USAF Gunship Precision Engagement Operations: Special Operations in the Kill Chain

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Overview

• AC130U Primary Roles and Missions
• Crew Complement
• Capabilities
• Kill Chain Integration
AC-130U Aircraft

- Modified C-130
  - AC-130A first appeared in Vietnam war
  - Highly specialized fire platform
- All based at Hurlburt Field, Florida
  - Limited number: 17
- Deployable worldwide
- Designed to support ground forces
Primary Roles and Missions

• Close air support
  – Airbase / point defense
  – Convoy escort
• Air interdiction
  – Pre-planned
  – Targets of opportunity
• Personnel recovery / combat search and rescue
• Reconnaissance
• Helicopter support
  – Landing zone identification / security
  – Enroute escort
• Military Operations in Urbanized Terrain
• Infiltration / exfiltration
Gunship Deployments

- Feb 03 - Today OIF - Iraq
- Sep 01 - Today OEF - Afghanistan
- Mar - July 99 - ALLIED FORCE - Kosovo
- 96 - ASSURED RESPONSE - Liberia
- 93-99 - DENY FLIGHT/JOINT ENDEAVOR - Bosnia
- 94 - SUPPORT DEMOCRACY - Haiti
- 92-94 - RESTORE HOPE - Somalia
- 91 - DESERT STORM - Iraq/Kuwait
- 89 - JUST CAUSE - Panama
- 83 - URGENT FURY – Grenada

- 4 SOS has been continuously deployed since Jan 03
AC-130U Crew Complement

- Flight Engineer
- Pilots
- Television Operator
- Infrared Operator
- Gunners
- Loadmaster
- Fire Control Officer
- Navigator
- Electronic Warfare Officer
- Right Scanner

Any Time… Any Place
Why Gunships?

• Extremely accurate gunfire
  – Reduce collateral damage
  – Real time BDA
• Long loiter time
• High SA of ground situation
  – 13 man gunship crew vs single seat asset
• Tailored weapons effect
  – Weapon/fuse combination chosen for specific targets

Any Time… Any Place
AC-130U Specialized Capabilities

- Long loiter time (5.5 hour unfueled / limited only by crew with aerial refueling)
- Low yield weapons
- Optimized for night operations
- Ground situational awareness
- Training heavily focused on CAS
Performance

- Normal T/O weight: 155,000 lbs
- Combat load:
  - 3000 x 25mm
  - 256 x 40mm
  - 100 x 105mm
- Max fuel endurance: 6.5 hrs unrefueled
- Routine missions: 6 – 12 hours / 5 hour loiter time
- Shooting altitudes: 4,000 AGL - 18,000 MSL

Any Time… Any Place
Navigation and Fire Control

• Redundant fire control computers
• Dual inertial navigation systems
• Global positioning system
• APQ-180 Strike radar
• Infrared detection set
• All light level television
• Head up display
Communications

- 4 x UHF LOS radios
- 2 x VHF LOS radios
- 2 x SATCOM (voice only) radios
- 1 x SATCOM (data) radio
- 2 x HF radios
  - All securable
  - 1 x UHF Have Quick II capable
  - 1 x VHF FM SINCGARs capable

Any Time… Any Place
Sensor Suite

- Infrared Detection Set (IDS)
  - Wide, medium, narrow fields of view
- ALL-TV
  - LIA, LTD/RF
  - Wide, medium, narrow fields of view
- Strike radar
  - Gives us our all-weather capability

Any Time… Any Place
AC-130 Armament

- 25mm Gatling gun
- 40mm Bofors cannon
- 105mm cannon
- All guns are trainable
  - Guns on hydraulic mounts move with sensors
Defensive Systems

• Radar warning receivers
• Electronic countermeasures
  – Radar jammer
  – Chaff
• Infrared warning receiver
• Infrared countermeasures
  – Flares
  – Infrared shields
  – Directed infrared countermeasures

Any Time… Any Place
Attack Geometry

Any Time… Any Place
Kill Chain Integration

- **Find**: Onboard sensors, networked assets, Ground Forces
- **Fix**: Kinetic or Onboard Sensors
- **Track**: Onboard Sensors
- **Target**: Gun/Ammo selection, marking
- **Execute**: Employ weapons
- **Assess**: Onboard sensors, networked assets, Ground Forces

*Any Time… Any Place*
Kill Chain Video

Any Time... Any Place
Limitations

• Unable to loiter in radar threat environment
  – Defensive systems are escape aid ONLY
• Daytime significantly increases vulnerability
• Limited capability against hardened targets
  – Requires coordinated weapons delivery
• Limited radar resolution
  – Targets must be radar significant or offsets used
• Limited use of LIA in target Area
  – Compromises gunship/ground party location
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