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PRESENTATION ON

MECHANICS OF EXPLOSION - GENERATION OF SHOCKWAVE AND FRAGMENTATION EFFECT

CUFS 2416 EXPLOSIVE AND POST BLAST INVESTIGATION

B.SC. FORENSIC SCIENCE (SEM 6)
SCHOOL OF FORENSIC SCIENCES
BHUBANESHWAR CAMPUS

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INTRODUCTION

- **An explosion can be said as a violent and noisy outburst which is caused by a build-up and release of pressure.**
- **Mechanics of explosion can be defined as the way in which an explosion occurs or what it produces.**
- **Ex- The bursting of a boiler or pressure vessel (pressure cooker)**

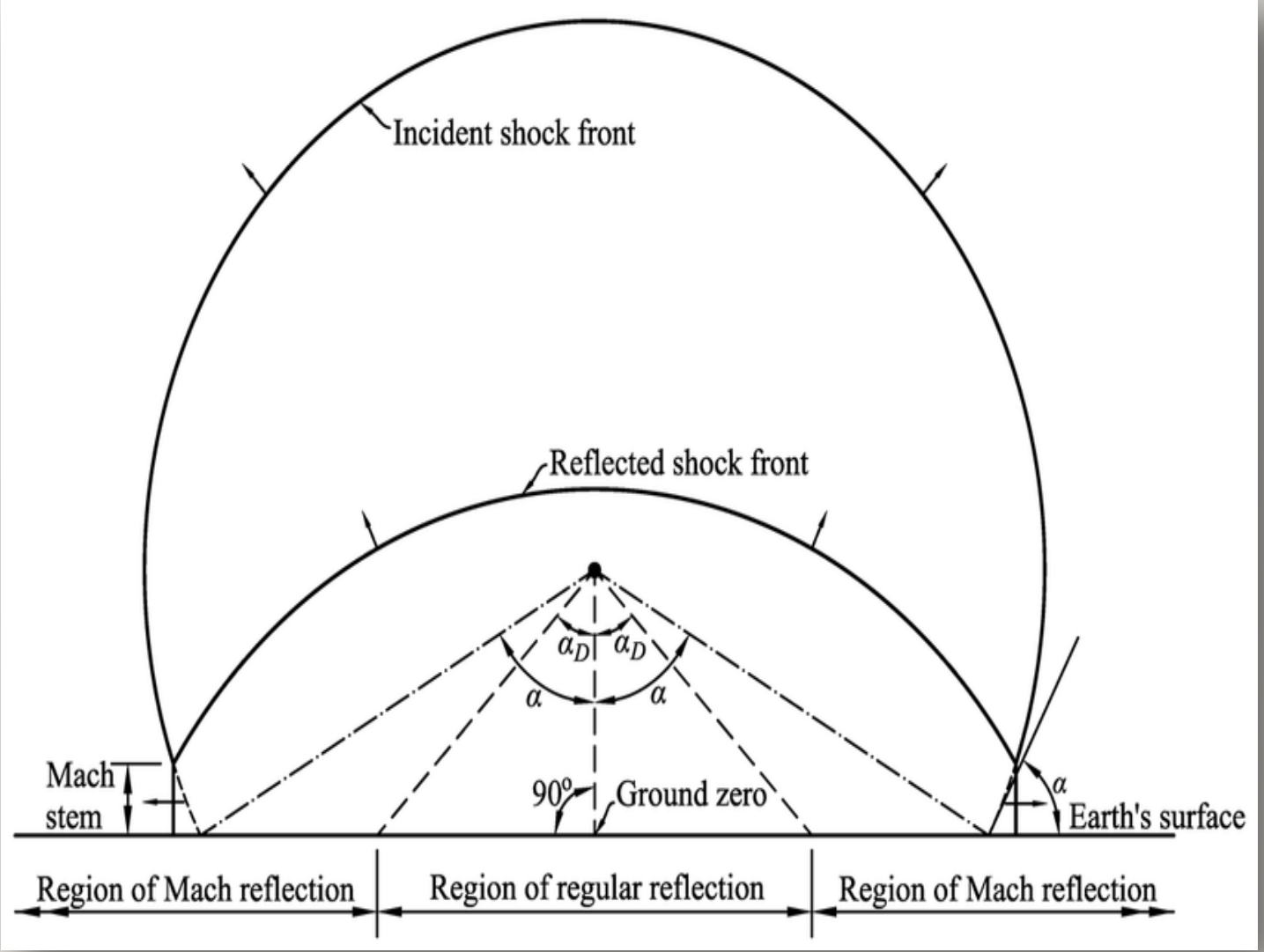
GENERATION OF SHOCK WAVE

- **Shock waves are strong pressure waves in any elastic medium such as air, water, or a solid substance, produced by supersonic aircraft, explosions, lightning, or other phenomena that create violent changes in pressure.**
- **A shock wave is generated when energy is suddenly released or deposited in a material, thereby causing an explosion.**
- **Shock wave is a very thin region in a flow where supersonic flow is decelerated to subsonic flow.**
- **To visualize shock waves, special imaging techniques are required like Schlieren imaging.**

TYPES OF SHOCK WAVES

- **Normal shockwave**
- **Oblique shockwave**
- **Curved/Bow shockwave**

Diagram of a shockwave

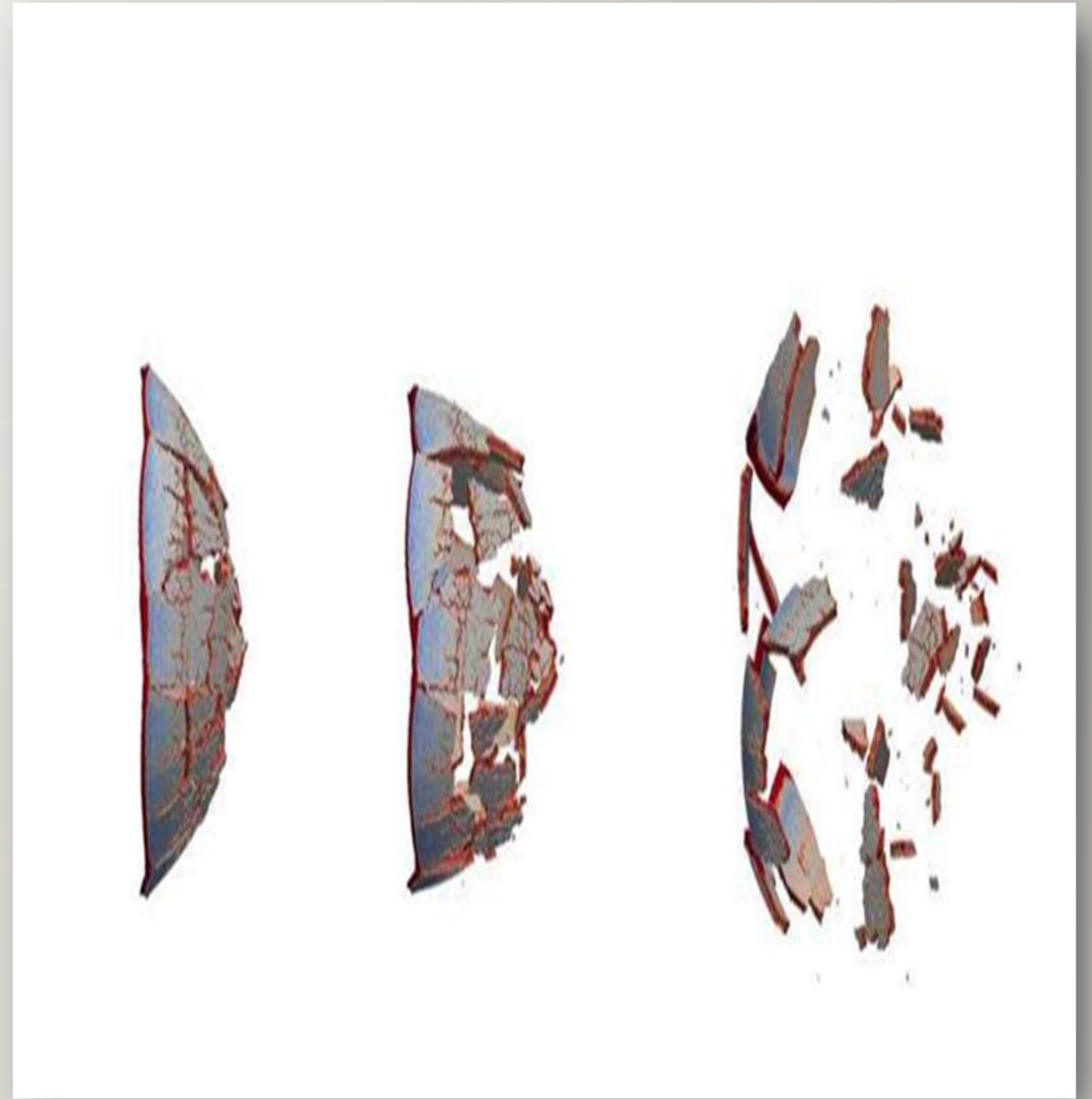
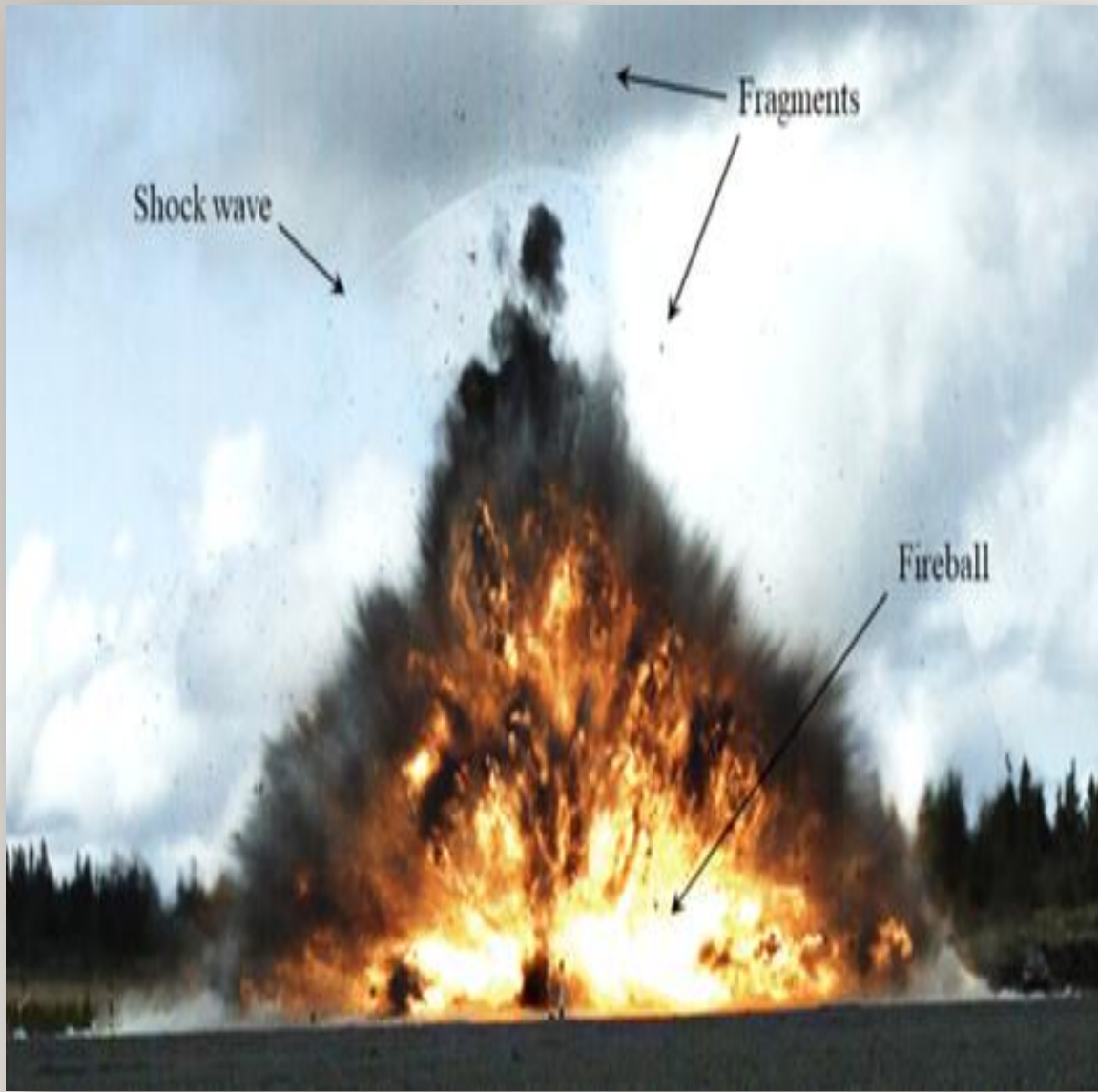


**Picture of a shockwave in
an explosion -**



FRAGMENTATION EFFECT

- **Fragmentation is the process by which the casing, shot, or other components of weapon, bomb, rocket, missile, grenade, etc. are dispersed or shattered by the detonation of the explosive filler.**
- **The effect of these fragments on a given target depends on the size and terminal velocity of the fragment when it hits the target.**
- **Usually a SED is made in such a way that when an explosion occurs, it causes the body of the explosion to expand one and half times its original volume.**
- **The velocity of these fragments can go up to 2500 feet / second.**



THANK YOU