

V-22 Osprey Brief ComDef West 2010

Advancing Force Multiplicity



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LtCol Evan LeBlanc

Command Officer, VMM-161

MCAS Miramar

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NAVAIR Control # 04-10



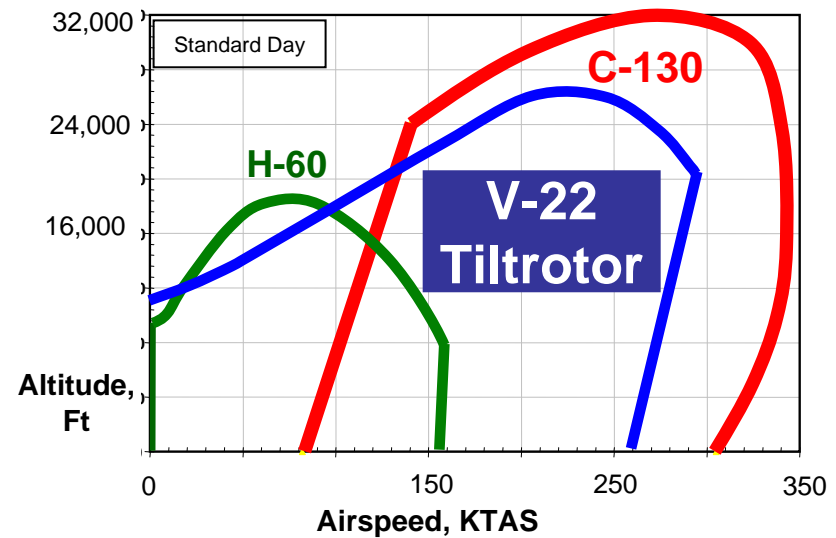


Technical Overview

V-22 Osprey Performance



- Sustained Cruise 262 kn/485 km/h
- Maximum 282 kn/522 km/h
- Mission Radius 350 nm/648 km
- Service Ceiling 25,000 ft/7,620 m
- Normal Altitude w/pax 10,000 ft/3,048 m
- Ferry Range 2,600 nm/4,815 km w/1 refuel
- One Engine Out Capable
- Amphibious Shipboard Capable



Versatility of a Helicopter – Speed/Range of a Turboprop



Program Overview

Joint Service Multi-Mission Tiltrotor Aircraft



USMC



360 MV-22

- Combat Assault & Amphibious Assault
- Sustained Land Operations
- Self Deployment



USSOCOM



50 CV-22

- Long Range Special Operations (SpecOps)
- Contingency Operations
- Evacuation & Maritime SpecOps



USN



48 MV-22

- Personnel Recovery
- Fleet Logistics Support
- Special Warfare
- Aerial Refuel





Program Overview

Navy V-22 Joint Program Office (JPO)



- Tiltrotor vertical/short takeoff and landing (VSTOL)
- Multi-mission aircraft developed to meet combat requirements
- Replacing USMC CH-46E
- Augmenting USAF SOF
- Mix of 458 aircraft delivered to
 - USMC MV-22
 - USSOCOM CV-22
 - USN MV-22
- Full rate production, 11.B dollar Multi-Year Procurement
- 103 V-22's flying
- Performance Based Logistics (PBL) programs
- Engine Support Program by Mission Care[®]
- Over 70,300+ Flight Hours (FH)
- Over 50% FH flown in the last 2 years
- Operational Squadrons
 - Seven USMC MV-22
 - Two USSOCOM CV-22

PMA-275 is Responsible for all V-22 variants, USMC, USN and USSOCOM



MV-22 Product Roadmap

Improved Readiness w/ Maturity



Return to Flight

RTF

- Line clearance modifications and increased inspections for flight test use
- Tape under clamps
- Additional clamps
- Remove marriage clamps
- Add bore scope ports

Block A

- Improved IETMs
- Nacelle Redesign (Demonstrated Safe and Operational)
- SW Upgrades
- CRIs/ Weight Reduction / R&M Improvements
- Resolution Matrix Improvements
- Improved Mission Computer
- Dig Map Upgrade

Block B

- Improved Effectiveness and Suitability
- SW Upgrades
- CRIs & R&M Improvements
- Weight Reduction
- Training/Logistics Improvements
- Aft Ramp Hoist
- Wing Fuel
- Ramp Mounted Weapon System
- Belly Gun

Block C

- Enhanced Standby Flight Instrument package
- Fwd ALE-47 Dispenser
- Troop Commander Station upgrades
- EAPS / Starter Valve upgrade
- ECS upgrade
- Weather Radar with Lightning Detect
- Misc SW Upgrades
- CRIs

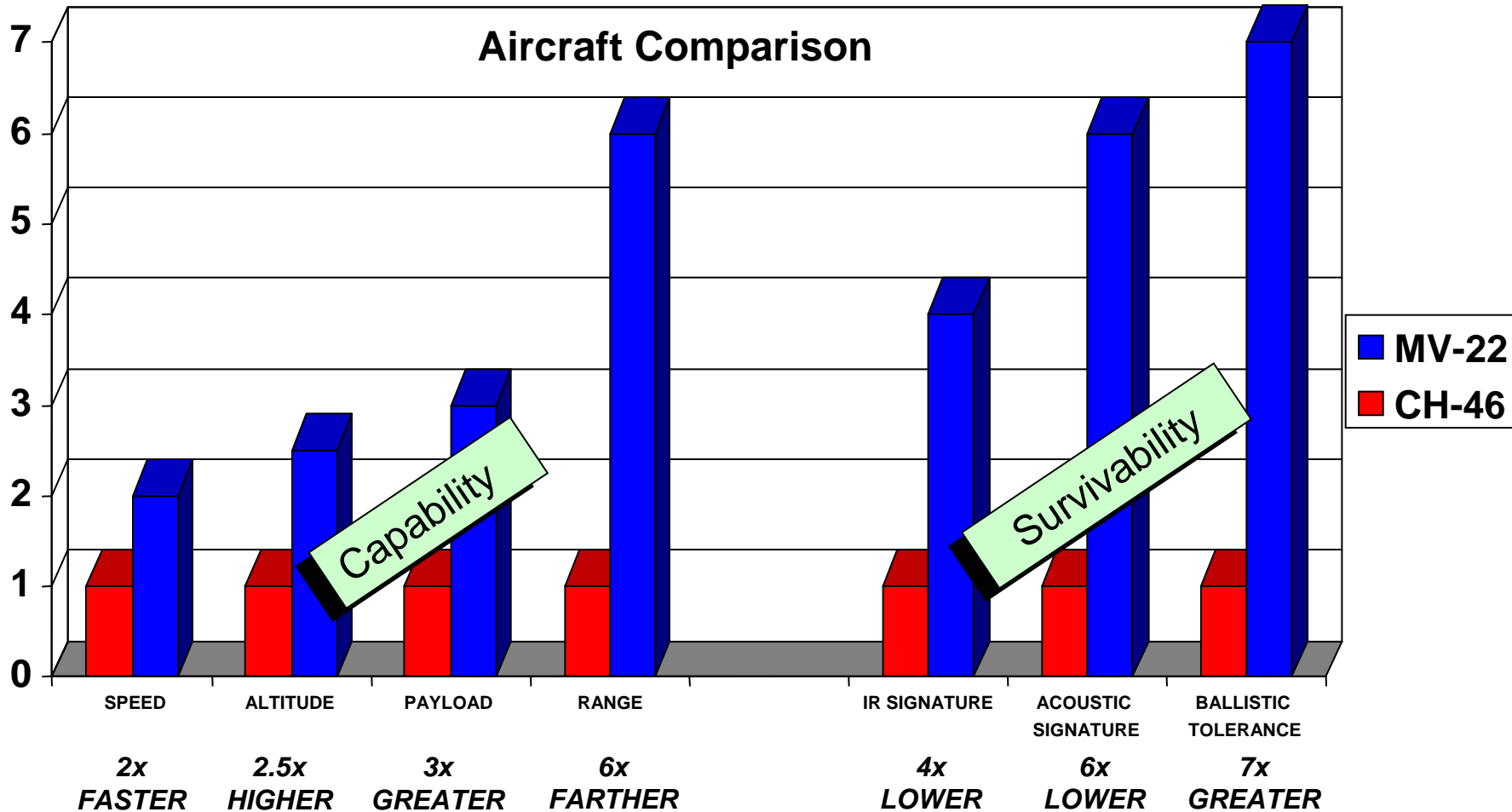
Future

- Open Systems
- Force Tracking
- CNS/ATM & TCAS
- LPI Altimeter
- Link-16 & Wideband
- FAB-T & JTRS
- Wireless Intercom
- EW Upgrades
- Aero/Engine/Xmsn Performance Improv.
- NBC Sensing
- Aerial Refueling
- External Stores Pylons
- Self-taxi
- Naval Kits





MV-22 Capability/Survivability





Unmatched Survivability

Designed to "Go in Harm's Way"



PERFORMANCE

- Speed
- Range
- Altitude
- Maneuverability

ENERGY MANAGEMENT:

- "Broomstraw" Blade Failure
- Mass Remote Design
- Controlled Wing Failure
- Anti-plow Bulkhead
- Attenuating Cargo Restraints

TACTICS

- Night
- Low-level
- All Weather



SYSTEMS PROTECTION

- Armor
- Redundancy
- Isolation
- Separation

DRY BAY AND ENGINE FIRE SUPPRESSION

DITCHING BOUANCY, STABILITY AND EMERGENCY EGRESS

SELF SEALING FUEL SYSTEM

BALLISTIC TOLERANCE:

- Composite Structure
- Hydraulic Ram Protection
- Self-sealing Fuel Bladders
- Nitrogen Inerted Fuel System

DEFENSIVE WEAPON SYSTEM

EW WARNING AND COUNTERMEASURES

ONE ENGINE INOPERATIVE CAPABILITY

STROKING SEATS & SHOULDER HARNESSSES FOR TROOPS & CREW

SIGNATURE REDUCTION

- Visual
- Infrared
- Acoustic
- EMCON

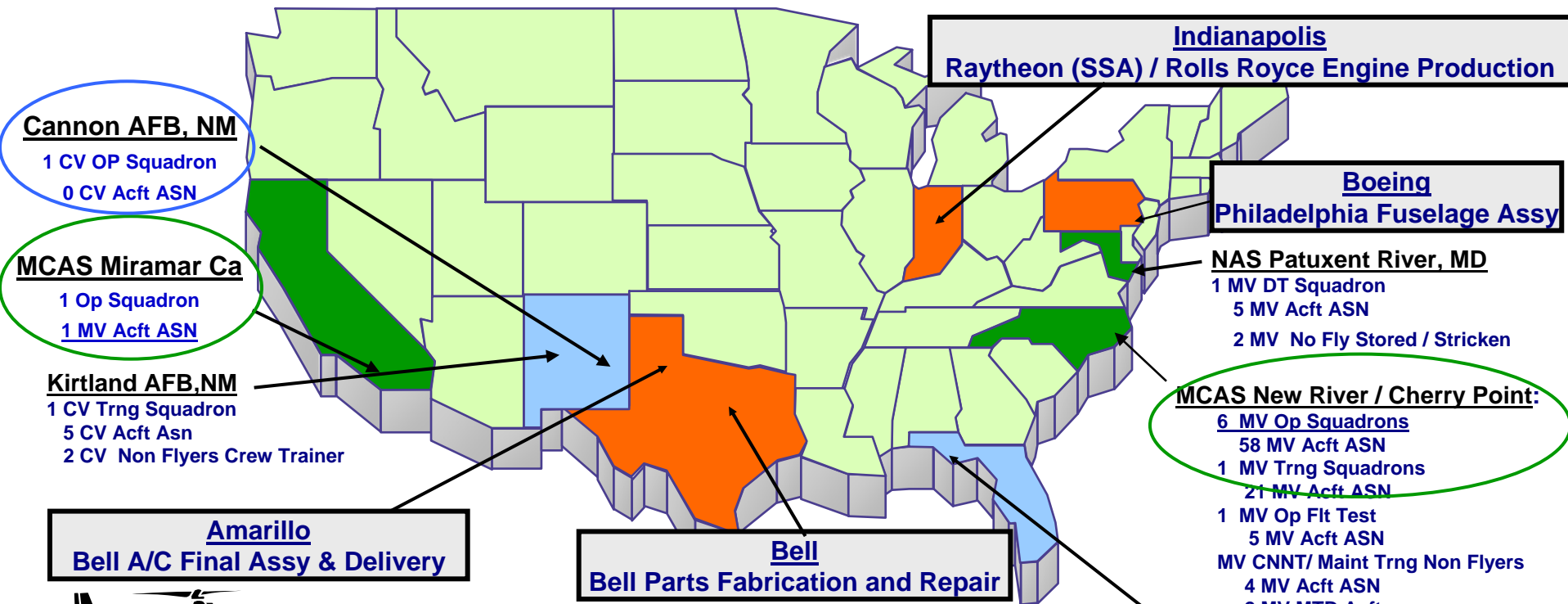
Reduced Susceptibility

+ Reduced Vulnerability

= Improved Survivability



Location / Operational Inventory



Aircraft Inventory Summary

	Flyers	Ground Trainers	Stored	Stricken	Total
MV-22 Operational	59	0	4	0	63
CV-22 Operational	7	0	0	0	7
MV Test	10	0	2	0	12
CV Test	1	0	0	0	1
MV Training	21	6	0	0	27
CV Training	5	2	0	0	7
Stricken	0	0	0	9	9
TOTAL	103	8	6	9	126

1 Sqn OCONUS
10 MV-22

1 USMC Sqn Deployed
10 MV-22

Hurlburt AFB, FL
1 CV op Squadron
7 CV Acft ASN
1 CV Flt Test AC

CV-22
Available for Tasking



USMC and USSOCOM

V-22 Timeline 2006 - 2009



Rapidly growing, stable and maturing fleet



The V-22s removes many of the current limitations inherent to helicopter operations resulting in a new perspective in current CONOPS.



Fleet Overview

V-22 Timeline Major Events



	Date	Event	Status
FY06 – FY10	FY 2006	1 st Transatlantic Flight (MV-22)	✓
	FY 2006	CV-22 Op Eval, CV-22 1 st Prod A/C, 1 st CV-OP Squadron	✓
	FY 2007	1 st Operational Squadron VMM-263, 1 st Deployed to OIF	✓
	FY 2008	2 nd & 3 rd Operational Squadron VMM-162 and VMM-266	✓
	FY 2008	MV-22 Deployed 12 aircraft over 18 months (3 Sqds)	✓
	FY 2009	4 th & 5 th Operational Squadron VMM-261 and VMM-264	✓
	FY 2009	VMM-261 1st MV-22 MEU, MV-22 OEF Operations Begin	✓
	FY 2009	6th Operational Squadron VMM-365	✓
	FY 2009	East Coast Transition CH-46 to MV-22 Complete	✓
	FY 2009	1 st USMC MV-22 (West Coast) Squadron VMM-161	✓
	FY 2010	VMM-162 2 nd MV-22 MEU, <i>Diverted to Haiti</i>	✓

Message V-22 is a Military Certified and Combat Capable Aircraft



MV-22 Missions



- **Multi National Forces – West Missions:**
 - Air Assault
 - Raids
 - Medical Evacuation
 - Tactical Recovery of Aircraft and Personnel (TRAP)
 - Battlefield Circulation
 - Logistical /Personnel Transport
- **Tactics and Threat Mitigation**
 - Utilized Low - Medium - High Altitude Tactics
 - Maximized inherent survivability characteristics of the MV-22
- **Versatility**
 - Did the work of a helicopters and fixed wing platforms
 - Allows new ground schemes of maneuver
- **Operated in extreme weather**
- **Changed the operational commanders mindset**



Marine Medium Tiltrotor Squadron (VMM)

Tactics and Threat Mitigation



- **As in Iraq, utilize Low - Medium – High altitude tactics:**
 - Tactics using both Fixed & Rotary Wing advantages
 - Transport in airplane mode between 9,000 ft/2,743 m to 13,000 ft/3,962 m
 - Ability to move cargo over 20,000 ft/6,096 m avoiding terrain
 - Use of Short Take-Off and Landing (STOL) increases cargo/troop lift, range/radius, and performance
 - Self-deployable reducing other airlift requirements
 - Taken advantage of V-22 superior Speed and Range which:
 - Delivers troops and cargo at a rate faster than possible with current helicopters
 - Improved survivability; transiting threat areas quickly
 - Providing operational commander increased flexibility
 - Improving successful recovery in MEDEVAC missions
 - Faster Buildup of insertion and sustaining force

MV-22 Osprey

USMC OIF & OEF Accomplishments

• OIF Accomplishments

- 4,650 + combat sorties
- 10,000 + combat flight hours
- 45.5 hrs/month flight hours
- 71.6*% MC rate ~ Cumulative Mission Capability
- 40,000 + personnel transported
- 2,500,000 lbs/1133980 kg of cargo
- 12 aircraft over 18 months

• OEF Accomplishments (as of early Jan)

- 218 + combat sorties
- 619 + combat flight hours
- 30.95 hrs/month flight hours
- 4,000 + personnel transported
- 149,000 lbs/67585 kg of cargo
- 10 aircraft over < 60 days

Meeting all operational tasking

Iraqi and Afghanistan Snapshot
April 2007 through early Jan 2010

(MEU not included)

* Mission Capability (MC) rate based on Aviation Management/Supply Readiness Reports (AMSRR)



V-22 Tactical Advantage

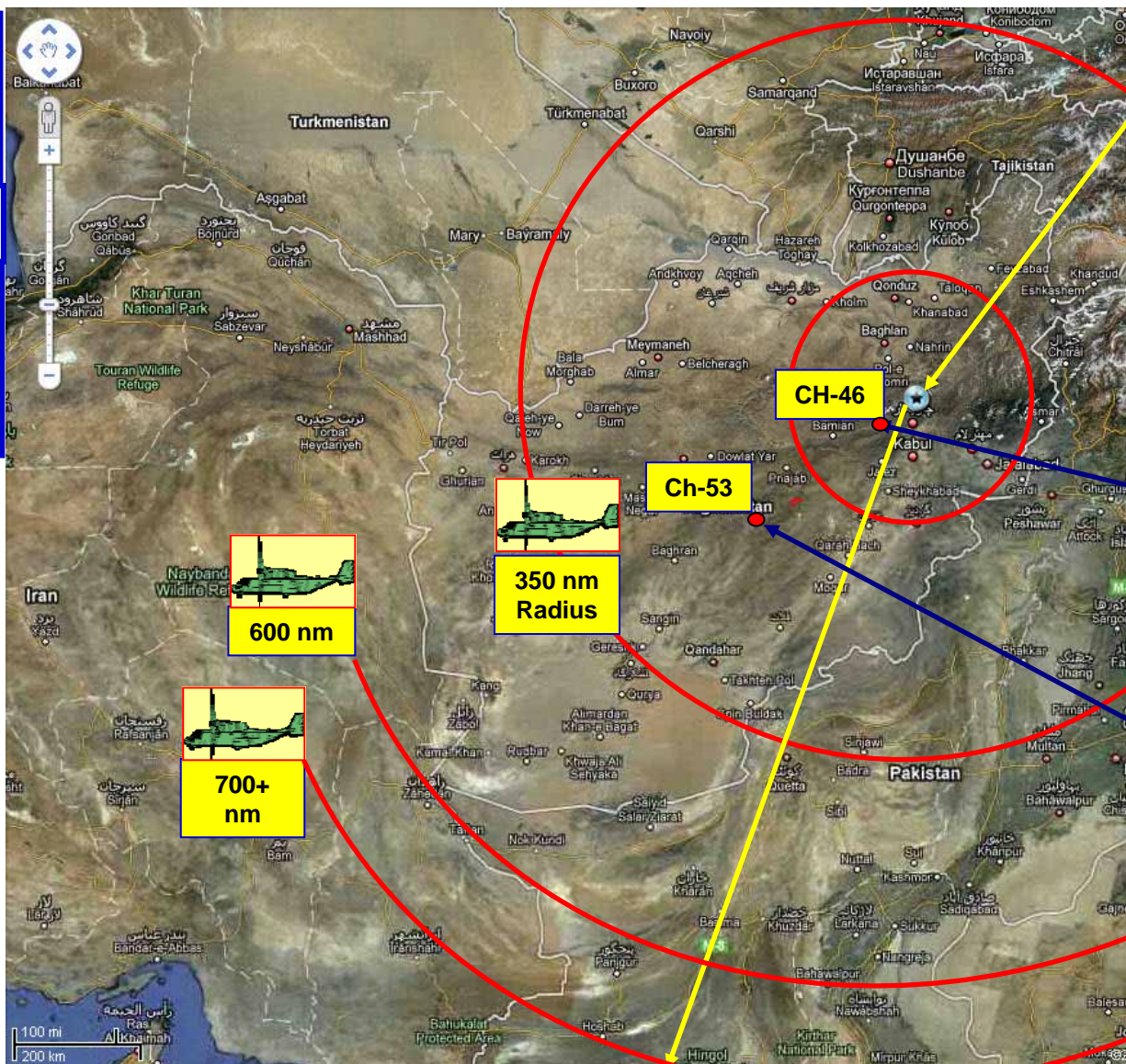
Operation OEF



Combat Radius
350 nm/648 km

Refueled Combat Radius
700 + nm/1296 km
(1 In-flight Refueling)

Self-Deploy
2600 nm/4815 km
(1 In-flight Refueling)



Bagram Air Base

124 nm/ 230 km

350 nm/ 648 km

750 nm/1390 km

1000 nm/1852 km



CH-46
Combat Radius
75 nm/138 km



CH-53D
Combat Radius
200 nm/370 km

Ch-53
350 nm
Radius

600 nm

700+ nm



VMM-263 MEU deployment



- **1st MV-22B shipboard deployment**
- **22nd Marine Expeditionary Unit**
 - 710 sorties
 - 760.7 flight hrs
 - 71%* MC rate ~ Cumulative Mission Capability
 - 2,582 personnel transported
 - 309,470 lbs/140373 kg cargo
 - 10 aircraft over 8 months
 - Provide tiltrotor Aviation Combat Element (ACE)
 - Two high profile MEDEVAC missions
 - Spec Ops missions
- **Nov 6, MEU transferred aircraft to OEF**

MEU with VMM-263 April – Nov 09

VMM-263 (MEU) Shipboard



Operation Enduring Freedom (OEF)



Expanding Battlefield Capability



OIF Lessons learned

Missions and Operations



- **OIF leadership were still in helicopter (H-46) mindset for tasking**
- **Inefficient use of V-22 capabilities until learning curve achieved**
- **Deployment prior to Material Support Date (MSD) drove shortfall in parts availability**
- **Operated in extreme weather**
 - Min temp of 18°F/-7.7°C
 - Max temp of 118°F/47.7°C
 - Operated in extreme low visibility due to dust, when other helo's did not fly
- **Tactics Techniques & Procedures (TTP's) continue to be modified**
- **Insertion surprise due to low noise**
- **Defensive weapons systems**
- **Long range theater engagement capability**
- **High altitude long duration loiter advantages for insertion/extraction and MEDEVAC**

'able to shrink the battle space' ¹

USMC General Conway MV-22



MV-22 Mission

Compatible to Shipboard Environment



- **Jun 05, OPEVAL**
 - DT & OT
 - Envelope expansion
 - Short Take Off Landing (STOL)
- **Nov 05, USS WASP (LHD 1)**
 - Night envelope expansion
- **2006 Deck qualifications**
 - USS SAN ANTONIO (LPD 17) qualified for 2 spots
 - USNS LEWIS AND CLARK (TAK-E-1), qualified for 1 spot
- **2007 Deck qualification**
 - UK RN HMS Illustrious Cross-Deck
- **Apr 09, 1st MEU deployment USS WASP (LHD 1)**
- **Jan 10, 2nd MEU Deployment USS Nassau (LHA 4)**
- **V-22 amphibious ship qualifications now in HOSTC database (Helicopter Operations from Ships other Than aircraft Carriers)**



LH Class



TAK-E Class



LPD-17 Class



Closing Statement



- **V-22 production ahead of contract schedule**
- **Fleet reliability and readiness continue to mature**
- **Logistics and supply support maturing**
- **Seven USMC and Two USSOCOM operational squadrons**
- **East Coast transition from H-46 to MV-22 complete**
- **USMC MV-22 on 6th deployment**
- **USSOCOM CV-22 SOF being tasked real time**
- **All Operational Tasking accomplished**
- **Roadmap to potential future growth in capabilities**
- **West Coast VMM-161 now receiving aircraft**



Questions?