ALGL Overview

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PM-ALGL

Distribution Statement A: Approved for public release; distribution unlimited

Harnessing the Power of Technology for the Warfighter
ALGL Program

Advanced Lightweight Grenade Launcher (MK47 Weapon System and Ammunition)

MARK 47 MOD 0 Weapon System

MK 285 Air Bursting

Standard HV 40MM

Harnessing the Power of Technology for the Warfighter

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ALGL Program

ALGL is a USSOCOM Acquisition Program.

Sponsor: USSOCOM  PEO-SW

Fielded to: USASOC

Fielded to: NAVSPECWARCOM

Program Management & Life Cycle Sustainment: NSWC Crane Division
ALGL Program

ALGL TOPMAP

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<th>Existing Systems</th>
<th>Emerging Systems</th>
<th>Objective Systems</th>
</tr>
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**GRENADA MACHINE GUNS**

**MK19**

**MK47 Mod 0, Standard Ammunition**

**MK285 Air Bursting Ammo**

**MK47 Mod 1, Enhanced Ammo**
MK47 Joint Fielding Status

- May04 First Unit Equipped (FUE)
- MK47 Weapon Systems in Production
  - FY06 Deliveries fill 59% of Basis of Issue Plan
ALGL Program

• ALGL Overview
  – MK47 Weapon System
    • NATO Nominated Weapon
    • Heavy Thermal Weapons Sight (HTWS) Capability
    • Improved Crew Served Weapons Mount (ICSWM) Foreign Comparative Test Project
  – MK285 Air Bursting Ammunition
ALGL Program

• ALGL Subprograms:
  – MK285 Air Bursting 40MM Ammunition
  – MK47 NATO Nominated Weapon Support
    • 3 MK47s to European Regional Test Center
    • 3 MK47s to North American Regional Test Center
ALGL Program

- MK47 with AN/PAS-13 HTWS
• Foreign Comparative Test (FCT)
  – Improved Crew Served Weapons Mount (ICSWM) Project
    • FY06 new start
    • ICSWM – “soft mount” for MK47 machine gun
    • Full and Open Competition
    • Source Selection process goal 4QFY06
ALGL Program

SIGHT: DESIGNED IN CANADA, IMPROVED AND MANUFACTURED BY RAYTHEON IN THE U.S.

40 MM PROJECTILE: DESIGNED BY DIEHL IN GERMANY

40 MM CARTRIDGE CASE: DESIGNED BY NICO IN GERMANY

FUZE: DESIGNED BY BOFORS IN SWEDEN, S&A: MANUFACTURED BY MTH IN SWITZERLAND

MK285 AMMUNITION: INTEGRATED BY NAMMO IN NORWAY

MK47 WEAPON SYSTEM: DESIGNED AND INTEGRATED BY GENERAL DYNAMICS ARMAMENT AND TECHNICAL PRODUCTS (GDATP) IN THE U.S.
ALGL Program

Air-bursting ammunition for ALGL

MARK 285 MOD 0 CARTRIDGE

PROGRAMMABLE FUZE
MARK 438 MOD 0

SAFETY AND ARMING DEVICE MARK 91 MOD 0

INSENSITIVE MUNITIONS EXPLOSIVE FILL

PRE-FORMED FRAGMENTS INCREASE LETHALITY

LOW DISPERSION DESIGN
ALGL Program

• MK438 fuze
  – Fuze set in chamber as hammer falls
  – Mechanical Safe & Arming (S&A)
    • 2 independent safety locks, setback and spin
  – MERCMECH improvements
    • Improved S&A support
    • Redundant circuitry
    • No on-board battery required
ALGL Program

- **MK285 function modes:**
  - **Point Detonating**
    - function on impact, 18 - 40M S&A arming distance
  - **Airburst**
    - Fire control sends power and time information
    - set range 100-1800 meters
    - Safe Separation Distance 58 meters
  - **Self Destruct**
    - functions approximately 18 seconds after launch
## ALGL Program

### INSENSITIVE MUNITIONS (IM) TEST RESULTS/ASSESSMENTS

<table>
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<tr>
<th></th>
<th>FCO</th>
<th>SCO</th>
<th>BI</th>
<th>FI</th>
<th>SD</th>
<th>SCJ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MK 285 Cartridge</strong></td>
<td>Type IV Deflagration</td>
<td>Type IV Deflagration</td>
<td>Type VI No Reaction</td>
<td>Type VI No Reaction</td>
<td>Type III Pass</td>
<td>(Fail)</td>
</tr>
</tbody>
</table>

- Fast Cook Off (FCO)
- Slow Cook Off (SCO)
- Bullet Impact (BI)
- Fragment Impact (FI)
- Sympathetic Detonation (SD)
- Shaped Charge Jet (SCJ)
IM TESTING

• IM tests passed:
  – Bullet Impact (BI)
    • Type VI No Reaction = Pass
  – Fragment Impact (FI)
    • Type VI No Reaction = Pass
  – Sympathetic Detonation (SD)
    • Type III Reaction = Pass
IM TESTING (continued)

- IM Tests; not passed, waiver required:
  - Fast Cook Off (FCO)
    - Type IV Deflagration reaction, fragments projected
    - Type V Burning reaction would pass
  - Slow Cook Off (SCO)
    - Type IV Deflagration reaction, fragments projected
    - Type V Burning reaction would pass
ALGL Program

IM TESTING (continued)

• IM Tests; failed, by analysis:
  – Shaped Charge Jet (SCJ)
  • (Fail) – determined by analysis
ALGL Program

IM WAY AHEAD

• IM Waiver & Strategic Plan
  – FY07 Strategic Plan
    • MK285 IM Waiver
    • MK285 on High Priority List
    • Funded Plan of Action & Milestones (POA&M) for IM Mitigation Effort
IM WAY AHEAD (continued)

• IM Mitigation Efforts:
  – MK285 POA&M, FY07-08
  – Test PA120 Container Modifications
    • Vent Overpressure
    • Reinforcement
  – Goal is Type V Burning Reaction for:
    • Fast Cook Off (FCO)
    • Slow Cook Off (SCO)
• MK285 Airburst Ammunition Testing
  – NAMMO Internal Qualification Tests
  – Contractor System Integration Testing
  – Government Qualification Test at NAMMO
  – Government Qualification Testing in US
• First Unit Equipped (FUE) plan 4QFY07
• MK285 Ammunition

5 rounds burst MK285
ALGL Program

• MK285 Ammunition
ALGL Program

- MK285 Ammunition
• Objective 40mm Airburst Family:
  – MK285 Airburst
    • Pre-fragmented Programmable High Explosive PPHE
  – M430 HEDP PIP
    • ALGL Programmable High Explosive Dual Purpose
    • After-armor Incendiary Effect
  – Programmable Training Round
    • Visible Airburst Signature
ALGL Program

• MK47 Weapon System:
  – Ground or Vehicle Mounted
  – Automatic 40mm Grenade Launcher
  – Day/night Fire Control

• Uses Standard 40mm Ammunition

• Objective MK285 Airburst Ammunition
  – Effective Against Targets in Defilade
ALGL Program

Advanced Lightweight Grenade Launcher
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