

V-22 Osprey Program Update

“Worth the Effort”

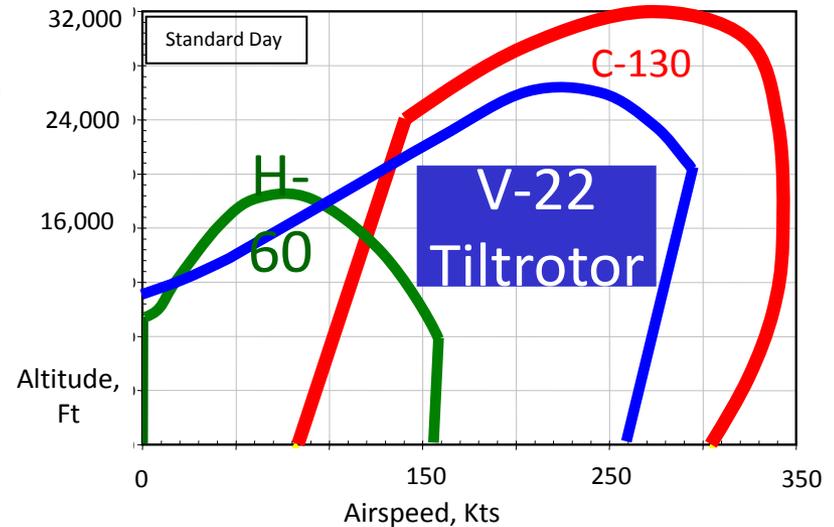




V-22 Performance



- **Tiltrotor Design**
- **V/STOL**
- **Maximum Sustained Cruise 262 kts (485 km)**
- **Mission Radius 350 nm (648 km)**
- **Service Ceiling 25,000 ft (7620 m)**
- **Normal Altitude w/Pax 10,000 ft (3048 m)**
- **Ferry Range 2,660 nm w/1 refuel (4926 km)**
- **One Engine Out Capable**
- **Amphibious Shipboard Capable**



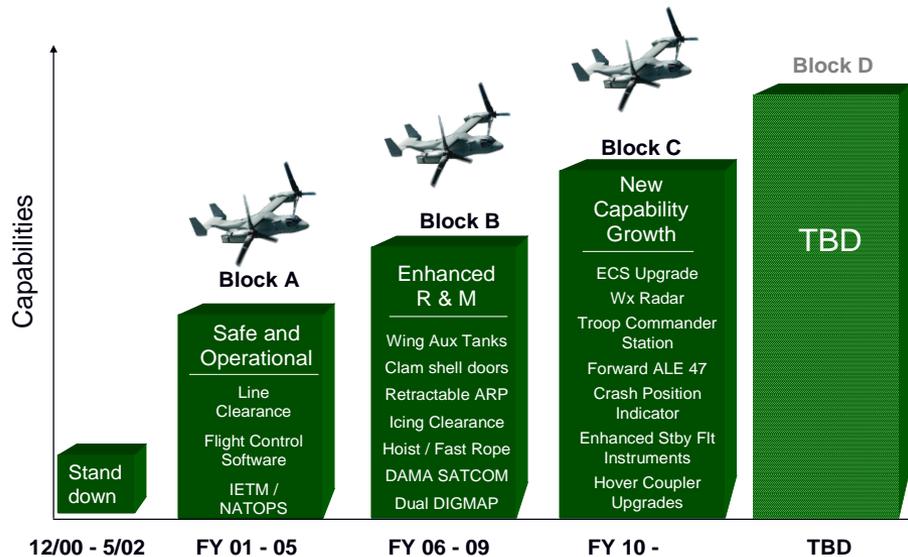
Versatility of a Helicopter – Speed/Range of a Turboprop



V-22 Block Upgrades



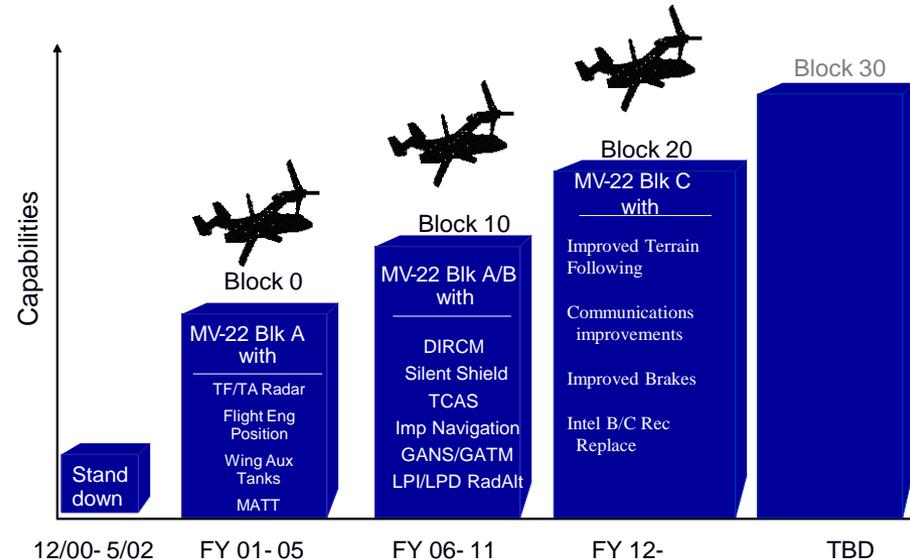
MV-22 Incremental Acquisition



CV-22 is the Special Operations Variant of the baseline V-22 Tiltrotor which includes:

- Terrain-Following Radar
- Infrared Countermeasures
- Radar Warning / Jamming
- Additional Radios
- One additional Flare / Chaff Dispenser

CV-22 Incremental Acquisition



PMA275 IIPT 2 Jun 09 0900-1200 1D548

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MV-22 / CV-22 Commonality

Airframe	90%
Avionics	50%
Propulsion	100%



3



V-22 Osprey Program Summary



Program Summary

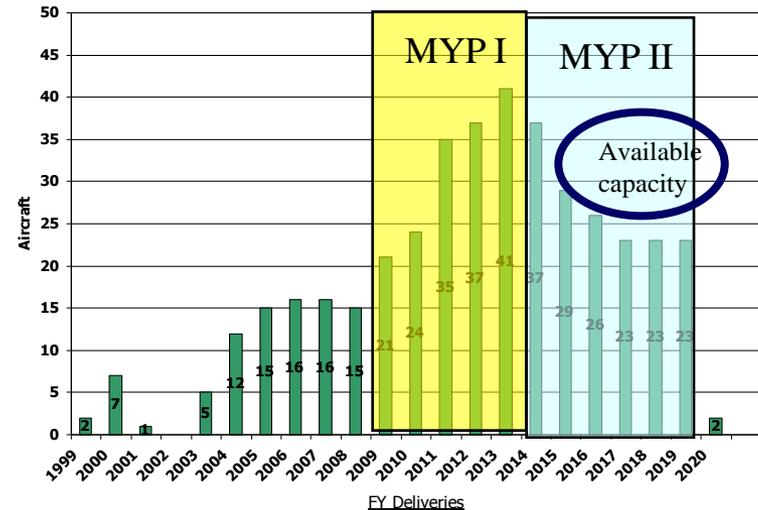
Contracted/Plan: 287/458
 Program Duration: Through 2018
 MV & CV IOC: Complete
 FRP Authorized: September 2005
 Final Assembly: Amarillo, TX
 Fuselage Assembly: Ridley Park, PA



Current Status

MYP Contract: March 2008
 CY10 Deliveries: 28 aircraft (Lot 12)
 FY11 Procurement: 35 aircraft (Lot 15)

MYP II Discussions underway proposed contract award in 2013 (FY13-FY17)



Opportunity in Procurement and Production



Multi-Mission Tiltrotor Aircraft

OSD-directed, Navy-led Joint Program Office (ACAT 1D)



USMC



AMPHIBIOUS OPERATIONS

SUSTAINED LAND OPERATIONS

SELF-DEPLOYMENT

360 MVs

USSOCOM



LONG-RANGE SPECIAL OPERATIONS

CONTINGENCY OPERATIONS

**EVACUATIONS AND MARITIME
SPECIAL OPERATIONS**

50 CVs

USN



PERSONNEL RECOVERY

SEA BASING LOG SUPPORT

SPECIAL WARFARE

48 MVs



**1st Generation Tiltrotor, Fly-by-Wire, Composite Aircraft:
Production on-track – meeting operational Fleet demands (13 OCONUS deployments)**



Nature of the Aircraft



- **Design**

- Designed from inception to be survivable, effective, and maintainable
- Blends the capabilities of a turbo-prop and a helicopter

- **Engineering**

- Highly redundant flight controls and load paths for critical components
- Fly-by-wire with over two million Software Lines of Code

- **Maintainability**

- Aircraft systems and components status continually monitored and recorded

- **Operational**

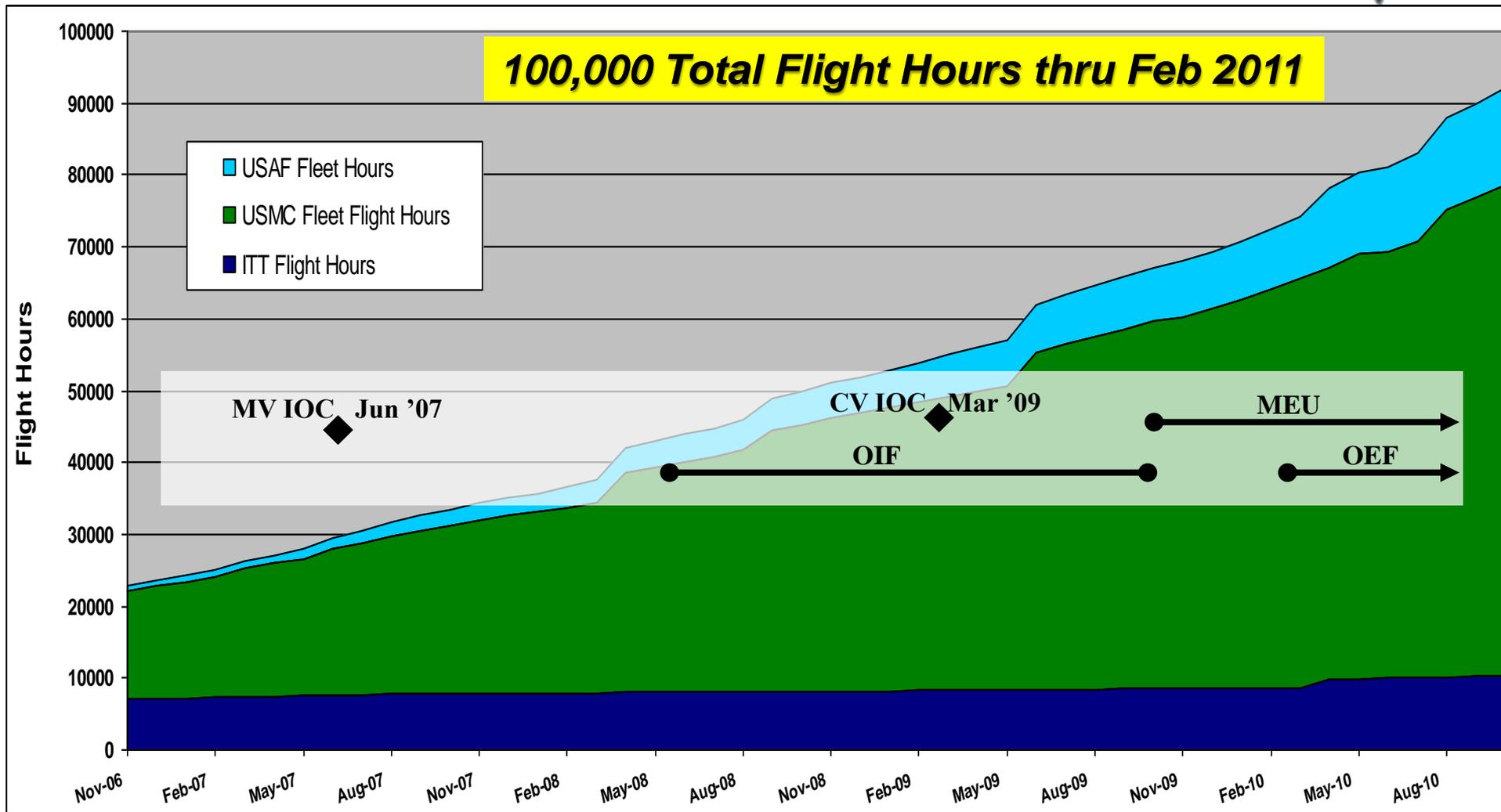
- High levels of automation enhance versatility, reduce risk, and extend aircrew duration
- Best understood when regarded as “a C-130 that hovers”
- Extremely quiet in airplane mode
- Powerful, high-end medium lift capability with good single engine characteristics



V-22 Fleet Introduction



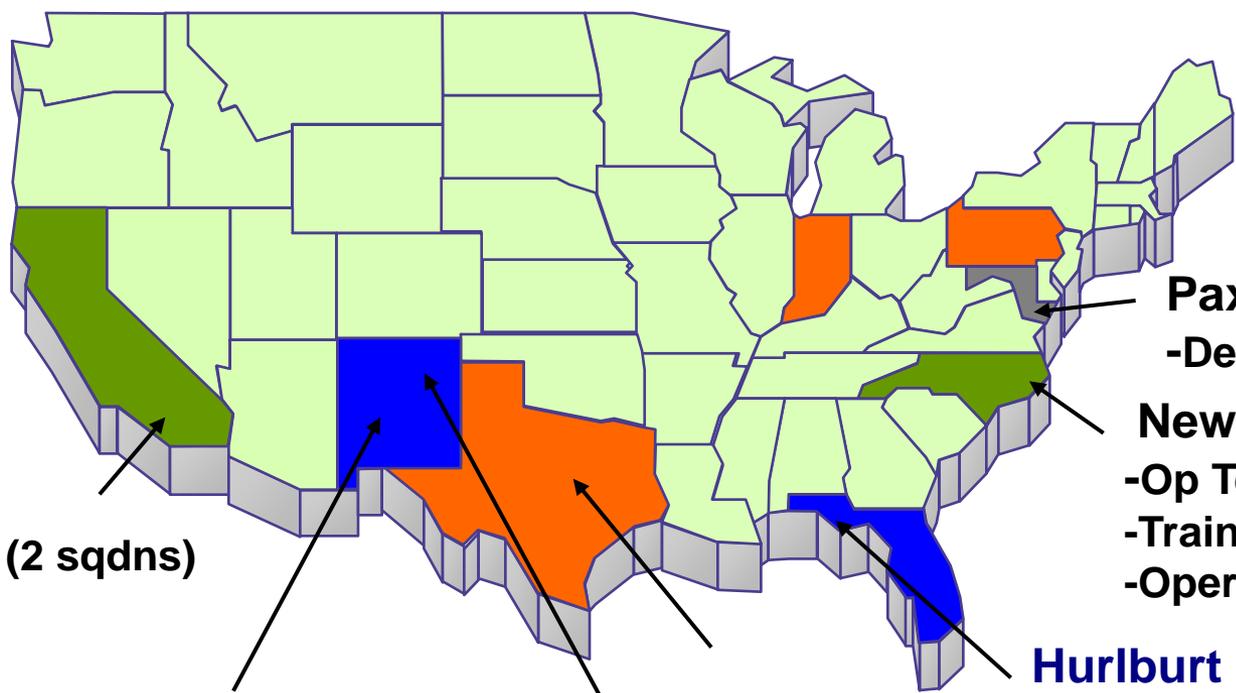
100,000 Total Flight Hours thru Feb 2011



46% of Total Flight Hours Flown in the last 2 Years



Location / Operational Inventory 2010



Miramar
-Operational (2 sqdns)

Kirtland
-Op Training (1 Sqdn)

Cannon
-Operational (1 Sqdn)

Pax River
-Dev Test (1 Sqdn)

New River
-Op Test (1 Sqdn)
-Training (1 Sqdn)
-Operational (6 Sqdns)

Hurlburt
-Operational (1 Sqdn)
-Dev Test (1 Sqdn)



2 Sqdns OCONUS
12 MV-22 / 5 CV-22

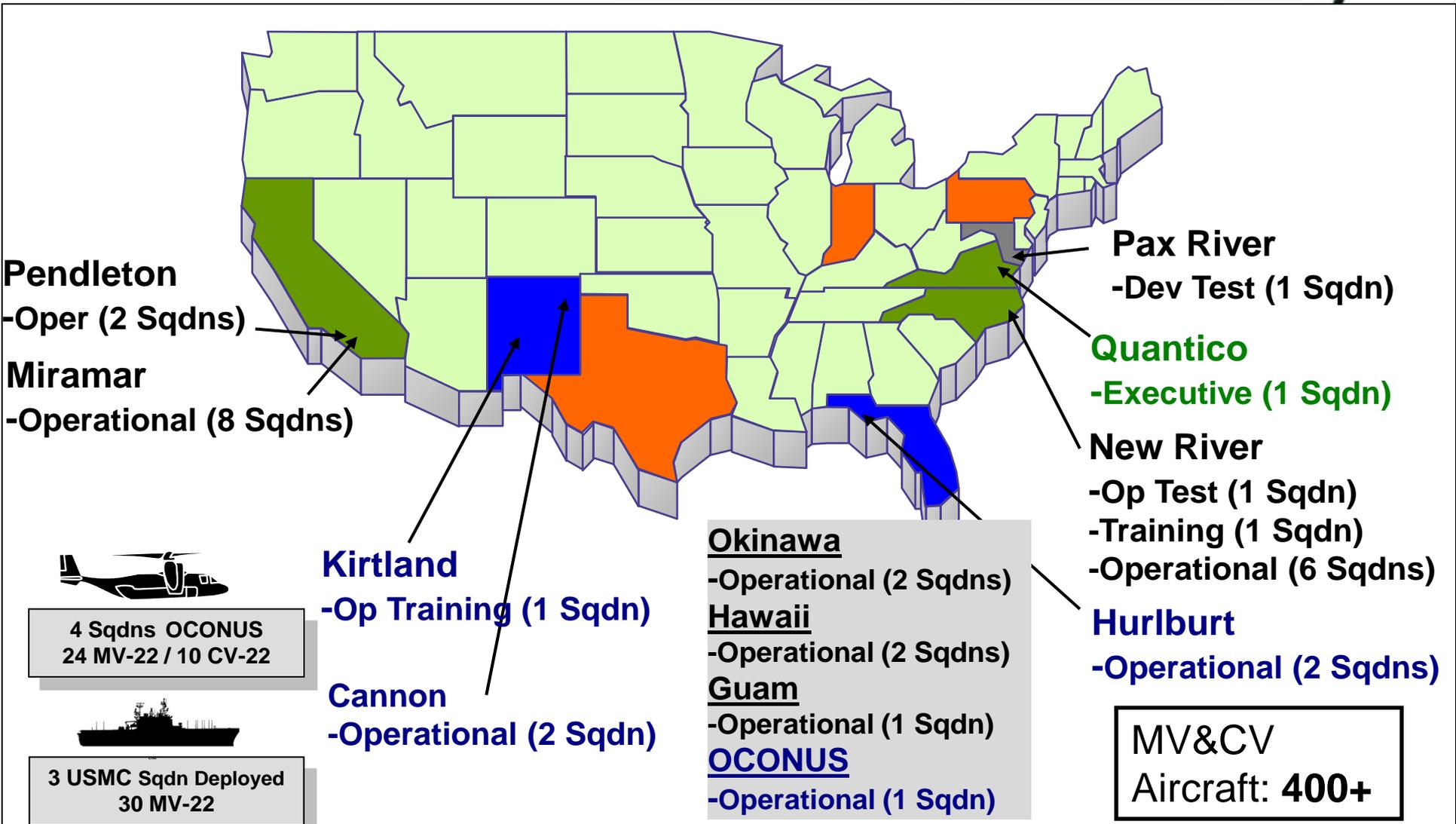


1 USMC Sqdn Deployed
10 MV-22

MV&CV
Aircraft: **128**



Location / Operational Inventory 2019



Projected squadron basing



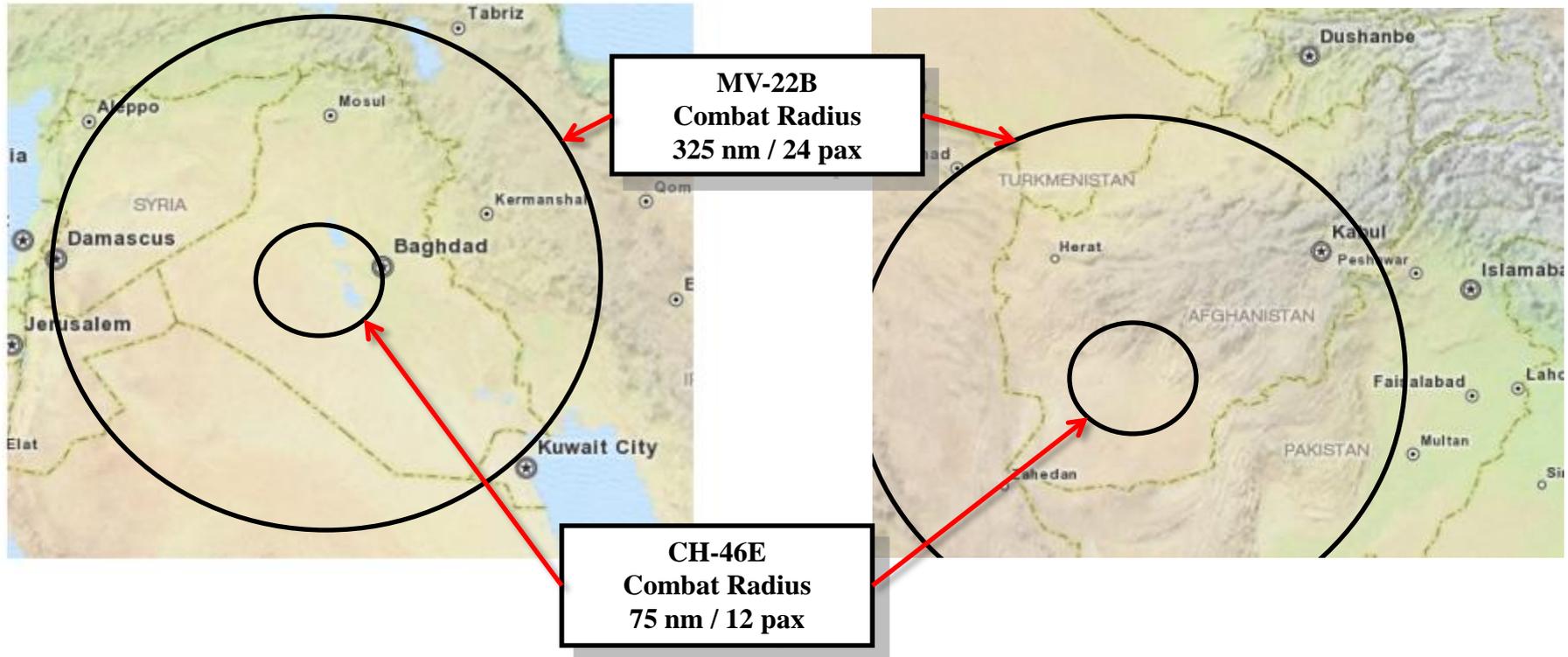
V-22 Defines Capability Leap



MV-22 provides unprecedented agility and operational reach

Operation Iraqi Freedom

Operation Enduring Freedom



Effective and Survivable – Executing Full Array of Missions

Operation Iraqi Freedom

Oct 2007 - Apr 2009



9,000 flight hours, 6,000 sorties, 45,000 passengers moved, and 2 million pounds cargo

“Turns Texas into Rhode Island.”

– **BGen Alles, CG ACE MNF-W**

“I could dominate [Al Anbar Province], because I had V-22s...I couldn't do what I did with just helicopters.”

– **MGen Kelly, CG MNF-W**

Operation Enduring Freedom Nov 2009 - present



Example mission: High Value Target takedown

“4 MV-22B's hit two separate zones simultaneously on the southern end of the town. The two MV's came out of the sun and he couldn't see them or hear them until they were right on top of them--less than 30 seconds out.”

-Forward Air Controller

General support, direct action raids, deliberate assault, resupply, support for remote tribal shuras, and CASEVAC at ranges un-executable by legacy assets.

V-22 is shrinking the battlespace

NAVAIR Public Release # 11-111

Marine Expeditionary Units May 2009 - present



“The V-22 can reach the fight and be effective in the fight like no other aircraft that has ever been embarked on these ships. And in doing so, it enhances the ship’s ability to contribute to those missions.”

- USS Bataan Commanding Officer

***Third MEU deployment is underway
Long-range logistics repeatedly demonstrated
500+nm CASEVAC from Indian Ocean to Kenya***

AFSOC Support to OIF and OEF



OIF – 68 direct action assaults, 231 terrorists captured
OEF – several thousand mile rapid redeployment to
support national tasking

Direct action assaults, combat support,
and security engagement

“Doing things only the V-22 could do.” - anonymous



Performance



- **The V-22 continues to excel in combat**
 - MV-22B and CV-22 Range, speed, and endurance allow economy of force and mass
- **Mission Tasking**
 - Every combat mission from raids, direct action, aerial delivery, general support, and battlefield circulation
 - Assault support aircraft of choice for open-desert night landings
- **Survivability**
 - Speed into and out of the zone causing many misses
 - Several small arms and RPG hits; aircraft flying the next day
 - MANPAD engagements defeated
- **Customer Feedback**
 - “Most survivable aircraft we’ve got.” – BGen Alles, CG Air Combat Element
 - “I could dominate because I had V-22s.” – MGen Kelley, CG Multi-National Forces West



Multi-Mission Applications



Potential Multimission Applications



MV-22
Assault Support



CV-22
Special Operations



Combat Search and Rescue



Aerial Refueling



Command and Control



Ground Refueling



Logistics Support



MEDEVAC



Antisubmarine Warfare



Executive/VIP



Disaster Relief



Aerial Surveillance



Force Protection



Airborne Tactical Laser

Legend

✓ *In Service*

➤ *In consideration*

• *Future consideration*

- ✓ SpecOps – Special Operations
- ✓ RGR - Rapid Ground Refueling
- ✓ Assault Medium Lift
- ✓ VOD - Vertical on Board Delivery
- ✓ Tactical Mobility
- ✓ Forward Area Refueling (FARP)
- ✓ MEDEVAC - Medical Evacuation
- ✓ SAR - Search and Rescue
- ✓ CSAR - Combat Search and Rescue

- COD - Carrier on Board Delivery
- Aerial Refueler (“give” as a tanker)
- Executive transport and support
- C² - Command & Control
- UAS - Unmanned Aerial Systems
- ASaC - Airborne Surveillance and Control

- Armed Reconnaissance
- AEW – Airborne Electronic Warfare
- Close Air Support
- UUV - Unmanned Underwater Vehicle
- ASW - Anti Submarine Warfare
- ASuW – Anti Surface Warfare
- Surface, Subsurface, Surveillance Coordination
- Over-The-Horizon Targeting
- Observation



What's Important



CV-22's deliver aid in Central America



MV-22 CASEVAC



24th MEU Marines MV-22 transit to Haiti from USS Nassau



MV-22 Assault Support in OEF



MV-22 Assault Support



Assisting Haitians near Grand Saline, Haiti

Perspective - Perseverance - Performance



Takeaways



- Game changer - Speed and Range
- Exceedingly Effective and Survivable
- Readiness and Cost being Aggressively Attacked
 - Not Uncommon for Early Fielded Systems
 - Predictable Path Forward
- Expect to cross 100,000 flight hour milestone 1st quarter CY 2011
- Team (Gov't/Industry) Ownership is Essential

***V-22 Osprey — As Ready and Affordable
As It Is Effective and Survivable***

Questions



V-22 is meeting all mission tasking in this environment . . .