Controlled Detonation Chamber (CDC) Safety

Presented at: 34th DDESB Seminar Portland, OR July 13 – 15, 2010

Presented by: Dan Young, CSP, CMQ CH2M HILL



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Standard Form 298 (Rev. 8-98) Prescribed by ANSI Std Z39-18

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)



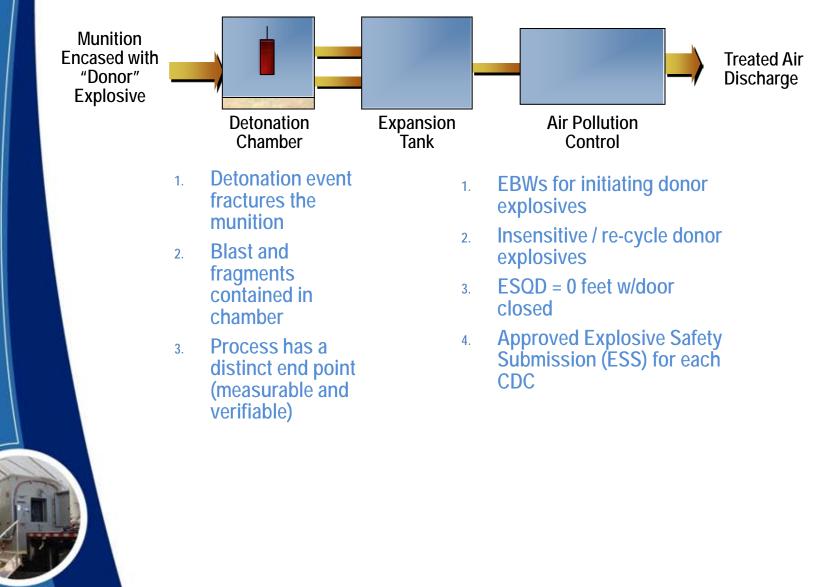


ESQD Safety – Cont.

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



CDC Operating Overview





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







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 CH2NHILL®

Phone 251-962-2963 Cell 251-752-0148 Dan.Young@CH2M.com



