A-10 Thunderbolt II

Definition: The A-10 Thunderbolt II, better known by its nickname "Warthog," is a U.S. close air support and forward air control fighter (in this secondary mission, it operates under the designation OA-10). It was built by Fairchild Republic Co. and is now sustained by Northrop Grumman.

Features: The aircraft was developed in the early 1970s to provide an airborne counter to the Warsaw Pact's superior number of armored vehicles. It reached IOC in 1977 and is still considered the world's most effective anti-tank platform.

Designed specifically for close-air support, the aircraft is adept at operating from unimproved airstrips, maneuvering at low altitudes and speeds and loitering over battlefields. As one of the few American aircraft built more to withstand fire than to avoid it, the A-10 is also renowned for its ability to sustain battle damage. A titanium "bath-tub" and armored canopy protects the cockpit as well as parts of the flight control system. The wings, horizontal tail and vertical fins incorporate redundant structural support. The engines are mounted high to protect them on the ground from debris and in the air from small arms, cannon fire and infrared missiles. Hydraulic flight controls are backed up by manual cable systems. Fuel cells are protected by shrapnel-catching foam and isolated by self-sealing mechanisms. Less well-protected components are designed for rapid field replacement.

The A-10’s most notable weapon system is the GAU-8/A Avenger - a seven-barrel rotary cannon mounted in the nose that fires up to 4,200 rounds per minute. Each round is 30mm in diameter and over 11 in. long - slightly longer and narrower than a 12-oz. beverage bottle - and bears a tip of depleted uranium for increased armor penetration and incendiary effect. In addition to the cannon, the fighter has eleven hard-points for ground attack ordinance and is particularly suitable for the AGM-65 Maverick anti-tank missile.

Over the course of its lifetime, several upgrades have been made to the aircraft to enhance its operational capabilities. In 1978, a Pave Penny laser-receiver pod was added to enable the aircraft to drop laser-guided bombs illuminated by ground troops or other aircraft. In 1980, inertial navigation systems were added. During the following decade, the aircraft received the Low-Altitude Safety and Targeting Enhancement (LASTE) package, which provided computerized weapon arming, an autopilot and a multifunction display (MFD). During the mid-1990s, the instrument panels were adapted so pilots could wear night vision goggles and carry out nocturnal missions. In 1999, the MFD was upgraded and a GPS navigation system was added.

In 2005, the entire fleet began receiving a "Precision Engagement" package that included a new flight control system, improved cockpit displays, hands-on throttle and stick controls, moving map displays, the capability to deliver GPS and laser-guided bombs, digital stores management, the integration of LITENING and Sniper advanced targeting pods, new electronic countermeasures, a situational awareness data link (SADL) and upgraded power systems. All A-10s have received the upgrade package and are now referred to as A-10Cs.

Production, Current Upgrades and Status:
The U.S. Air Force received 713 A-10s between 1975 and 1984. Of these, 343 remain in service among active duty, guard and reserve units.

In 2007, Boeing was awarded a $1.1 billion contract to replace the wings on up to 242 A-10s, which would allow the aircraft to continue flying until 2035. Firm orders have been placed for 173. The first aircraft with a replaced wing rolled out on February 15, 2012 and the last aircraft is scheduled to be turned over in 2016.

As part of its FY15 budget submission, the Air Force has proposed retiring the remainder of the fleet. Congress is expected to make a decision on the proposal as part of the forthcoming FY15 National Defense Authorization Act.

—Dan Katz

All Program Dossier data is excerpted from the Aviation Week Intelligence Network (awin.aviationweek.com). To learn how to receive full access to dozens of updated online profiles of major international defense programs, call +1 703.997.0275 or email mark.hyer@aviationweek.com.
## Specifications: A-10 Thunderbolt II

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Designation</strong></td>
<td>A-10C / OA-10C</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td>Thunderbolt II / &quot;Warthog&quot;</td>
</tr>
<tr>
<td><strong>Manufacturer</strong></td>
<td>Fairchild Republic Co. (sustained now by Northrop Grumman)</td>
</tr>
<tr>
<td><strong>Category/Type</strong></td>
<td>Attack Fighter</td>
</tr>
<tr>
<td><strong>Crew</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>IOC</strong></td>
<td>1977 (A-10A); 2007 (A-10C)</td>
</tr>
<tr>
<td><strong>Unit cost</strong></td>
<td>$11.8M (FY94) total program unit cost</td>
</tr>
</tbody>
</table>

### Dimensions and Weights

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>53 ft. 4 in. (16.2 m)</td>
</tr>
<tr>
<td>Wingspan</td>
<td>57 ft. 6 in. (17.4 m)</td>
</tr>
<tr>
<td>Height</td>
<td>14 ft. 8 in. (4.4 m)</td>
</tr>
<tr>
<td>Wing Area</td>
<td>506 ft.² (47.01 m²)</td>
</tr>
<tr>
<td>Aspect Ratio</td>
<td>6.54</td>
</tr>
<tr>
<td>Weight (empty)</td>
<td>29,000 lb. (13,150 kg)</td>
</tr>
<tr>
<td>Weight (max take-off)</td>
<td>51,000 lb. (22,950 kg)</td>
</tr>
<tr>
<td>Fuel Capacity (Internal)</td>
<td>11,000 lb. (5,000 kg)</td>
</tr>
<tr>
<td>Fuel Capacity (External)</td>
<td>3 x 600-gal. (2,270 liter) external drop tanks - 12,060 lb. (5,482 kg) total</td>
</tr>
<tr>
<td>Fuel Capacity (Max Total)</td>
<td>23,060 lb. (10,480 kg)</td>
</tr>
</tbody>
</table>

### Performance

<table>
<thead>
<tr>
<th>Performance</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine(s)</td>
<td>2 x TF34-GE-100</td>
</tr>
<tr>
<td>Thrust</td>
<td>18,130 lb. combined</td>
</tr>
<tr>
<td>Max Speed</td>
<td>518 mph - Mach 0.75; 340 mph cruise speed</td>
</tr>
<tr>
<td>Max Speed without Afterburner</td>
<td>N/A</td>
</tr>
<tr>
<td>Service Ceiling</td>
<td>45,000 ft. (13,600m)</td>
</tr>
<tr>
<td>Range</td>
<td>800 mi. (1,290 km)</td>
</tr>
<tr>
<td>Ferry Range</td>
<td>2,580 mi. (4,150 km)</td>
</tr>
<tr>
<td>Combat Radius</td>
<td>Close Air-Support: 288 mi. (450 km) with 2 hr. loiter</td>
</tr>
<tr>
<td></td>
<td>Deep Strike: 620 mi. (1,000 km)</td>
</tr>
<tr>
<td>G-limit</td>
<td>+7.33</td>
</tr>
<tr>
<td>Thrust/Wt</td>
<td>0.4</td>
</tr>
<tr>
<td>Wing Loading</td>
<td>93.68 lb/ft² (457.4 kg/m²)</td>
</tr>
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</table>

### Weapons

<table>
<thead>
<tr>
<th>Weapon</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Cannon</td>
<td>GAU-8/A Avenger 30mm, seven-barrel cannon with 1,350 rounds</td>
</tr>
<tr>
<td>Hardpoints</td>
<td>11 (3 under fuselage, 8 under wings)</td>
</tr>
<tr>
<td>Max Stores</td>
<td>16,000 lb. (7,260 kg)</td>
</tr>
<tr>
<td>Weapons Compatibility</td>
<td>AIM-9 Sidewinder</td>
</tr>
<tr>
<td></td>
<td>Mk-82/83/84 General Purpose Bombs</td>
</tr>
<tr>
<td></td>
<td>Hydra 2.75-in. (70mm) rockets</td>
</tr>
</tbody>
</table>

Source: Aviation Week Intelligence Network  

Continued
Specifications: A-10 Thunderbolt II

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<tbody>
<tr>
<td>AGM-65 Maverick</td>
<td></td>
</tr>
<tr>
<td>CBU-51/58/71/87/89/97</td>
<td>and Rockeye II cluster bombs</td>
</tr>
<tr>
<td>Paveway series LGBs</td>
<td></td>
</tr>
<tr>
<td>A-10C:</td>
<td></td>
</tr>
<tr>
<td>GBU-31/32/38 JDAM</td>
<td></td>
</tr>
<tr>
<td>CBU-103/104/105 WCMD</td>
<td></td>
</tr>
</tbody>
</table>

Avionics

| Radar:                 | None                                           |
| Radar Warning Receiver:| ALR-46(V)                                      |
| Electronic Countermeasures | Compatible with ALQ-119, 131 and 184 ECM pods |
| Chaff/Flare Dispensers: | Compatible with ALE-37. Can carry 4 SUU-25/42 flare launchers on hardpoints |
| Other Avionics:        | AAS-35(V) Pave Penny Laser Tracker Pod         |
|                        | A-10C: Sniper, Litening                        |
|                        | A-10C: SADL                                     |

Source: Aviation Week Intelligence Network

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