

Demilitarization

CBU Demil Line Development GD-OTS and EBV EEC



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GENERAL DYNAMICS
Ordnance and Tactical Systems

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EXPLOSIVES ENVIRONMENTAL COMPANY



Outline of Presentation

- **Summary of Results**
- **CBU Line Requirements**
- **Approach to Fill Capability Gap**
- **Line Development Overview**
- **Overall Demil Approach**
- **Pictures and Videos**
- **Current Operational Status**
- **Demil Capability of Stockpile Assets with Submunitions**

Proprietary processes will not be discussed in this presentation



Summary of Results

CBU Demil Line is Operating

- Safe and Efficient
- 720 Bomblets per Hour – Design Rate
 - More than 3 CBU / hour
- Timeframe from Design to Production - 8 Months
- State of the Art Equipment
 - Fully Automated Bomblet Disassembly Machine
 - Automated Inspection throughout Disassembly
- Engineering Solution – No R&D
- No USG Capital Investment



Base Year Award CBU

CDT: 1,585 Tons / 3,114 Units

DODIC	Nomen	Quantity	Tonnage [t]	Bomblets	Quantity /CBU	NEW/ CBU [lbs]	HE
E800	52B/B	790	394	BLU 61 A/B	220	134	Cyclotol
E803	58/B 58A/B	508 851	259 432	BLU 63/B BLU 63A/B	650	190	Cyclotol
E828	71/B	965	498	BLU 86/B	650	167	Comp B

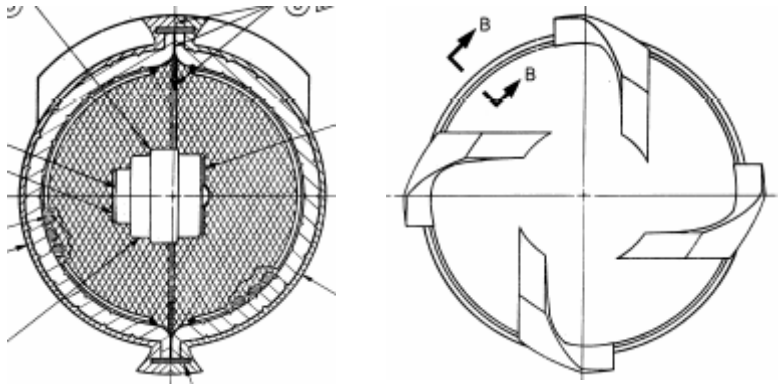


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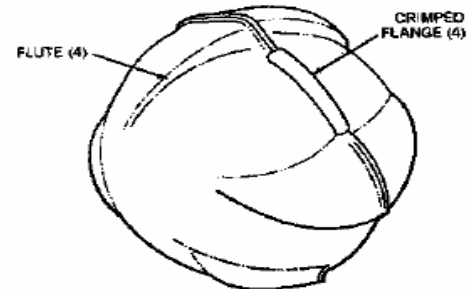
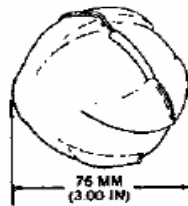


CBU Bomblets



BLU 61 A/B

Bomblets	Quantity /CBU	NEW/ Bomblets
BLU 61 A/B	220	0.61 lbs
BLU 63/B BLU 63A/B	650	0.26 lbs 0.28 lbs
BLU 86/B	650	0.26 lbs



BLU 63/B, 63A/B, BLU 86/B

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CBU Facility Requirements

- **Combination of Automated and Manual Operations**
 - Maximum Safety / Minimum Risk
 - To Achieve Highest Process Efficiency
- **High Volume Throughput**
 - To Complete Current Contract Requirements
 - Enough Capacity to Deplete All Similar Assets in B5A Account
- **Low Maintenance Requirements**
- **Bomblet Disassembly Operations are Remote Controlled with Video Monitoring**
- **Thermal Treatment of Energetics**

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Approach to Fill Capability Gap

GD-OTS and EBV EEC Approach

- Full Compliance with EHS and Security Regulations
- Evaluate Currently Available Technologies
- Utilize Expertise in Ammunition, Engineering, Equipment Design, and Demil Operations
- Engineer a Safe, Smart Solution
- Result is a Safe, Efficient, and Rapid Solution to Major Demil Stockpile Problems without the need for R&D

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Approach to Fill Capability Gap

Evaluation

MIDAS
Ammo Data Cards
Process Lay-out
Risk Analysis
EHS Compliance

Facilitization

Facilities
Equipment
Line Installation
Waste streams
Process Plans
Training

Prove-out

Engineering Testing
Walk-through
Low-rate production

Production

Performance
Evaluation
Process
Improvements



CBU Demil Line Team



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SAB Sonderanlagenbau
Nord GmbH



CBU Line Start-up Schedule

<u>Event</u>	<u>Original Date</u>	<u>Actual Date</u>
Project Start / Initial Design	03-Aug-06	03-Aug-06
Preliminary Design Review at SAB	20-Sep-06	20-Sep-06
Manufacture Test Equipment	21-Sep-06	21-Sep-06
Engineering Tests at EBV	27-Oct-06	27-Oct-06
Critical Design Review	03-Nov-06	03-Nov-06
Manufacture Equipment	06-Nov-06	06-Nov-06
Equipment Prove-Out at SAB	08-Jan-07	08-Jan-07
Building Construction	29-Jan-07	29-Jan-07
Installation of Equipment at EBV	02-Apr-07	02-Apr-07
Prove-Out and Ramp-Up	16-Apr-07	23-Apr-07*
Low Rate Production	23-Apr-07	30-Apr-07

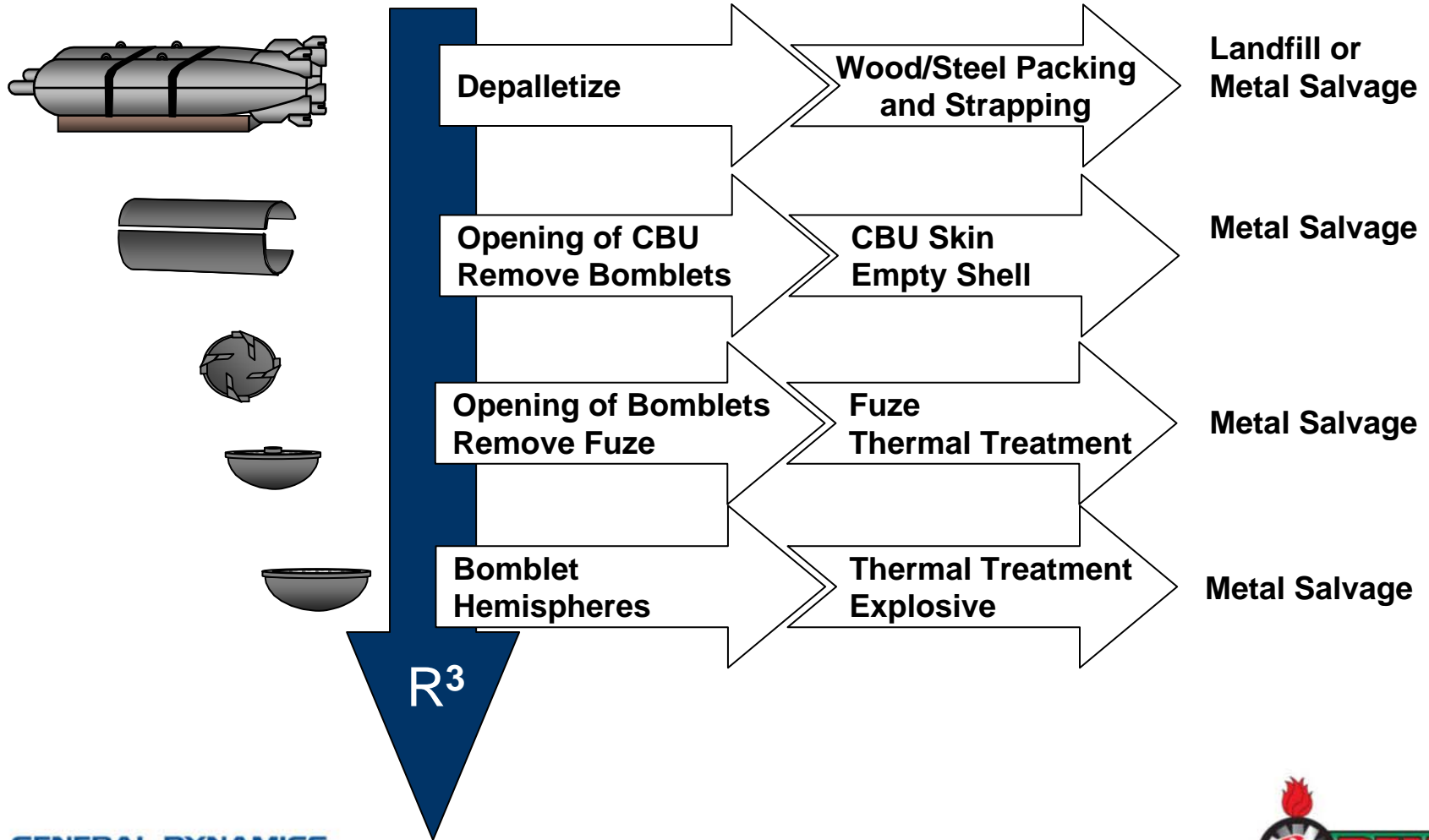
** No Inert Rounds Available during Entire Effort*

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Overall Demil Approach



CBU Demil Line – Production Equipment



New CBU Building



Fixture for Opening CBU Dispenser

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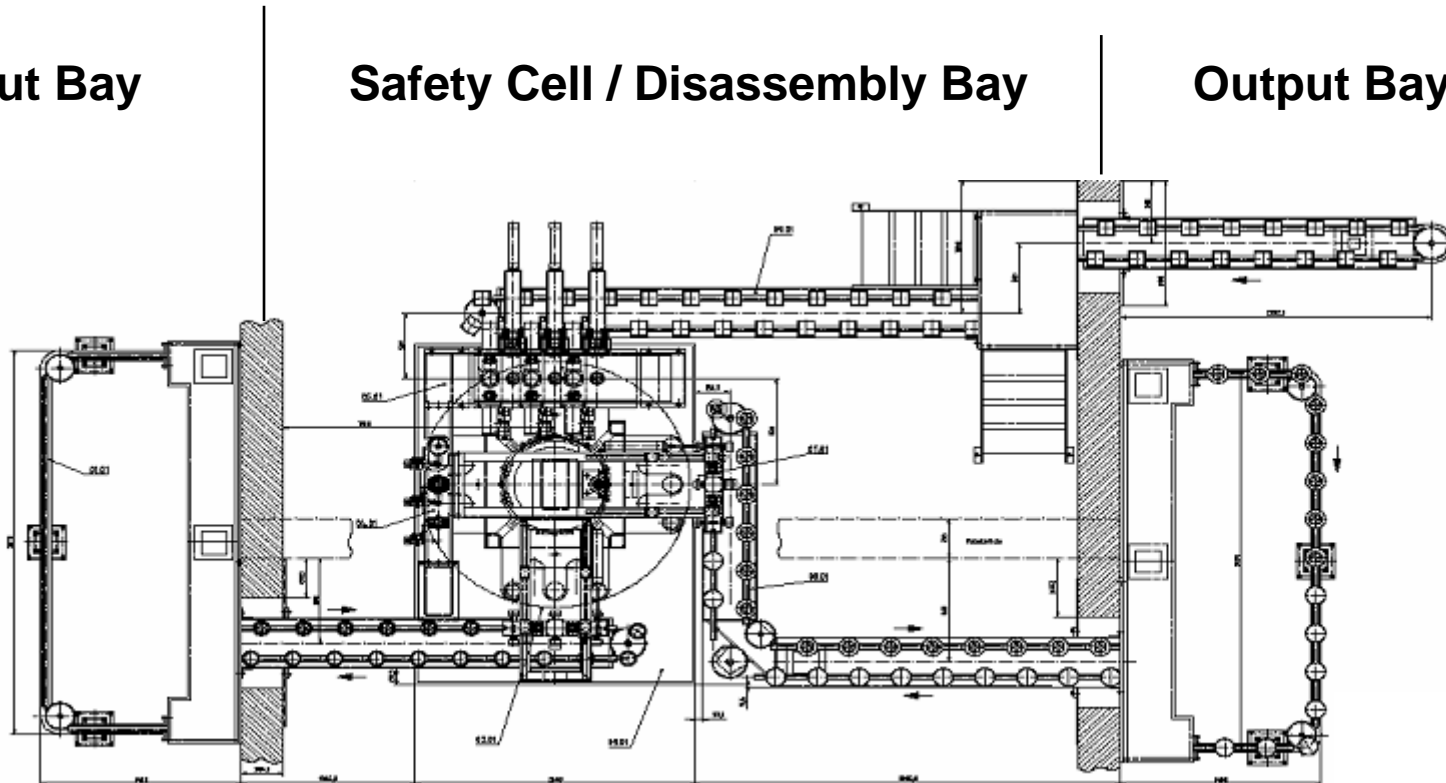
CBU Disassembly Line – Overall Layout

Top View

Input Bay

Safety Cell / Disassembly Bay

Output Bay



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CBU Demil Line – Production Equipment



Input Conveyor and Control Station for Disassembly Machine



Bomblet Spacing on Input Conveyor

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CBU Demil Line – Production Equipment



**Disassembly Machine
in Safety Cell**



**Output Conveyor for Fuzes
and Bomblet Hemispheres**

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Video of Bomblet Disassembly Equipment



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Video of Output Conveyor



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Current Operational Status

- **Successful Prove-out and Ramp-up**
 - **System Check Out on Both Size Bomblets**
- **Flexible Design**
 - **Disassembly Equipment has Handled All Bomblet Variants Seen to Date**
- **Initial 3 weeks of Equipment Operation:**
 - **426 CBU's have been Demilitarized (95,440 Bomblets)**
 - **61 CBU's highest daily production to date**



B5A Account for CBU Assets

- **Within the Current Contract, this Line can Demil all Assets Currently Listing in the B5A Account for these 3 DODIC's**

DODIC	Quantity	Months to Complete
E800	3,743	2
E803	15,565	26
E828	19,230	32

- **Total Time Required – Less Than 5 Years**
- **Time Based on Current Daily Production Rate at 24/7**
- **Equipment Optimization will Increase Productivity**



Demil Center of Excellence for ICM / CBU

- GD-OTS teamed with EBV EEC to Create the Leading Center of Excellence for Demil of Assets Containing Submunitions
- Engineered Solutions that are Safe, Efficient, and Low-Cost
- Proven Capabilities across Range of Demil Items
- ICM Line in Operation for 4 years
- Design and Implementation of CBU Line in 8 months
- MLRS
 - Engineering Studies Completed
 - Final Design Ready to Build to Maximize R³ and Environmental Efficiency



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