ANALYSIS: BELL HELICOPTER PUSHING V-22 FOR USAF SEARCH-AND-RESCUE

News / Manufacturer

In March 2011, during Operation "Odyssey Dawn", two US Marine Corps **Bell Boeing MV-22s** were instrumental in the rescue of a Boeing F-15E pilot who had ejected from his aircraft deep within hostile territory in Libya after the Strike Eagle succumbed to mechanical failure.

Stationed 133nm (246km) away on an amphibious assault ship, the MV-22s – backed up by two McDonnell Douglas AV-8B Harrier II strike aircraft and a heavy-lift Sikorsky CH-53E Super Stallion – executed a “textbook example” of what the marines call a tactical recovery of aircraft and personnel (TRAP) mission.

Then, in December 2013, three of the US Air Force's CV-22 tiltrotors flew 500nm from Djibouti to South Sudan to extract US embassy staff and citizens as the new nation teetered on the brink of civil war. The aircraft sustained 143 "hits” on approach from gunfire, and four of the 21 special forces rescuers were wounded, but luckily the triple-redundant CV-22s withstood the damage and flew to safety. The damaged aircraft are now fully repaired and operational.

Early this year, USMC MV-22s were sent to rescue a downed Royal Jordanian Air Force Lockheed

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Martin F-16 pilot in Syria. That mission was called off because of “security concerns”, and the pilot was subsequently captured and killed by Islamic State militants, but the Osprey remains on crisis-response duty in the region as part of the coalition air campaign in Iraq and Syria, with refuelling support from Lockheed Martin KC-130s.

These are just some of the many examples of the V-22 platform encroaching on the combat search-and-rescue (CSAR) mission traditionally performed by helicopters and fixed-wing transports.

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US Marine Corps

The twin-engined tiltrotor’s inherent speed, range and self-protection equipment make it “ideally suited” for rescue operations in unfriendly regions, according to Osprey advocates.

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The platform is loved and loathed in equal measure because of its chequered development history, multiple deadly crashes, and low engine time-on-wing in certain hot, sandy environments in which it operates. However, the V-22 has demonstrated its value enough times in combat that senior USAF leaders have wondered if it could be formally incorporated into the service's CSAR mix, alongside the traditional Sikorsky HH-60 Pave Hawk and Lockheed HC-130 assets.

There are no firm commitments or funding, just general interest at this point. But because of a looming dip in V-22 production and few firm foreign orders other than from Japan, Bell Helicopter and the US Navy and marines sorely need another air force CV-22 buy, and Bell at least is advertising it for long-range search-and-rescue.

In an interview with *Flight International*, company executives Keith Daniel and Pete Robichaux say more CV-22s are needed to fill an important high-speed, long-distance combat rescue “gap”.

“When you look at what’s going on in the Middle East and you look at a continent like Africa, a conventional helicopter cannot perform the mission in a timely enough manner to change the outcome for an airman or anyone else that needs to be picked up when time is working against you,” says Robichaux, Bell’s senior manager for air force business development. “That is the benefit the V-22 brings.”

“If you’re sitting on a life raft or on the ground, who do you want to come and get you? It needs to be the best capability the nation can provide, and speed and range are extremely important,” adds Daniel, Bell’s director of global military business.

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US Marine Corps

The Osprey’s aircraft-like characteristics in forward flight give it approximately twice the speed and two- to three-times the range of legacy rotorcraft designs, according to the USMC.

It has a maximum airspeed of about 260kt (480km/h) and an operating ceiling of 25,000ft. Its unrefuelled combat radius is 425nm – compared to just 75nm for the tandem-rotor Boeing CH-46E Sea Knight it replaced.

The air force is most of the way through procuring 52 CV-22s for its special forces units, and the USMC is approaching the end of its 360 MV-22 programme of record. The USN has funded 40 of 48 HV-22s to replace the Grumman C-2A Greyhound for carrier strike group resupply, but its first order is not planned until fiscal year 2018, and production ramps up closer to 2020. That timing contributes to the near-term production dip at Bell’s finally assembly line in Amarillo, Texas, and

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Boeing’s airframe plant in Philadelphia, Pennsylvania.

Bell thinks the USAF could use another “25 to 40” CSAR-equipped CV-22s. Ideally, long-lead parts funding would come in in FY2017, with a procurement contract in 2018 for delivery by 2020, according to the company officials. Timing is an imperative, since the USMC hopes to finalise numbers for its next five-year contract by June 2016. Filling that production dip could reduce the cost per unit by 10%, says the V-22 joint programme office.

“I would welcome any additional customers, whether it’s domestic or international,” US Naval Air Systems Command V-22 programme manager USMC Col Dan Robinson said at the Dubai air show.

“It’s a great platform for the CSAR mission, but at this time it’s not funded. If that decision is made and we’re told the air force is interested, we will absolutely welcome that.”

Robinson says MV-22 is “uniquely suited” to CSAR or TRAP missions, and the crisis response units in the US Central Command area of responsibility are performing well. “It can very quickly get to a location and then vertically land in a specific spot to recover a downed aircrew or even do casualty evacuation,” he says.

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US Air Force

USAF headquarters, though, does not share that enthusiasm, and cannot seem to stomach any new procurement spending with an already overburdened budget top line. Its $25 billion 2016 procurement account is already fully dedicated to higher-priorities than V-22s, like the Lockheed F-35, Boeing KC-46, General Atomics Aeronautical Systems MQ-9, Lockheed C-130J, rockets and satellites.

The service has also initiated an $8 billion Combat Rescue Helicopter (CRH) programme for 112 new HH-60Ws to replace the outdated HH-60G, with deliveries to start in 2019. It also continues to replace old HC-130s with newer J-models.

An air force spokeswoman tells *Flight International* that the HC-130 and CRH programmes are fully resourced, and procurement of the HH-60W will complete in 2029. The latter is derived from

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the US Army's UH-60M Black Hawk, and is outfitted with guns, defensive aids, medical equipment, and specialised avionics and mission systems supplied by Lockheed; which now owns Sikorsky. The M-model has a cruise speed of 150kt and a 270nm range.

“Any discussion on pursuing additional resources for personnel recovery will need to evaluate the costs and benefits of adding another aircraft type to diversify the fleet versus adding to the existing total of CRH aircraft,” the air force says. “While the CV-22 is capable of conducting some personnel recovery missions, formally augmenting the USAF's personnel recovery mission would require additional co-ordination within the DoD [Department of Defense] and with Congress.”

The air force is considering “concepts” for the CV-22 in the CSAR role, but no analysis has been done about formally augmenting the Osprey into the fleet mix. And the prevailing view is that the current CV-22 programme is already sized correctly to meet US Special Operations Command needs.

The US Marine Corps recently completed the longest ever MV-22B transit, travelling 5,360nm from Miramar in California to Rio de Janeiro, Brazil

US Marine Corps

If the USAF were to buy CSAR CV-22s, Bell thinks some should be assigned to active-duty units and others to Air National Guard squadrons for domestic “Title 32” missions like disaster relief, rescue operations and medical evacuation. Bell says forward-firing armaments also make sense, because the CV-22’s sensors can see farther than the aircraft can currently shoot with its aft-facing 50mm machine gun.

The 2014 V-22 selected acquisition report lists the platform’s average unit procurement cost as $83 million in baseline 2005 dollars, which is about $101 million today when adjusted for inflation.

Andrew Hunter of the Center for Strategic and International Studies in Washington DC agrees that there is a place for V-22s dedicated to the air force search-and-rescue role. But there is no reason that the joint force cannot service that mission together using existing V-22s, he says.

“The question arises; can [the USAF] afford a mixed-fleet approach? That’s a challenging question, but clearly there’s a mission need where V-22 could fit,” Hunter says. “I’m a believer in the fact we have a joint force and can leverage it. Not everything that does search-and-rescue needs to be in the air force.”

Looking to the future and the introduction of the stealthy, first-day-of-war F-35, there are several scenarios where the V-22 is optimal. Bell offered one such scenario set in the South China Sea where an F-35 goes down and the pilot ejects but is stuck hundreds of miles away from any air force base.

In that instance, V-22s could be circling and ready to deploy from a nearby tanker orbit, and could arrive at the scene with fighter escorts many times faster than any other rotorcraft.

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