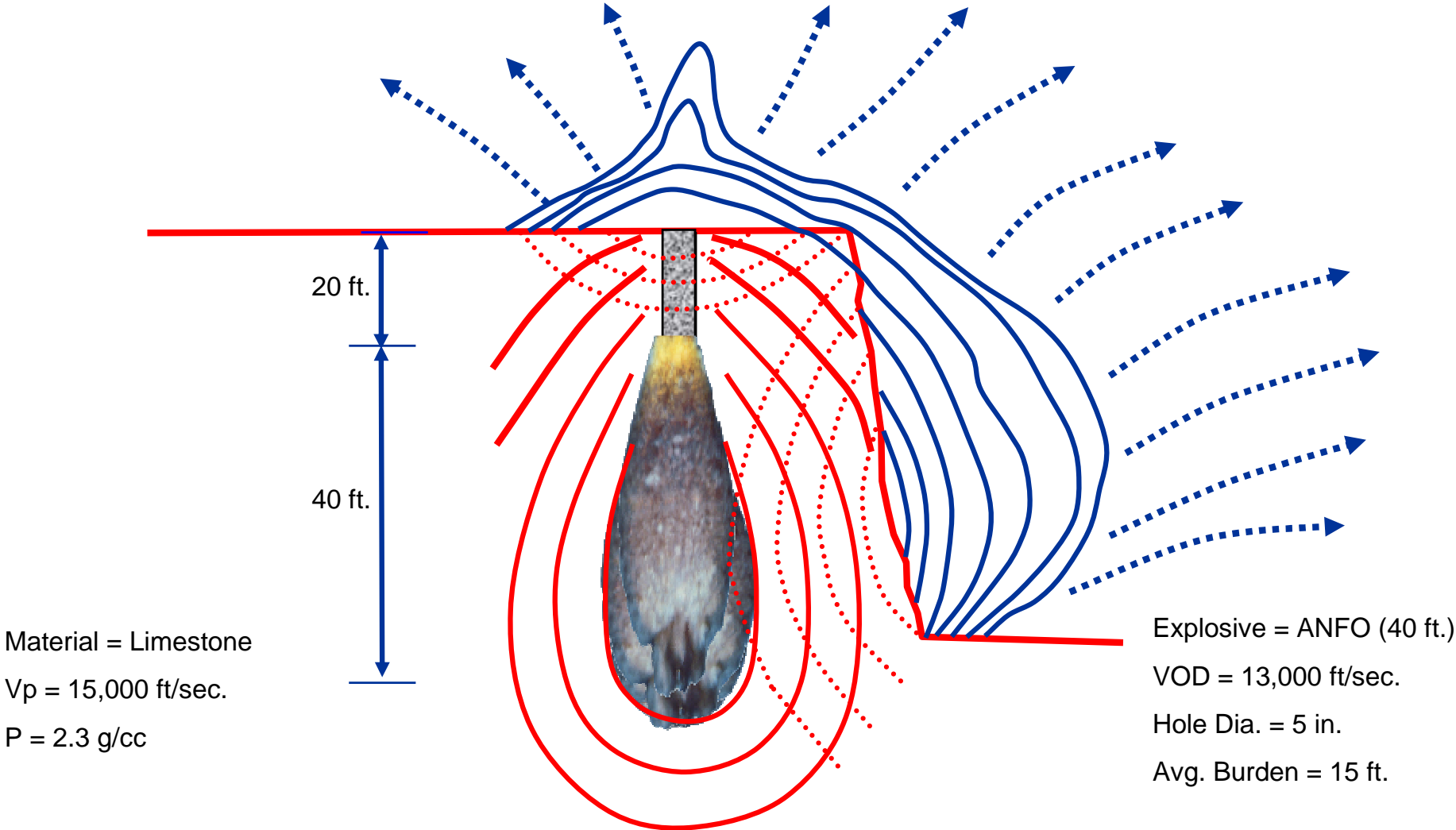
Without the Drill Hole.



Explosives Produce Shock and Awe!

Blast Dynamics

Action – Reaction Energy Release











.13 ms

Blast Hole

**Bench
Free Face**

Stress In Vicinity of
Blast Hole

Pressure		
	kPa	PSI
	54,000	372,317
	48,000	330,948
	42,000	289,580
	36,000	248,211
	30,000	206,843
	24,000	165,474
	18,000	124,106
	12,000	82,737
	6,000	41,369
	-	-
	(6,000)	(41,369)

Explosive induced shock wave
transmission sequence at 0.13 ms
Courtesy: Dr. Dale Preece

.17 ms

Blast Hole

Bench
Free Face

Stress In Vicinity of
Blast Hole

Pressure		
	kPa	PSI
	54,000	372,317
	48,000	330,948
	42,000	289,580
	36,000	248,211
	30,000	206,843
	24,000	165,474
	18,000	124,106
	12,000	82,737
	6,000	41,369
	-	-
	(6,000)	(41,369)


Explosive induced shock wave
transmission sequence at 0.17 ms
Courtesy: Dr. Dale Preece

.29 ms

Blast Hole

**Bench
Free Face**

Stress In Vicinity of
Blast Hole

Pressure		
	kPa	PSI
	54,000	372,317
	48,000	330,948
	42,000	289,580
	36,000	248,211
	30,000	206,843
	24,000	165,474
	18,000	124,106
	12,000	82,737
	6,000	41,369
	-	-
(6,000)	(41,369)	





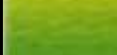
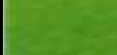
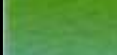




Explosive induced shock wave
transmission sequence at 0.29 ms
Courtesy: Dr. Dale Preece

.39 ms

Blast Hole

**Bench
Free Face**

Stress In Vicinity of
Blast Hole

Pressure		
	kPa	PSI
	54,000	372,317
	48,000	330,948
	42,000	289,580
	36,000	248,211
	30,000	206,843
	24,000	165,474
	18,000	124,106
	12,000	82,737
	6,000	41,369
	-	-
	(6,000)	(41,369)

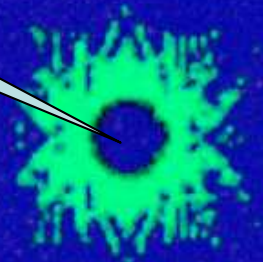
Explosive induced shock wave
transmission sequence at 0.39 ms
Courtesy: Dr. Dale Preece



.24 ms

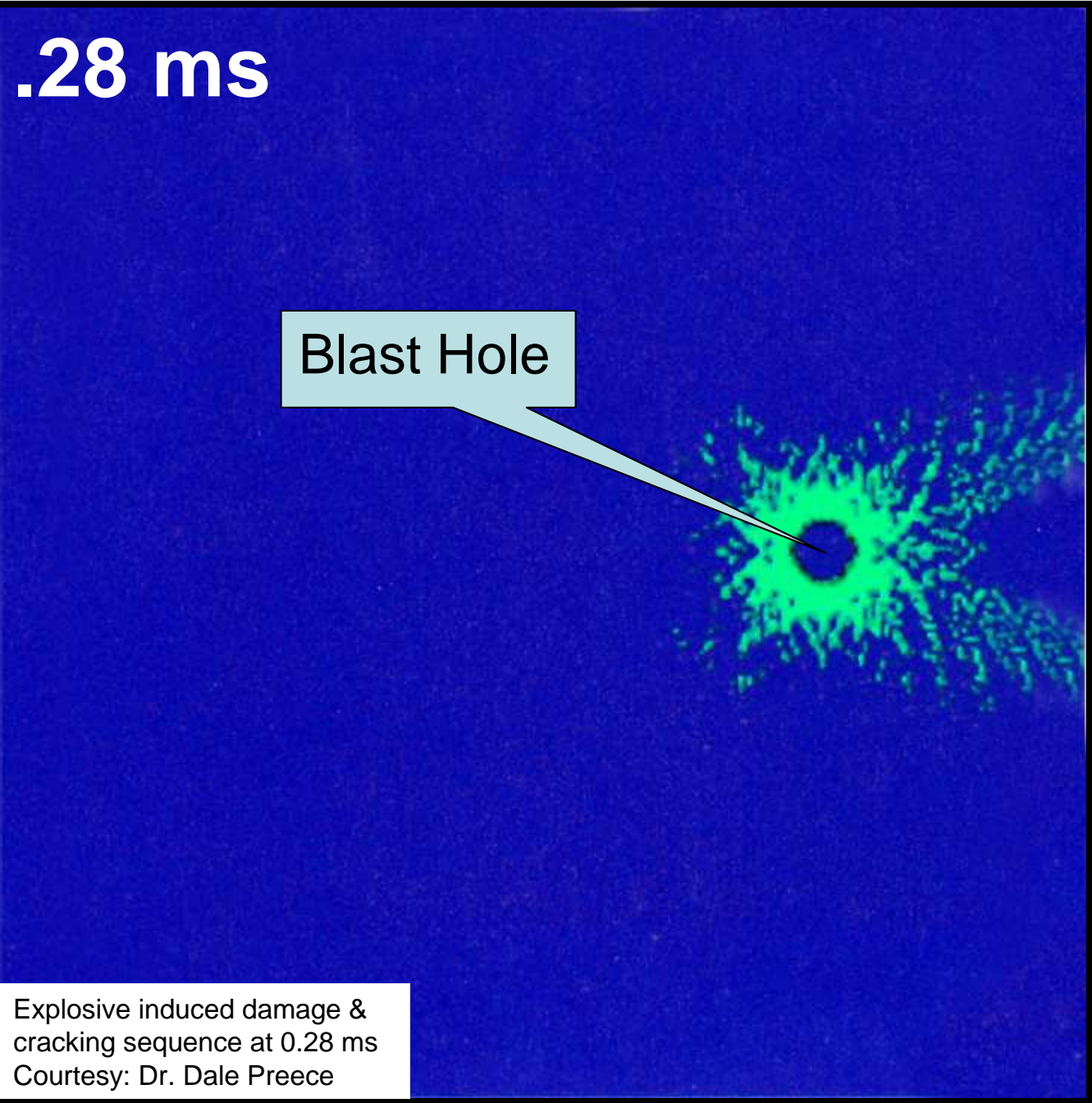
Bench
Free Face

Blast Hole



Cracking In
Vicinity of
Blast Hole

Explosive induced damage &
cracking sequence at 0.24 ms
Courtesy: Dr. Dale Preece



.28 ms

Blast Hole

Bench
Free Face

Cracking In
Vicinity of
Blast Hole

Explosive induced damage & cracking sequence at 0.28 ms
Courtesy: Dr. Dale Preece

.42 ms

Blast Hole

Bench
Free Face

Cracking In
Vicinity of
Blast Hole

Explosive induced damage &
cracking sequence at 0.42 ms
Courtesy: Dr. Dale Preece

.98 ms

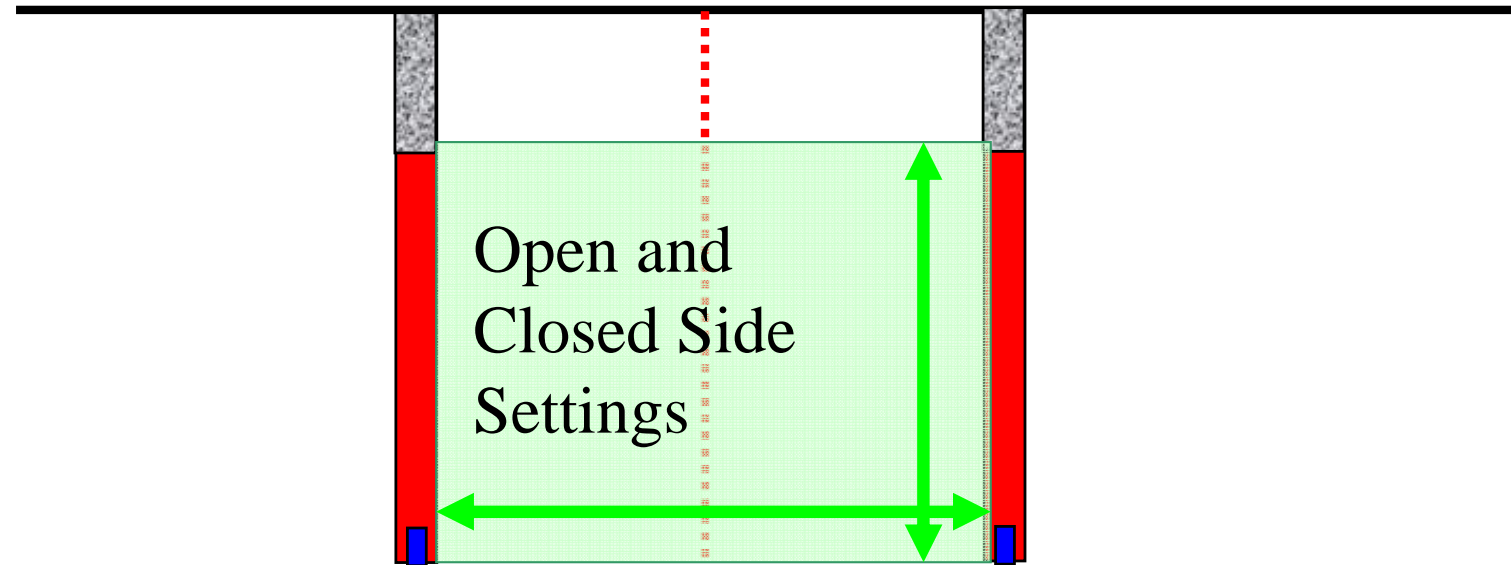
Blast Hole

Bench
Free Face

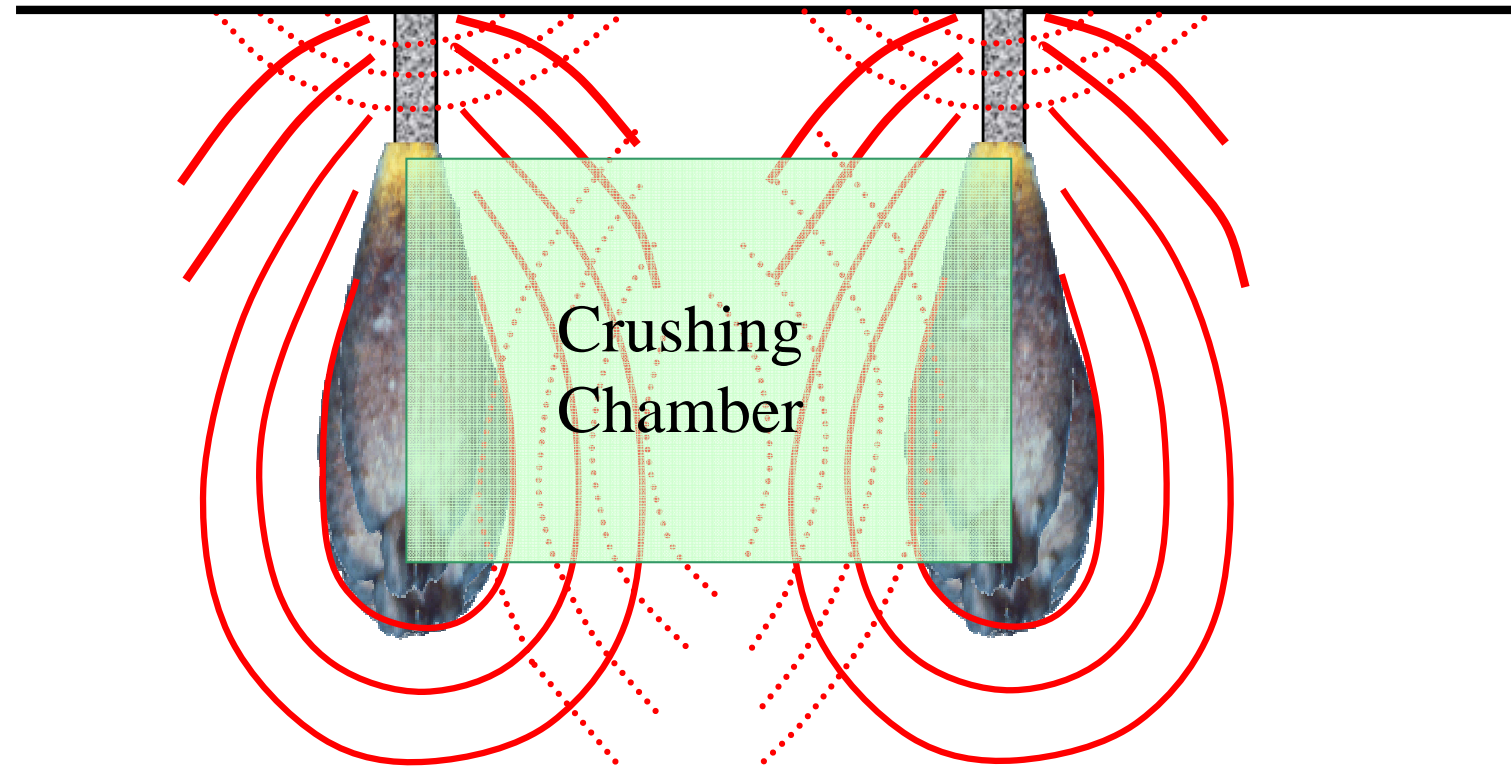
Cracking In
Vicinity of
Blast Hole

Explosive induced damage &
cracking sequence at 0.98 ms
Courtesy: Dr. Dale Preece

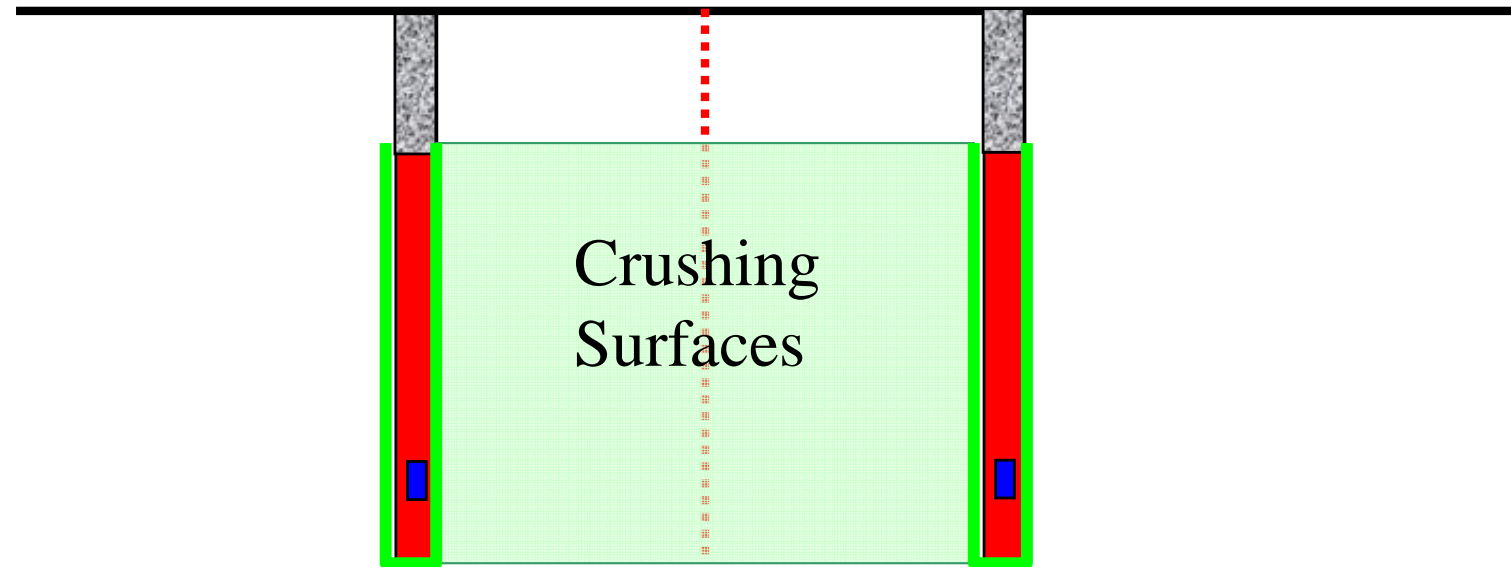
Chemical Crusher (conceptually)



Chemical Crusher (conceptually)



Chemical Crusher (conceptually)



Chemical Crusher (conceptually)

