MK-48/MK-56 NATO Seasparrow Vertical Launch Systems (VLS)

The MK-48/MK-56 Seasparrow VLS provides a hemispherical, 360° umbrella of effective protection against airborne threats from a limited shipboard space.

Benefits
- Launches Seasparrow or ESSM
- Hemispheric coverage
- Installation flexibility
- Supports high firepower
- High reliability
- Lowest life-cycle cost
- Maintenance and logistical support programs in place

The MK-48/MK-56 Seasparrow VLS delivers, from limited shipboard space, a hemispherical, 360° umbrella of effective protection against airborne threats. The NATO Seasparrow missile (RIM-7VL) has proven itself against a broad spectrum of airborne threats, including subsonic and supersonic missiles arriving at steep dive angles or low sea-skimming altitudes aided in their penetration by low radar cross-section, evasive maneuvering and electronic jamming. With the capacity of up to sixteen Seasparrow (RIM-7VL) or 32 ESSMs (Evolved Seasparrow Missile), the MK-48/MK-56 significantly increases the firepower of ready-to-launch missiles in the same space as an eight missile trainable launcher. These missiles can be launched with minimal intervals between each salvo. MK-48 has no active mechanical parts such as doors or motors. This also translates into higher reliability and availability, with lower ship-manning requirements.

The new DP-48 (Dual Pack) has been contracted for by the Royal Danish Navy. In the same Mod 3 Module that housed six Seasparrow missiles, twelve Evolved Seasparrow Missiles will now be carried.

Applications
Raytheon’s MK-48 Mod 0 design can be used to distribute launchers about the deck of a ship. Mod 1 can be mounted on a bulkhead such as the side of a hangar and Mod 2 can be compactly mounted within the ship’s superstructure. Mod 3 is extremely compact, offering a potent weapon system which can be installed aboard combat vessels under 1,000 tons. All four systems have been contracted for ships of six allied navies. Depending on ship design, the most appropriate model can be chosen. All provide a compact, lightweight design that isolates the missile from shock and the extreme green water environment. The MK-48 and MK-56 Vertical Launch Systems are compatible with internationally accepted Fire Control Systems and the new ESM.
MK-48/MK-56 NATO Seasparrow Vertical Launch System

Mod 0... On-Deck
- Canadian City Class Frigates
- Japanese Murasame Class Destroyers

Mod 1... Bulkhead
- Netherlands Karl Doorman Class

Mod 2... In-Deck
- Hellenic Hydra Class
- Korean KDX Class

Mod 3... Compact Module
- Danish STANFLEX
- Niels Juel Frigate
### MK-48 NATO Seasparrow VLS Characteristics

#### Above Deck Specifications:

<table>
<thead>
<tr>
<th></th>
<th>RIM-7VL (cm)</th>
<th>ESSM (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mod 0</td>
<td>228</td>
<td>127</td>
</tr>
<tr>
<td>Mod 1</td>
<td>173</td>
<td>132</td>
</tr>
<tr>
<td>Mod 2</td>
<td>477</td>
<td>417</td>
</tr>
<tr>
<td>Mod 3</td>
<td>366</td>
<td>271</td>
</tr>
</tbody>
</table>

#### Below Deck Specifications:

<table>
<thead>
<tr>
<th>System</th>
<th>Width (cm)</th>
<th>Depth (cm)</th>
<th>Height (cm)</th>
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</thead>
<tbody>
<tr>
<td>Missile Launch System</td>
<td>61</td>
<td>99</td>
<td>132</td>
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<tr>
<td>Electrical Interface Unit</td>
<td>64</td>
<td>45</td>
<td>91</td>
</tr>
<tr>
<td>Launch Controller</td>
<td>152</td>
<td>34</td>
<td>200</td>
</tr>
<tr>
<td>ESSM Launch Controller</td>
<td>89</td>
<td>30</td>
<td>178</td>
</tr>
</tbody>
</table>

### MK-48 NATO Seasparrow VLS Weight (kg) - including missiles

#### Specifications:

<table>
<thead>
<tr>
<th></th>
<th>Above Deck</th>
<th>Below Deck</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mod 0</td>
<td>15,128</td>
<td>29,5681</td>
<td>15,942</td>
</tr>
<tr>
<td>Mod 1</td>
<td>12,464</td>
<td>26,020</td>
<td>13,278</td>
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<tr>
<td>Mod 2</td>
<td>16,834</td>
<td>30,482</td>
<td>17,648</td>
</tr>
<tr>
<td>Mod 3</td>
<td>7,272</td>
<td>11,340</td>
<td>7,748</td>
</tr>
</tbody>
</table>

### MK-48 NATO Seasparrow VLS Prime Power Requirements

#### Specifications:

| Mod 0 , 1, 2 with 16 missiles | 115 Vac, 3φ, 60 MHz, Type I | 115 Vac, 3φ, 400 MHz, Type II | 4 kVA (without anti-icing) | 13 kVA (without anti-icing) | 21 kVA |
| Mod 3 with 6 missiles          | 440 Vac, 3φ, 60 MHz, Type I | 115 Vac, 3φ, 400 MHz, Type II | 12 kVA                      | 9 kVA                        | 140 VA |

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Canada, Japan, Netherlands, Greece, Korea, Denmark
MK-48/MK-56 Vertical Launch System (VLS)

- **Seeker**
  - Semi-active radar
  - Look-down, shoot-down
  - Demonstrated performance against sea-skimming missiles in heavy clutter

- **Guidance Section**
  - Integrated missile
  - Digital missile-borne computer
  - Surface-to-surface mode

- **Warhead**
  - 39 kg, optimized for anti-ship missiles

- **Control Section**
  - High maneuverability
  - Folded wings for compact storage

- **Rocket Motor (8” diameter)**
  - 8” diameter
  - Beyond the horizon range

- **Jet Vane Control**
  - Provides close-in minimum range

- **Warhead**
  - 39 kg, optimized for anti-ship missiles

- **Transition Section**
  - 8” to 10” body size
  - Fast autopilot computer
  - Inertial measurement unit

- **Strakes (4)**
  - Aerodynamic performance

- **Guidance Section**
  - Integrated missile
  - Digital missile-borne computer
  - Surface-to-surface mode

- **Rocket Motor**
  - 10” diameter
  - Beyond the horizon range

- **Tail Control Section**
  - Allows for very high G maneuvers

- **Thruster Vector Control**
  - Provides rapid close-in minimum range

- **Hemispherical coverage**
- **Installation flexibility**
- **Supports high firepower**
- **High reliability**
- **Lowest life-cycle cost**
- **Maintenance and logistics support programs in place**

**Media Contact**
Guy Shields
978.858.5246 phone
978.858.9414 fax
Guy_Shields@raytheon.com

Integrated Defense Systems
50 Apple Hill Drive
Tewksbury, Massachusetts
01876 USA
www.raytheon.com

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