

Controlled Detonation Chamber (CDC) Safety

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Presented by:
Dan Young, CSP, CMQ
CH2M HILL



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Report Documentation Page

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DoD 6055.09-STD

DoD Ammunition and Explosives Safety Standards

- Explosives Safety Management (ESM) Policy
- Provide the maximum possible protection to people and property from the damaging effects of DoD military munitions (explosive and chemical)
- Standards within 6055.09-STD are only the minimum protection criteria for personnel and property, and greater protection should always be provided.....
- Applicability... DoD titled AE wherever it is located



Open Detonation Hazards

- BLAST – (PRESSURE)
- FRAGMENTATION
- ENVIRONMENTAL IMPLACT
- VISUAL
- AUDIO
- HEALTH
- FINANCIAL RISKS



ESQD Safety

- Quantity-Distance (QD)
- K-factors
 - Inhabited Building Distance (IDB) – (K40/50)
 - Public Traffic Route (PTR) – (K24/30)
 - Unbarricaded Intraline Distance (ILD) – (K18)
 - Unbarricaded Intermagazine Distance (IMD) (K11)
 - Intentional Detonation MSD (K328)

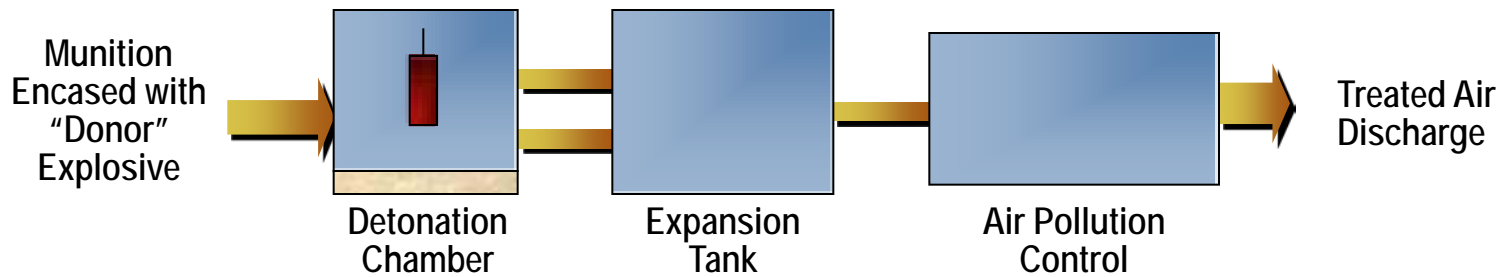


ESQD Safety – Cont.

- Maximum Frag Distance (MFD)
- Maximum Soil Eject Distance
- Fragment Hazard Distance



CDC Operating Overview



1. Detonation event fractures the munition
2. Blast and fragments contained in chamber
3. Process has a distinct end point (measurable and verifiable)

1. EBWs for initiating donor explosives
2. Insensitive / re-cycle donor explosives
3. ESQD = 0 feet w/door closed
4. Approved Explosive Safety Submission (ESS) for each CDC



T-10 Mobile CDC Systems

- Self contained system that is transported on one trailer



T-25/30/60 Mobile CDC Systems

- Self-contained system that is transported on 2 trailers
- T-30 Demonstrated by US Navy, NSWC, Crane Division to destroy 5-inch projectiles and 155mm projectiles filled with high explosives



Items Destroyed in CDC

1. Small arms ammunition
 2. 20mm
 3. 40mm
 4. 60mm
 5. 81mm
 6. 105mm Projectile
 7. 155 mm Projectile
 8. 5 inch Projectile
 9. Fuzes & burster charges
- A. Propellants
 - B. Incendiaries
 - C. Riot Control Agents
 - D. Smoke producing fills
 - E. White Phosphorus
 - F. Mil & Civ pyrotechnics
 - G. High Explosives (HE)



A Variety of Donor Explosives Can be Used as Needed



PETN Sheet



Granular Explosives



Slurry Explosive



Preformed RDX Donor



CDC - DDESB Approved ESS

- Each CDC has an approved ESS
 - T-10 =
 - 13 lb TNT limit
 - 105mm Projectile Diameter limit
 - T-25 =
 - 16.7 lb TNT limit
 - 4.2 inch Mortar or 4.5 inch Rocket Diameter limit
 - T30/60 =
 - 40 lb TNT limit
 - 155mm Projectile Diameter limit



T-10 Operations

- Tent is for weather protection only
- T-10 CDC system has been used for destruction of recovered conventional munitions
- Over 10,000 munitions have been safely destroyed, from small arms to 105mm projectiles



Conclusions

- Durability has been established with a history of safe and effective performance (9 years and continuing)
- Multiple systems available to meet critical success factors
- Systems meets all relevant DoD Explosives Safety Criteria
- Smoke producing fills, riot agent fills, propellants, and fills of incendiaries are approved for disposal
- No liquid wastes generated during operations
- Same chamber can destroy conventional and chemical weapons without munition disassembly
- Results have been independently validated by U.S. Government



Contact

Dan Young, CSP, CMQ

CH2MHILL®

Phone 251-962-2963

Cell 251-752-0148

Dan.Young@CH2M.com

