Advanced Gun System (AGS)

AGS Gun and Magazine

J.A. Kidwell
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**AGS Background**

- **Mission:**
  - Destruction, interdiction, suppression and other fire support missions to support ground and expeditionary forces

- **Platform:**
  - DDG1000

- **Employment:**
  - Engage enemy land targets at long range with precise, high volume fire support

- **Description:**
  - 155mm automated gun system which includes:
    - Fully Automated magazine
    - Unmanned gun mount
    - GPS guided projectile
    - Pallet (transport & storage)

- **Contractors:** BAE Systems, GDATP, LMCO
### (U) Key AGS Element Performance and Operational Requirements

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Performance Requirement</th>
<th>AGS Design Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magazine Capacity</td>
<td>600 LRLAP rounds per ship (minimum).</td>
<td>8-Round Pallets and Capacity for 75 Pallets (minimum).</td>
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<tr>
<td>Signatures (RCS and Infrared [IR])</td>
<td>Use design practices that minimize ship signatures.</td>
<td>Low signature shield design for gun mount – hides the barrel eliminating the major RCS signature source for AGS. AGS baseline incorporates ship-level design guidance concerning signature reduction.</td>
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<tr>
<td>Maximum Land Attack Range</td>
<td>&gt; 63 nautical miles (nm).</td>
<td>155 mm, 62 Caliber Gun and Rocket Assisted, Guided, Projectiles</td>
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<tr>
<td>Max. Rate-of-Fire/Sustained Rate-of-Fire</td>
<td>10 rounds/minute</td>
<td>Fully Automated Magazine and Liquid Cooled Barrel</td>
</tr>
<tr>
<td>Accuracy (Land Attack)</td>
<td>Classified.</td>
<td>LRLAP has precise targeting by using a Global Positioning System (GPS) guidance system with a backup Inertial Navigation System (INS) guidance system.</td>
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<tr>
<td>Lethality</td>
<td>Provide equivalent lethality to that of current 155 mm gun M795 ordnance.</td>
<td>Arena tests conducted confirm performance.</td>
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<tr>
<td>Multiple Rounds Simultaneous Impact</td>
<td>Provide MRSI capability of 6 LRLAP rounds within 1 sec. from 36 nm to 67 nm.</td>
<td>AGS will be capable of achieving the specified MRSI effect with its LRLAP guided projectile.</td>
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<tr>
<td>Replenishment Modes</td>
<td>At-sea or in port.</td>
<td>Design enables at-sea and in port replenishment of AGS pallets</td>
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</table>
ADVANCED GUN SYSTEM MAJOR COMPONENTS

DDG 1000

AGS MT62 Magazine
AGS MT62 Gun Mount
AGS MT61 Magazine
AGS MT61 Gun Mount

AGS LRLAP
AGS Pallet
AGS Propelling Charge
AGS Gun Mt Overview

- Elevation Drives
- MCU w/SAU’s
- Train Drive
- Carriage Structure
- Ejector
- Gun Barrel
- Slip Ring
- I/OCU
- Lower Gun Structure
- Rammer
- MCU w/SAU’s
AGS Magazine Overview
AGS Pallet Overview

- Stowage and unload table roller track
- Handling and stowage lug with initialization connection
- Transfer mechanism roller track
- Forklift handling pockets
- Humidity indicator and desiccant access
- Stowage lugs
Advanced Gun System (AGS) & Magazine

Accomplishments

Component testing to validate design
- Gun and Magazine single axis testing (SAT), multi-axis testing (MAT), and factory acceptance testing (FAT) complete
- Gun mount and magazine integrated testing at Dugway, UT Land-Based Test Site
  - Verified maximum rate of fire of 10 rounds per minute
  - Verified maximum rate of fire in 8-round bursts
  - Verified magazine capable of unloading all 8 complete rounds from pallet in 45 seconds or less
AGS Fire Control

- Provides a set of services to support the planning and execution of EAGS engagements
  - Estimation of number of rounds and estimated effectiveness
  - Determination of target aim points and fuzing
  - Calculation of firing solutions
    - Guided and unguided projectile trajectories
    - Gun pointing angles
    - Time of flight
    - Terminal conditions
- Supports up to 6 round AGS Multiple Round Simultaneous Impact (MRSI) engagement execution
# AGS Program Schedule

* Minimal effort extends through Sept 2013

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>Ship Design Start</td>
</tr>
<tr>
<td>Q2</td>
<td>Ship K Award</td>
</tr>
<tr>
<td>Q3</td>
<td>MSD PRR</td>
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<tr>
<td>Q4</td>
<td>Ship PRR</td>
</tr>
<tr>
<td>Q4</td>
<td>Ship Fabrication Start</td>
</tr>
<tr>
<td>Q4</td>
<td>Lay Keel</td>
</tr>
<tr>
<td>Q4</td>
<td>Hull Integration Complete</td>
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**DDI Contract**

- AGS IPR #2
- AGS PRR
- DDG 1000 SW Rel. 4
- DDG 1000 SW Rel. 5
- DDG 1000 SW Rel. 6
- Ship A MT62: Jan 21, 2010
- Ship B MT62: Jan 21, 2011
- Ship A MT61: Apr 21, 2010
- Ship B MT61: Apr 21, 2011

**Magazine Design**

- 1st Ship, Magazine MT 62
- VFI Drop 3 Need Dates
- VFI Zone 1540/1650

**Gun Mount Design**

- 1st Ship, Gun MT 61
- AGS SW Build 5.1
- AGS SW Build 5.2
- AGS SW Build 5.3
- AGS SW Build 5.4

**DDI Extension CLIN**

- AGS SW Build 5.5

**DD&C CLIN**

- Upper Gun at Dugway
- Test
- Ship A: 11/29/2010
- Ship B: 11/29/2011
AGS Summary

• Rapid Response
• Will Deliver Precision, High Volume Fire In Support Of The Warfighter
• High Reliability
• Major Technologies Demonstrated Through EDM
Contact Information

- James A. Kidwell
  - Naval Surface Warfare Center, Port Hueneme Division, Louisville
  - (502)364-5047
  - Address:
    NSWC PHD Det Louisville
    ATTN: James A. Kidwell, G61
    160 Rochester Drive
    Louisville, KY 40214