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Apache Overview to Huntsville Aerospace Marketing Association



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Apache

The AH-64 Apache is a twin-engine, four bladed, multi-mission attack helicopter designed as a highly stable aerial weapons-delivery platform.



Name: AH-64E Apache

Value: ~ \$32M (new build cost)

Produced: The Boeing Company, Mesa, AZ

Key Contractors: Boeing, Lockheed-Martin,
Northrup-Grumman, GE

US Army Stationing: CONUS, Korea, Germany,
Iraq

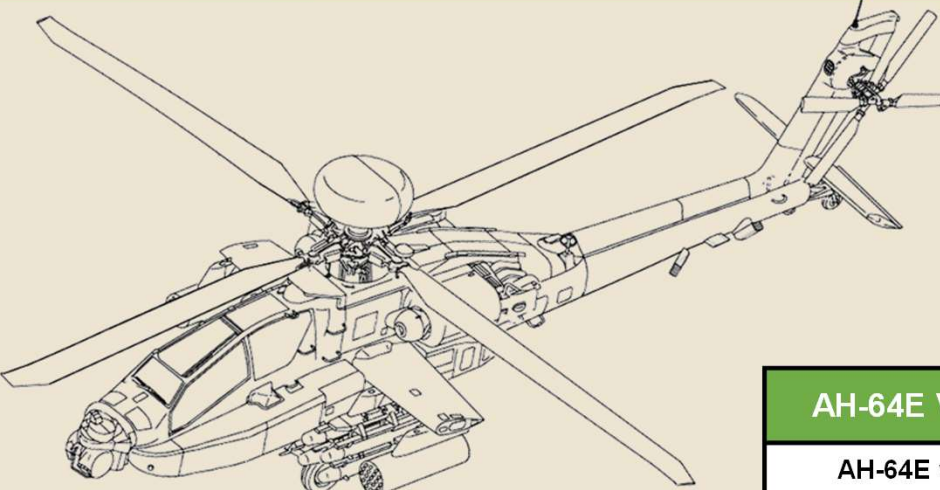
International: 16 countries have a version of Apache
in their inventory

Characteristics

Crew	2
Combat mission speed	164 knots (max speed)
Combat range	260 nautical miles
Combat endurance	2.5 hours
Max gross weight	20,260 pounds
Ordinance	16 Hellfire missiles
	76 2.75 inch rockets
	1,200 30mm rounds



AH-64 Capabilities Progression



AH-64D

- Digital Cockpit
- Fire Control Radar (FCR)
- Radar Frequency Interferometer (RFI)
- Radar Guided Missiles
- Modernized Infra-Red Sensors
- Integrated Aircraft Survivability Equipment (ASE)
- Manned/Unmanned Teaming (MUMT)

AH-64E Version 1 / Version 2.2

AH-64D PLUS:

Aircraft Performance

- New Airframe
- Full 701D Engine Power
- Improved Drive System
- Composite Main Rotor Blades

Lethality

- Radar Electronics Unit (REU)
- Integrated Laser Pointer

Navigation

- IFR Certified
- Standby Flight Display

Communications

- Dual ARC-231 w/Emer backup

Aircraft Architecture

- Mission Processor

AH-64E Version 4

AH-64E v1 PLUS:

Aircraft Performance

- RCEFS

Situational Awareness

- Link-16 baseline
- Blue Force Tracker Block II (BFT-2)
- Air-to-Air-to-Ground (AAG) Video
- System Level Embedded Diagnostics (SLED)
- Smart Tool for Apache Maintenance Picture (STAMP)

Navigation

- Enroute RNP / RNAV / VNAV

Aircraft Architecture

- Cyber Security Improvements

AH-64E Version 4.5+

AH-64E v4 PLUS: Aircraft Architecture

- Multi-core Mission Processor (MMP)

AH-64E Version 6

AH-64E v4.5 PLUS:

Aircraft Performance

- Engine First Limit Indicator

Lethality

- FCR Extended Range
- FCR Maritime & UAS Targeting
- JAGM
- MRFI Maritime Detection
- MRFI Ranging / Geo-location
- Modernized Day Sensor Assembly (MDSA) Extended Range
- MDSA HD Color Video (IFF)
- MUMT Extended Range (MUMT-X), C/L/Ku/S bands

Situational Awareness

- Expanded Link-16
- Expanded STAMP / SLED
- Data Correlation
- Cognitive Decision Aiding System (CDAS)

Navigation

- Full RNP / RNAV / VNAV
- ADS-B (out)
- TACAN

Communications

- ARC-231 Maritime Frequencies

Aircraft Architecture

- ARINC 653 RTOS
- Common Configuration



AH-64E Version 6 Capabilities

Manned Un-Manned Teaming – eXpanded (MUMT-X)

- Level of Interoperability (LOI) 1 – 4 UAV Control
- Extended range (C/L/Ku/S bands)

Gen 2 Fire Control Radar (FCR)

- Extended Range
- Air Targeting
- Maritime Targeting
- Single Target Track
- JMAC (Combat ID)

Gen 2 Radar Frequency Interferometer (RFI)

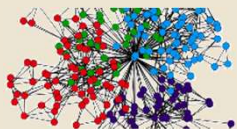
- ESM Quality Radar Detection
- Passive Ranging / Geolocation

Cognitive Decision Aiding System (CDAS)

- Fratricide Prevention
- Workload Reduction
- Automated Route Reprogramming to Avoid Detected Threats
- Synchronized Weapons, Fire for Simultaneous Time on Target

Data Correlation

- Correlation of Link 16, BFT, AAG, AFAPD Icons
- Fratricide Prevention



Gen 2 Pilot Night Vision Sensor (PNVS)

- Longwave Pilotage Certified FLIR
- Electronic Image Intensifier (EI2) Camera

Gen 3 Day Sensor Assembly (DSA)

- Longer Range Target Detection & Identification (178x Zoom)
- FLIR + Short Wave IR + Color TV
- More Powerful Laser Designator
- Eye Safe Laser Ranging
- 2 Color Laser Spot Tracker
- Integral NVG Laser Pointer



30mm Gun Accuracy Improvements

ARC-231 Maritime Voice Radio

- Supports Littoral Operations

Improved PVI

- First Limit Indicator
- Improved Onboard Performance Data

Joint Interoperability & Networking

- Link 16

AGP Upgrade

Navigation Enhancements

- TACAN
- RNP
- RNAV
- VNAV
- DAFIF
- DigMap
- ADS-B Out
- Vertical Obstacle Display

JAGM & AGM-114R

- Fully Integrated Joint Air to Ground Missile
- Latest Fielded Hellfire

Air-to-Air/Ground – eXpanded (AAG-X)

- Streams Apache Gen 3 Target Acquisition Designation Sight (TADS) Video to Ground Commander or Wingman

Upgraded Multi-Core Mission Processors (MMP)

Cyber Security / IA Compliance



System Level Embedded Diagnostics (SLED)







US ARMY AVIATION ATTACK STRUCTURE

26 Apache Battalions

17 CONUS

AAO: 812

APO: 791

AC 24 X 22 = 528

NG 24 X 4 = 96

RUCKER = 115

TEST = 4

TOTAL = 743

+ RCF = 69

AAO = 812

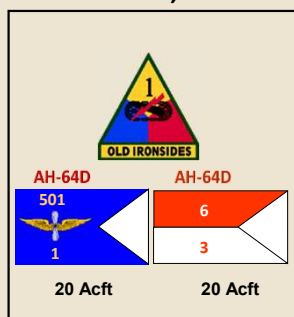
TOTAL ACFT IN FLEET:

333 AH-64D

415 AH-64E

748 TOTAL

Ft Bliss, TX



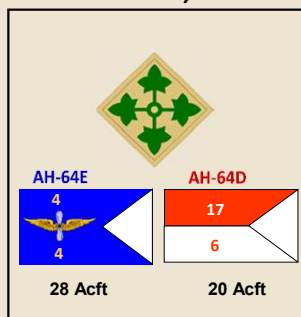
1 AD

HAAF, GA



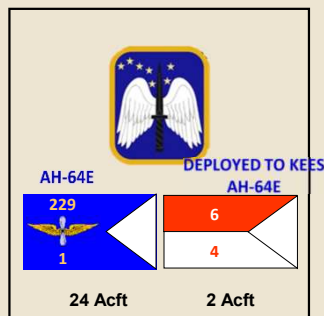
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Ft Carson, CO



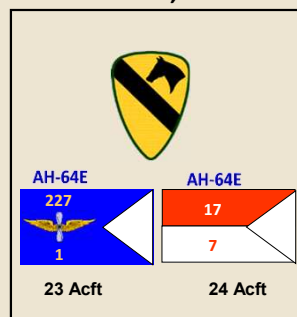
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JBLM, WA



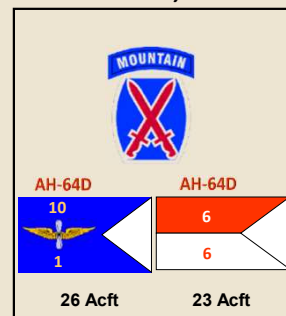
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Ft Hood, TX



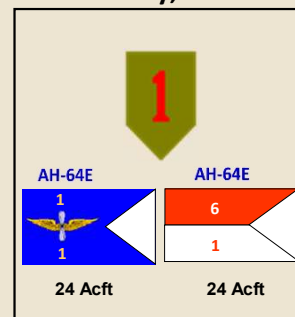
1 CD

Ft Drum, NY



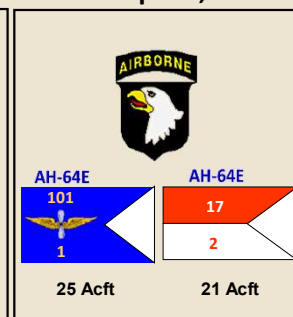
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Ft Riley, KS



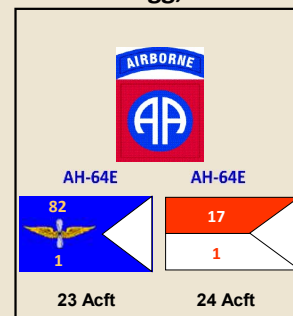
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Ft Campbell, KY



101 ABN

Ft Bragg, NC



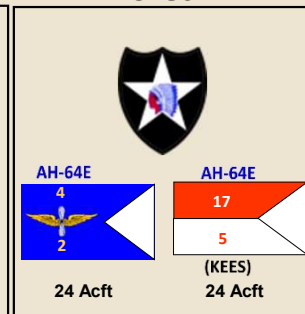
82 ABN

Alaska Hawaii



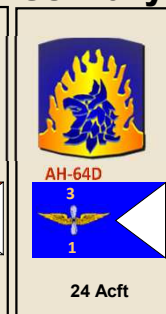
25 ID

Korea



2 ID

Germany



12 CAB

4 NG

36 DIV
TX/MS



18 Acft

38 DIV
NC



17 Acft

40 DIV
UT



19 Acft

42 DIV
SC



16 Acft

TRAINING

USAACE



5 OCONUS BN SETS

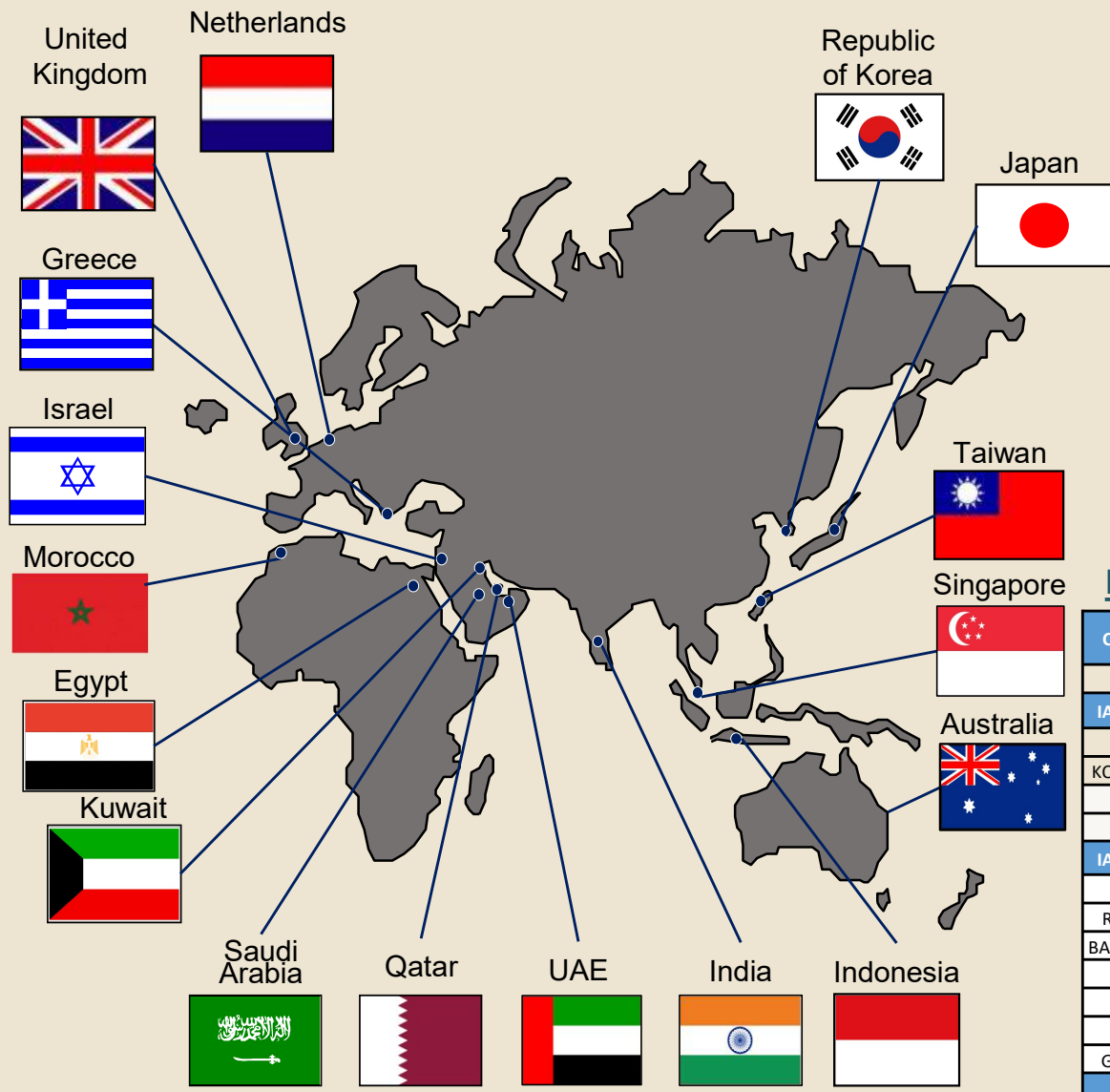


International Apache Fleet

International Fleet

COUNTRY	MODEL			QTY
	A	D	E	
AUSTRALIA			29	
EGYPT		18	25	43*
GREECE	19	10^		29 (9)
INDIA (AF)			22	22
INDIA(Army)			6	6*
INDONESIA			8	8
ISRAEL	26			26
		20		20
JAPAN		13^		13 (12)
KUWAIT		16		16
MOROCCO			24	24*
NETHERLANDS			28	28*
QATAR			24	24
REPUBLIC OF KOREA			36	36
SAUDI ARABIA (RSLFAC)		10		10 (9)
			35	35
SAUDI ARABIA (MNG)			36	36**
SINGAPORE		20		20
TAIWAN			30	30 (29)
UAE			36	36*
UK		16^	50	66**
TOTALS	45	123	389	557 (552)

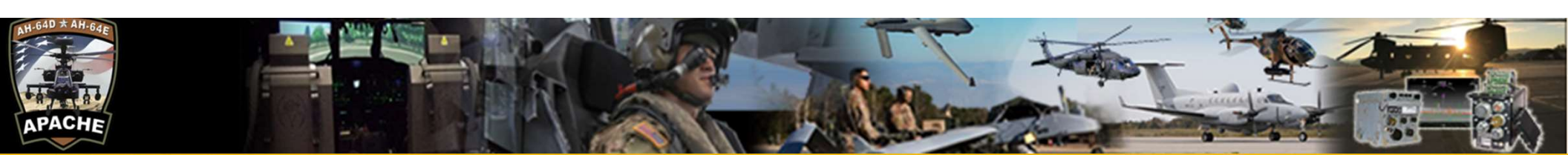
◆ DCS/FMS Hybrid
* Pending 1st Aircraft Delivery
** Aircraft DD250s In Progress
^ DCS
() Current Qty Due to Attrition
BLUE Qty – Current Production



Future / Potential AH-64E

COUNTRY	New Build	Reman	STATUS
KUWAIT	8	16	LOA Offered
IA Working	8	16	LOAs
EGYPT	0	18	LOR for P&A
KOREA Army	36	0	LOR for P&A
JAPAN	18	12	LOR for P&A
POLAND	32/64	0	LOR for P&A
IA Working	118	30	P&As
GREECE	9	9	P&A (Hold)
ROMANIA	24	0	P&A (Hold)
BANGLADESH	8	0	P&A (Hold)
QATAR	6	0	LOR (Hold)
RSLFAC	0	9	LOR (Hold)
INDIA	11	0	Interest
GERMANY	8	0	RFI /ROM
Future	66	18	Interest
Total	192	64	

Totals Based on Potential Max Quantity



Attack Helicopter

Modernization Efforts

- SPIKE-NLOS Integration
- Open System Architecture (V6.X) Development
- Improved Turbine Engine (ITE) Integration

FY22 Focus Areas

- Multi-Year 2 Production Contract Award
- Reinstate Digital Call for Fire
- Deliver AH-64E V6 Helicopters to USARPAC & ARNG Units
- Move AH-64E Fleet Closer to Common Configuration and OSA with V6.X OFP Upgrade –Contract Awarded Dec 21
- Integrate CIRCM Modifications and Installation
- Continue ITE Integration on AH-64E
- Achieve SPIKE Missile Integration
- Execute Gen 2 Turret Special User Evaluation



Fleet Challenges

- **Generator Path Forward**
 - Generator improvements to decrease incidents
- **AH-64D Sustainment**
 - Metal Main Rotor Blades (MMRB)
 - High washout rate during repair at CCAD
 - Contractor repair is no longer available
 - No production of MMRB
 - Obsolescence Risks for legacy electronic equipment
 - Emerging obsolescence issues will have limited harvest opportunities after production line is closed
- **30mm Gun Accuracy**
 - Software fixes continue in V6.x
 - Dampener testing in Feb 22



Questions

