Future Vertical Lift Aircraft Design Conference
January 18-20, 2012

Mr. Jose Gonzalez
Director, Land Warfare & Munitions
OSD, AT&L
Future Vertical Lift (FVL) Initiative
Agenda

• Introduction
• BLUF
• FVLI Purpose Still Valid
• FVLI Forward
• The Strategic Plan
• Strategic Guidance and Execution
• Summary
Jose Gonzalez
Director Land Warfare and Munitions

• Acquisition oversight and technology advancement of tactical land warfare and conventional munitions programs in the following areas:
  • **Army/Marine Corps/Air Force rotary-wing and tilt-rotor aviation**
  • Combat and tactical vehicles (tracked and wheeled)
  • Conventional munitions
  • Force protection and physical security
  • Focused and precision munitions
  • Munitions safety and demilitarization
  • Non-lethal weapons
  • Robotics and unmanned ground vehicles
  • Radars
  • Radios and ground networks
  • Soldier Systems

• Initiatives
  • **Vertical Lift Consortium**
    • Robotics Technology Consortium
    • DoD Ordnance Technology Consortium

• FVL Executive Steering Group Co-Chair
“OSD sees urgent problems ahead…. that neither the DoD nor individual companies alone can fix… but we can collaboratively address them with a long term commitment”

Industry Day, October 2009

• A fair amount of skepticism then but FVLI is ongoing and beginning its 4th year!
• Congressional interest continues, as well as OSD attention and leadership
• On February 2, the ESG will conduct its 17th session, the 9th with VLC participation
• The FVL JMR Working Group will meet January 31st for the 11th time to refine a JMR Draft ICD
• The Joint Coordination and Integration Cell (JCIC) has been activated, per the Strategic Plan and will become the standing advocacy and leadership body for Vertical Lift within the Joint Staff and OSD.
• Although San Francisco is a great escape from DC, I'm here because I want industry, government, and the academic community to understand that the DoD is serious about the FVL initiative and to encourage you to get onboard if you’re not all ready and stay on board if you are.
The Reason FVL Was Initiated is Still Valid

• DoD does not have follow-on programs of record to replace the current DoD vertical lift fleet

• Current production will end between 2020 and 2022

• The majority of the current vertical lift fleet will reach the end of their useful lives between 2020 and 2035

• The current fleet is technology limited to less than 160 knots and 4,000 feet altitude/95 degrees at mission gross weight and unable to meet the needed combat range of greater than 800 kilometers.

• Vertical lift aircraft and crew require new capabilities to operate in an increasingly lethal, low to medium altitude environment, and also address mother nature’s challenges.

• Research and Development lead time is about seven to ten years to develop the next generation technology required for future vertical lift capabilities.
# FVL Forward - Incremental Steps

**We have Made and Continue to Make Progress**

<table>
<thead>
<tr>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2021</th>
<th>2030</th>
</tr>
</thead>
</table>

- **Congressional Rotorcraft Caucus Interest**
- **Report to Congress**
- **Capabilities Based Assessment**
- **Joint Coordination & Integration Cell (JCIC)**
- **Signed Strategic Plan**
- **2009 NDAA**
- **Vertical Lift Consortium**
- **Army CBA Study Activities**
- **FVL JMR Study Activities**
- **ICD Doc Dev**
- **FVL JMFR Roadmap/Strategic Plan in Final Staffing**

- **Long Term Needs Identified**
- **Capabilities/Gaps Defined**
- **Congressional Support**
- **Joint Collaboration Established**
- **Industry Consortium Formed**

**Capabilities/Gaps Defined**

- **Congressional Support**
- **Joint Collaboration Established**
- **Industry Consortium Formed**
- **FVL Roadmap/Strategic Plan in Final Staffing**

**FVL JMR Attributes Determined**

- **An approved ICD is imminent, facilitating designing several demonstrator aircraft**

**The future is dependent on the successful leveraging of S&T to effectively design and develop a new Air Vehicle in order to influence the initiation of a program of record**

**Phase 1 – Air Vehicle Dev**

1st flight

**Phase 2 – Mission Systems Dev**

1st flight

**FVL JMR Acquisition Program**

**IOC 2030**

**Mat Solutions Analysis AoA Tech Dev**
FVL Strategic Plan

• The Plan has been signed by three Service Secretaries, and will begin staffing for the Deputy Secretary of Defense signature on the fourth signature.

• A Joint effort across the Services, USSOCOM and NASA to define/develop a family of vertical lift aircraft sharing a common architecture and component baseline for the 2025-2030 timeframe.

• Strategic Plan organized around prioritized, time-phased decision points for leadership that would provide decision makers options for SLEP, upgrade or new start programs.

• Incorporates proposed technology action plan/Roadmap via decision point construct

• Strategic Plan provides an implementation plan to mitigate identified capability gaps using an integrated tech development, management and acquisition process.
• The FVL Strategic Plan is not about today's programs or the FYDP after next

• It’s not a document that once signed, goes on the shelf or is occasionally referenced. It will require an iterative review and update process to remain responsive.

• Every DoD helicopter program of record has gone through a Nunn McCurdy. It’s time to change the process
Some of the primary missions within the new Strategic Guidance have logical vertical lift implications:

- **Counter Terrorism and Irregular Warfare:** “As U.S. forces draw down in Afghanistan, our global counter terrorism efforts will become more widely distributed and will be characterized by a mix of direct action and security force assistance.”

- **Deter and Defeat Aggression:** “Our ground forces will be responsive and capitalize on balanced lift, presence, and prepositioning to maintain the agility needed to remain prepared for the several areas in which such conflicts could occur.”

- **Conduct Humanitarian, Disaster Relief, and Other Operations:** “U.S. forces possess rapidly deployable capabilities, including airlift and sealift, surveillance, medical evacuation and care, and communications that can be invaluable in supplementing lead relief agencies. U.S. forces will also remain capable of conducting non-combatant evacuation operations for American citizens overseas on an emergency basis.”

**Executing the Guidance (and the FVLI approach).**

- **Future fleet capabilities** should improve over current, specifically within expeditionary operations where deployability, operational agility and low support footprint are issues.

- Two lengthy wars have demonstrated clearly the major limitations on OPTEMPO, high O&S cost drivers, and complex and costly training requirements.

- **Future Hybrid threats;** especially in complex terrain (360 deg threats) will require innovations and new system integration approaches - airframe protection designs which would not integrate on today’s platforms that are already out of space, weight and power.
Summary

• If we don't proceed, the US can lose its advantages as a world leader in vertical lift R&D and engineering.

• We have passed the point where continued evolutionary change to conventional helicopters will be able to meet future requirements; new capabilities and technologies are needed.

• We will soon have a Strategic Plan, signed by DepSecDef, that will provide an actionable plan for providing options and decision opportunities for common equipment, spares, tools, support equipment and facilities, training systems, schools, as well as new aircraft into the 2030 timeframe.

• Future budgets shaped by the Strategic Guidance are going to be hard to navigate but we will navigate them. We need to articulate the business case, but there is a clear case to be made.

• There are a lot of technical, operational and business questions that need answering and neither those answers nor the talent pools reside solely in DoD. We will continue to reach out to the members of the US tech base for help.
Questions
### FVL Strategic Plan Decision Points

<table>
<thead>
<tr>
<th>MISSION</th>
<th>SVC</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035…2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trainer</td>
<td>USA, USN</td>
<td>TH-57B/C</td>
<td>TH-57D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Attack</td>
<td>USMC, USA</td>
<td>OH-58D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recon</td>
<td>USN, USN</td>
<td>UH-72A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISR, C²</td>
<td>USCG, USAF</td>
<td>Firescout</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDEVAC, SOF, SAR Assault</td>
<td></td>
<td>MH/AH-6J, MH-65C/DE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attack, Recon</td>
<td>USMC, USA</td>
<td>HH-60G</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISR, C²</td>
<td>USN, USN</td>
<td>MV-22B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDEVAC, SOF, SAR Assault</td>
<td>USCG, USAF</td>
<td>MH-60R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility, ASW, SUW VERTREP</td>
<td>USN, USN</td>
<td>CV-22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCM, CSAR</td>
<td>USN, USN</td>
<td>UH-1Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOD, Cargo, Heavy Lift</td>
<td>USA, USN</td>
<td>MH-60T</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCM, SOF, CSAR Assault</td>
<td>USMC, USAF</td>
<td>AH-64D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDEVAC, MVM, Cargo Ultra Lift Transport</td>
<td>USAF, USA</td>
<td>CH/MH-47, D/F/G, CH-53D, CH-53K, CH-53E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Initial Operational Capability**
- **Estimated End of Useful Life 10K Hrs (LRIP 1)**
- **Estimated Half-life**
- **DP 1: New Start Technology Development**
- **DP 2: New Start EMD or SLEP existing**

**Note:**
- 50% of Decision Points occur within next 10 yrs
- 85% within next 15 years
The Secretary and Chairman shall submit to the Congressional defense committees a report on the assessment under sub-section (a) (Capabilities based assessment). The report shall include:

1) **technology roadmap** that addresses critical technologies required for future development

2) detailed **science and technology investment and implementation plan** and an identification of the resources required to implement such a plan

3) **strategic plan that formalizes the strategic vision of DOD** for the next generation of vertical lift aircraft and rotorcraft, establishes Joint requirements for the next generation, and emphasizes development of common Service requirements

4) detailed **plan to establish a Joint Vertical Lift/Rotorcraft Office** based on lessons learned from the Joint Advanced Strike Technology Office
Vertical Lift Consortium (VLC)

Background: Specifics

Formation

• The Under Secretary of Defense (Acquisition, Technology and Logistics) Memorandum established an initiative to improve the long-term state of military vertical lift aircraft and the U.S. industrial sector.

• The Director, Land Warfare and Munitions, through the Contracting Center of the Joint Munitions and Lethality Command, established the Other Transaction Agreement (OTA) as the mechanism for future vertical lift initiatives.

• A Letter of Intent to self form was submitted to the Government on November 6, 2009 and the OTA signed January 2010

OTA Contract Vehicle

• Not a procurement contract/grant/cooperative agreement

• It is for performing basic, applied, advanced research and development OR for prototype projects directly relevant to weapons or weapon systems proposed to be acquired or developed by the DoD (Prototype OT/Section 845 OT)

OTA advantageous to the Non-Traditional contractor

• Must be at least one nontraditional defense contractor participating to a significant extent OR mandatory one third cost sharing for Traditional Defense Contractor
Service Vertical Lift Aircraft Production

Navy/Marine-30% DoD Inventory

- MH-60R/S: Production, End Date: 2016
- UH-1Y: Production, End Date: ~2018
- AH-1Z: Production, End Date: >2020
- MV-22: Production, End Date: ~2017
- CH-53K: Mid-EDD, End Date: >2027

Army-66% DoD Inventory

- UH-60M: Full Rate Production w/FMS, End Date: >2020
- CH-47: Full Rate Production w/FMS, End Date: ~2018
- OH-58D/OH-58F: Modifications, Service Life to End Date: 2027
- AH-64: Low Rate Production w/FMS & DCS, End Date: >2020

Production isn’t the problem – it’s development of new systems