



# 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

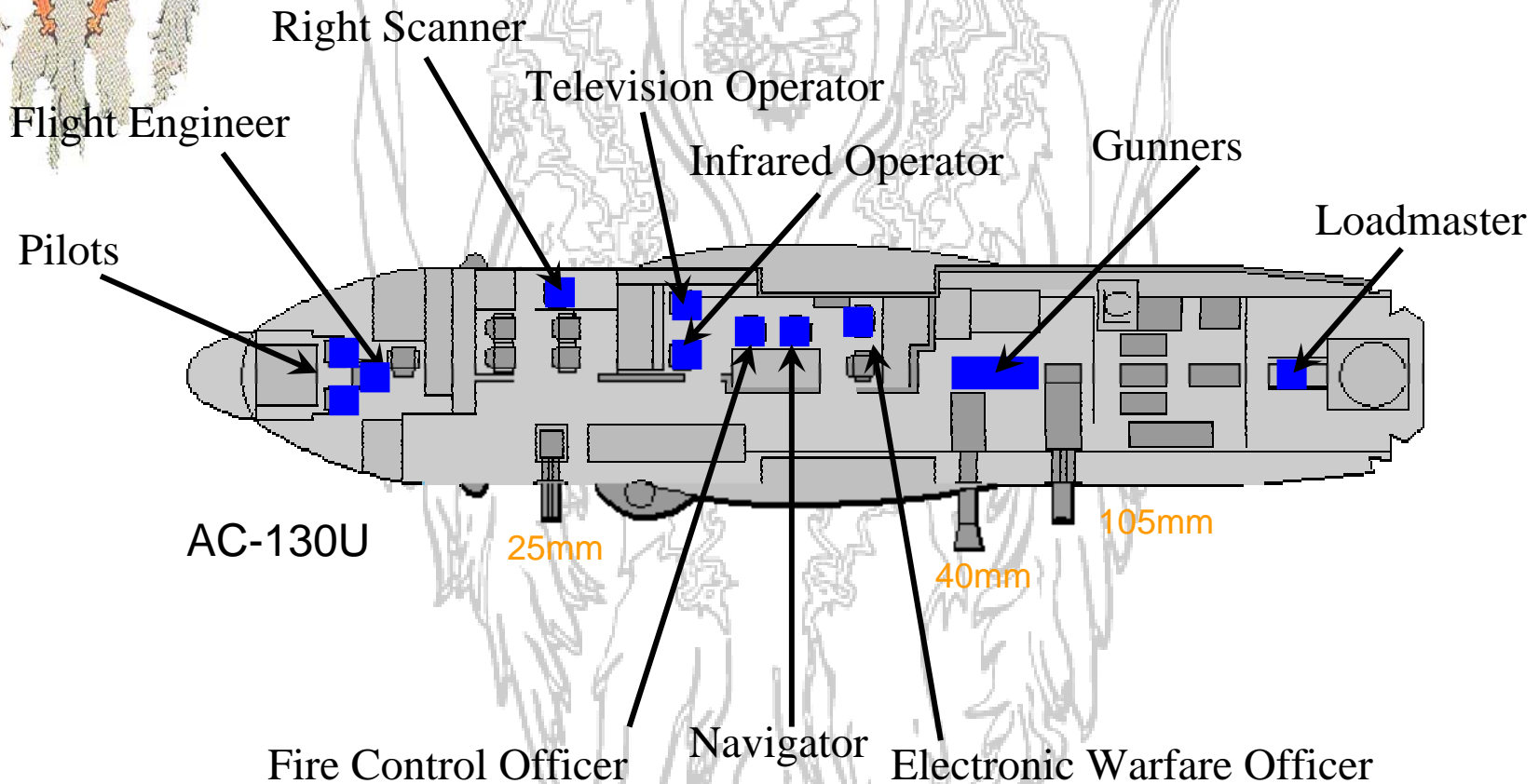
- Close air support
  - Airbase / point defense
  - Convoy escort
- Air interdiction
  - Pre-planned
  - Targets of opportunity
- Personnel recovery / combat search and rescue
- Reconnaissance
- Helicopter support
  - Landing zone identification / security
  - Enroute escort
- Military Operations in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



# 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



The slide features a background illustration of three AC-130U gunships. One is in the foreground, rendered in a light grey line-art style. Behind it, two other gunships are shown in a more detailed, colorful style with red and yellow accents. The title 'AC-130U Specialized Capabilities' is prominently displayed in the upper left quadrant.

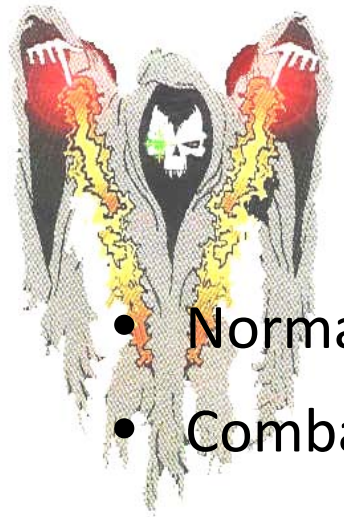
# AC-130U Specialized Capabilities

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





# Performance

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- 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

# 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

# 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



# AC-130 Armament

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



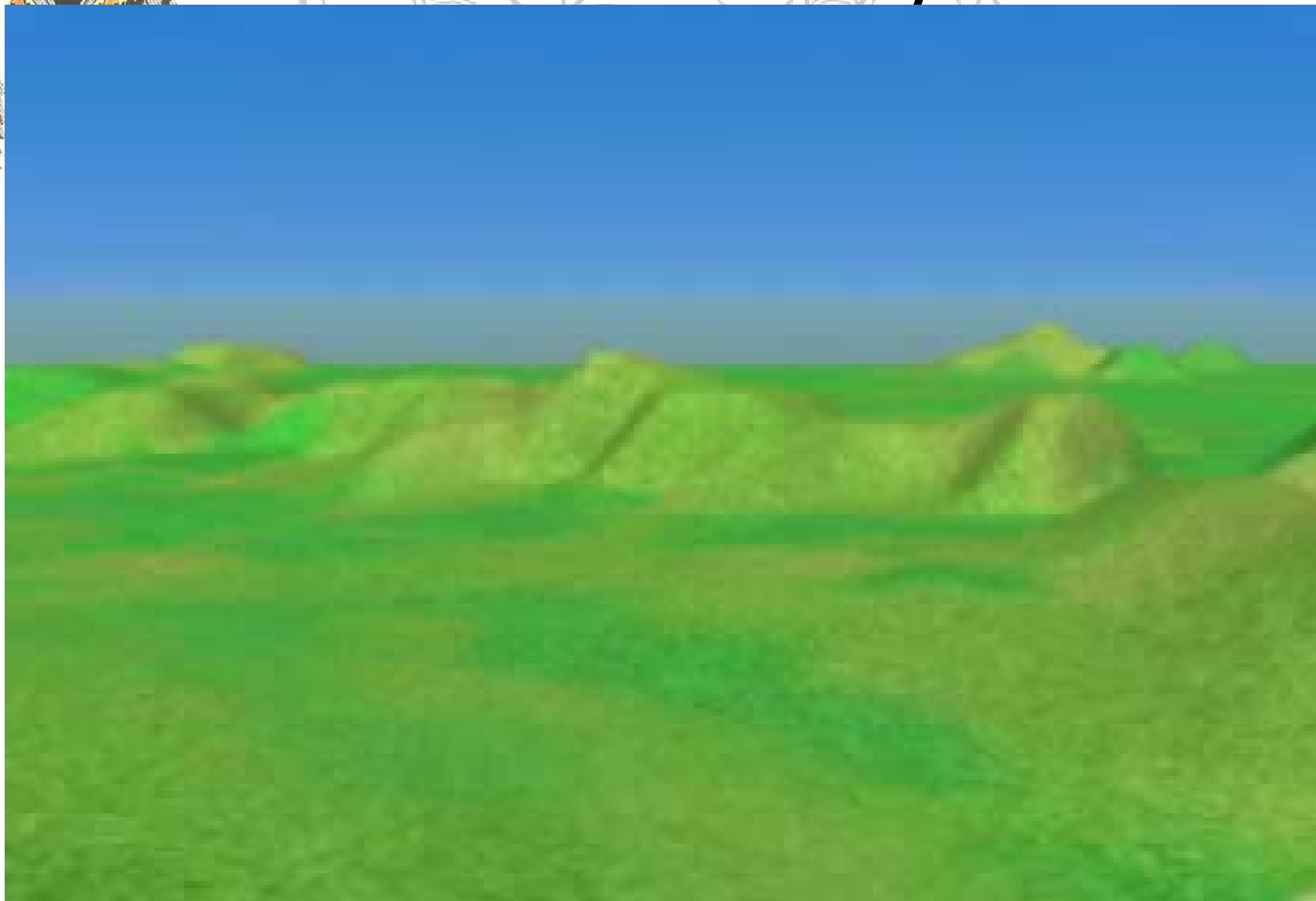


# Defensive Systems

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



# Attack Geometry







# 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

# Kill Chain Video





# 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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