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COUNTER NARCOTICS MISSIONS FOR UNMANNED AERIAL VEHICLES

by

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Abstract

With the ongoing draw down of US military forces and shrinking budgets, finding a more cost efficient means of accomplishing military missions is increasingly important. Current Department of Defense counter-narcotic missions operating in conjunction with U.S. Customs and the U.S. Coast Guard should consider using Unmanned Aerial Vehicles (UAVs) as adjunct to military forces or as the primary mission platform. UAVs have proven themselves as a valuable asset the military commander brings to the fight. Used effectively during military operations in Bosnia and Kosovo, UAVs were limited to intelligence and reconnaissance missions. Given the capabilities of UAVs, they can be more actively integrated into other military operations to enhance US military mission accomplishment. More specifically, UAVs should be incorporated into Intelligence, Surveillance, and Reconnaissance (ISR) roles specifically tailored to meet the challenges of the counter-narcotic mission. To support this proposition, my research will analyze current and proposed capabilities of UAVs as seen by military and industry leaders. Second, the mission of counter narcotics ISR will be examined to identify matching capabilities to the mission. Then an analysis of what specific capabilities UAVs can be incorporated into the mission of counter narcotics interdiction. Fourth, the integration of UAVs with current weapons systems to produce a synergistic effect will be analyzed. Finally, this paper will show that UAVs can be effectively integrated to enhance US Navy missions within our area of responsibility.

Part 1

Introduction

The revolution in military affairs is here, now, today. Warfare is changing at a pace equal to the technological advances of our country and the world. Information superiority has never been more highly emphasized as a defining factor upon which victory or defeat can be measured. The official vision statement of the Joint Chiefs of Staff, Joint Vision 2010, fully embraces the revolution in military affairs.

> A crucial component of Joint Vision 2010 is the importance of information superiority- the ability to collect, process, and disseminate an uninterrupted flow of information while denying the enemy's ability to do the same. UAVs are likely to be crucial in achieving information superiority, particularly because they can collect information that in the past would have been difficult to acquire without risking the lives of personnel.[1]

For those involved in the operational art of warfare, harnessing the tools of technology is a requirement for mission success. The focus on Unmanned Aerial Vehicles (UAVs) as a supporting element or even a replacement to tactical aircraft is under consideration for many mission tasks. That is not to say that the airman will no longer be required. UAV development is not close to that level of perfection in many mission areas. However, UAVs can significantly diminished the personal risk to aviators accomplishing dangerous missions. Further, in many cases the cost savings, low human risk factors, and endurance benefits of medium and high altitude UAVs make them the platform of choice for missions such as; strategic intelligence gathering, communications relays, location and jamming of enemy radar, peacekeeping monitor, or Intelligence, Surveillance, and Reconnaissance (ISR). Weaponization of UAVs will add a whole host of new mission roles. Nine critical operational missions outlined by the United States Air Force Scientific Advisory Boards report on UAV Technologies and Combat Operations published in 1996, emphasize the expansion of UAV capabilities in the near term.

- Counter Weapons of Mass Destruction
- Theatre Missile Defense- Ballistic Missiles/Cruise Missiles
- Fixed Target Attack
- Moving Target Attack
- Jamming
- Suppression of Enemy Air Defense (SEAD)
- Intelligence, Surveillance, and Reconnaissance (ISR)
- Communications/ Navigation Support
- Air-to-Air

The Department of Defense is currently pursuing three medium/high altitude and endurance UAV systems: Predator, Global Hawk, and Outrider. The Navy has just announced plans to develop a fourth Multi-Role UAV (MR-UAV) intended to for SEAD and ISR missions.[2]

Current Department of Defense planners expect near term UAV missions to center on broad categories of reconnaissance and surveillance. These missions typically fall into either strategic or tactical categories. Strategic intelligence is usually long ranged in nature. Gathered by satellite assets or U-2 aircraft, strategic reconnaissance improves the United States capacity to see what military assets, concentration of forces, weapons of mass destruction and industrial and manufacturing facilities another country possesses. UAVs such as Global Hawk will be primarily tasked for this role as an augmentation to or replacement of aging U-2 aircraft and will be considered a theater asset in terms of who gets to use Global Hawk's exceptional sensors.[3]

Tactical intelligence is local in nature. The battlefield commander wants real time feedback on troop dispositions and strengths just over the next hill. Helicopter or other aerial reconnaissance assets may not be as timely in reporting information to the tactical level commander.[4] New UAVs such as Outrider will be primarily used in this method. Older (relative term) UAVs such as Pioneer and Predator are currently fulfilling this role to a limited degree. "Those programs, if ultimately successful, promise to give the battlefield commanders a valuable new reconnaissance capability as well as to enhance and perhaps eventually replace many sophisticated manned reconnaissance systems that provide intelligence to theater commanders and the national command authority".[5]

The focus of this research is to support new concepts of operation (CONOPS) with respect to using UAVs in the battle against narcotics trafficking that undermine the safety, security, and vitality of the United States. Specifically, how the medium altitude-endurance UAV "Predator" could function in support of the U.S. Navy, U.S. Coast Guard, and U.S. Customs agencies in a maritime environment to reduce the flow of illegal narcotics into the United States. This concept of operations has strategic elements that are outlined in the National Security Strategy of the United States under vital interests. Any threat to the security, safety and vitality of the nation is considered a vital interest.[6]

The National Command authority has supported using the military to augment counter narcotics operations by the U.S. Coast Guard and U.S. Customs officials for many years. Navy Warships and aircraft have been routinely deployed to aid in this effort. How these assets are used and the opportunity cost of their employment in this role must be weighed against the requirements of the fleet around the world. The recent reduction in force levels places an ever-increasing burden each asset. UAVs can mitigate this problem by providing a relatively low cost alternative with superior mission capabilities. Armed with the latest technological advancements, UAVs are an integral player in the revolution in military affairs. To fully understand what unmanned aerial vehicles add to the defense arsenal it is prudent to review a short history of UAV attributes technological development.

Notes

[1] Department Of Defense, *Programs and Missions for Unmanned Aerial Vehicles*, (Washington D.C. Congressional Budget Office, 1998), Ch. 1, 14.

[2] Robert Wall, "U.S. Navy To Bolster Unmanned Aircraft Fleet", *Aviation Week & Space Technology*, 24 January 2000, 30.

[3] Department Of Defense, *Programs and Missions for Unmanned Aerial Vehicles*, (Washington D.C. Congressional Budget Office, 1998), Ch. 1, 4.

[4] Department Of Defense, *Programs and Missions for Unmanned Aerial Vehicles*, (Washington D.C. Congressional Budget Office, 1998), Ch. 1, 4.

[5] Department Of Defense, *Programs and Missions for Unmanned Aerial Vehicles*, (Washington D.C. Congressional Budget Office, 1998), Ch. 1, 1.

[6] The White House, *A National Security Strategy For A New Century*, December 1999, 1.

Part 2

MAJOR ATTRIBUTES OF UAVs

Endurance/Presence

A self-deploying asset, the UAV provides long term presence and inherent deterrence. UAVs provide a level of persistence typical manned aircraft cannot challenge. UAVs such as Predator and Global Hawk double or even triple the endurance of older U2R aircraft, which reduces aircraft requirements, and subsequent costs of coverage. Crew fatigue is no longer a limiting factor. Ground control stations employ personnel as required for continuous 24-hour operations as necessary. With a broad communications suite installed, UAVs offer an excellent platform for communications relay for missions outside the coverage of other organic aircraft.

Unmanned

One of the most important aspects of the UAV is the fact that no human is at risk. Current political attitudes emphasize the importance of having minimal or no friendly combatant loss of life in conjunction with military operations. Some of the provocative areas UAVs can be employed include operations in Nuclear, Chemical, or Biologically contaminated areas. It could be a Kamikaze vehicle against other high value assets or used to draw enemy fire in the close battle. The full measure of UAV potential mission roles has not yet been fully examined. Other functional impacts of unmanned vehicles significantly enhance the warfighting capability of the battlespace commander. Near term weaponization of UAVs is changing the future battlespace in an extraordinary way. Performing high attrition combat tasks similar to those shown in the Hollywood movie “Terminator” are no longer fanciful possibilities, they are realities.

On the other hand, UAVs have inherent shortcomings. A long command and control tether is required to facilitate mission operations. The reasoning power and situational awareness of ground based controlling personnel is not as crisp as that of a manned aircraft responding instantaneously to the changing environment. There are no substitute for real-life sensory inputs and visual cues that are difficult to duplicate through remote pilotage. These elements applied to weaponized UAVs implicitly point to likely incidents of fratricide if employed close to friendly troops unless detailed Rules of Engagement (ROE’s) are followed to the letter..

Automated

A crewless aircraft has technical aspects that allow designers to save money while maintaining capability. The cost of training mission personnel is much lower than the manned alternative. Crew safety testing and life support systems are not required. Using automated UAVs significantly reduces fatigue on ground crews and completely removes other flight physiology related stresses. These factors combine to reduce the cost of coverage, which is always a primary consideration in platform selection versus mission roles.

High Altitude Operation

Current missions typically associated with UAVs use altitude as the primary enabler. Higher altitude allows for broader areas of coverage with multiple sensors. Sensors employing doppler radar achieve better viewing angles with increased altitude for better resolution. Aircraft performance is also enhanced. Fuel consumption is reduced which directly equates to greater range and endurance. Further, UAVs at altitude enjoy relative survivability. Out of the range of most ground fire, they can operate with impunity. A certain level of visual and audio covertness is inherent. Unaided human ears for example, can not generally hear engine noise on the Predator if the UAV is above 10,000ft. In terms of future concepts, UAVs employed as Theater Ballistic Missile Defense platforms have a more advantageous geometry for intercept with high altitude capability.

Part 3

UAV DEVELOPMENTS

As early as World War I, the concept of using Unmanned Aerial vehicles existed. One of the early airpower theorists General Billy Mitchell said in 1924, "Aerial torpedoes which are really airplanes kept on their course by gyroscopic instruments an wireless telegraphy, with no pilots on board, can be directed for over a hundred miles in a sufficiently accurate way to hit great cities. So that in the future, the mere threat of bombing a town by an air force will cause cities to be evacuated, and all the munitions and supply factories to be stopped." Although history has not supported that claim, the importance of a UAV concept was clear.

The UAV known as the Firebee, later designated BQM-34 was a standard jet target used in a multi-role fashion by the Air Force, Navy, and Canadian Forces.[1] This versatile drone was a baseline for UAV evolution. In the 1950s intelligence gathering missions against the Soviet Union used the BQM-34. The Firebees' replacement, the Ryan 147B was the first UAV specifically designed for operational intelligence collection against Cuba and Vietnam.[2]

The BQM-34 was used to demonstrate various other missions to include missile and bomb delivery roles. However, these capabilities never were performed operationally. The close of the Vietnam War and the subsequent massive force reduction eliminated the Air Force UAV program in 1976.[3]

Development of UAV capabilities continued by the services at a reduced pace. Mission creep requirements, cost overruns, and technical integration problems impacted senior leadership support. In 1986, spurred by the success of Israeli drones used against Lebanon in the Bekaa Valley, then Secretary of the Navy John Lehman, pushed the Navy to acquire UAV capability. The 1986 project produced nine "Pioneer" systems that are still active today.[4] Since then, other UAV programs have been developed with varied success. Noted failures such as Hunter and Medium Range were plagued by cost overruns relating to the mechanical difficulties of micro engineering as well as crashes and mission creep between inter-service requirements. On the positive side, the Gnat –750 project funded by the CIA used in an intelligence-gathering role has been exported commercially. Tier II generation UAVs such as Predator are being acquired by the Air Force. The Navy also owns two predators. Ongoing development of Tier IIA vehicles, Global Hawk and Outrider continue. A Tier III UAV named "Darkstar" was modeled using the latest stealth technology similar to that found on the B-2 bomber. Unfortunately, Darkstar fell victim to engineering, cost, payload, and endurance shortcomings, which doomed the project for the near term.

History of Predator

The Advanced Concept Technology Demonstration (ACTD) process on the Predator was begun in 1993. The first air vehicle and ground station was delivered, and flown in 1994. Delivery of ten Predator UAVs and three ground stations was completed in March 1995 with subsequent deployment to Bosnia in August. During this time the Predator flew over 130 missions totaling 850 flight hours. By June 1996, further airframe and payload upgrades were implemented and the ACTD was considered complete. Predator was approved to enter the production phase of the acquisition process in August 1997. "The Air Force plans to Buy a total of 12 systems (each with four air vehicles and one ground control station) and to deploy only five of them to a regional conflict".[5]

Figure 1 Predator (UAV) Capabilities

The Predator is a fully autonomous, low cost/ attritable, and interoperable with the current architecture. The design has achieved an air vehicle fly away cost of less than $4 million. The Predator has near-term ISR capability. The system provides continuous, near all-weather day/night coverage with installed EO/IR and SAR sensors.[6]

EO or electro-optical imaging produces a digitized image used for feature recognition and target identification. Basically a sophisticated camera, the digital representation can be enhanced far beyond typical photography and uses high-powered optics for extended ranges. IR or Infrared imaging can detect hotspots such as motor vehicles engines, jet engines, or missile exhaust. They have good location accuracy and are not subject to false targets such as sun reflectors. Infrared imagery can have a longer range than image intensifiers and can operate without starlight. IR capabilities are reduced in regions of high humidity. SAR stands for synthetic aperture radar. SAR compares differences in Doppler shifts between a moving radar dish and a target to achieve resolution and is superior to IR for night and all-weather imaging. With these capable intelligence gathering sensors on board combined with cueing from satellites and other airborne surveillance assets, the ability of this UAV to gather sensitive imagery intelligence to support military operations is greatly enhanced.

COMMUNICATION and CONTROL

Predator is Normally controlled via Line of Sight (LOS) using C-Band microwave transmissions. A C-band datalink terminal mounted near the ground control station (GCS) usually controls the aircraft when operating within 120 nautical miles of the station. (approx. maximum LOS range) This link provides imagery transfer at a rate of 30 frames per second. Outside LOS or when terrain masks clear transmissions, the aircraft is controlled using Ku-band Satcom channels with imagery transfer rates reduced by one half. Also installed is a standard military Mode “C” transponder for identification friend or foe (IFF) purposes (mode III/IIIC only). An improved IFF is under development to provide modes I-IV.

UHF/VHF communications installed onboard the Predator allows for ground station communication with air traffic control (ATC), other aircraft, or notionally, to coordinate between joint agencies conducting counter narcotics operations. For operations in conjunction with the Navy’s P-3 Orion aircraft, using the Predator as an over the horizon communications relay would provide a centralized coordinating point for interdiction forces. Further, Customs or Coast Guard personnel acting as law enforcement agents in the UAV ground control station would provide *posse comitatus* relief and serve as an operations base for all agencies involved.

Current Airforce procedures limit maximum patrol ranges to 400 miles from the ground station (Satellite dependent). Currently Southern Command has no organic Ku-Band Satellite access. Sharing civilian capabilities would need to be explored in this area. The size of this problem and the associated solutions are beyond the scope of this paper and my expertise.

Sensors

A new sensor RISTAII (Reconnaissance Infrared Surveillance Target Acquisition, Second Generation Technology) could be the vital link between current Predator search limitations that require some type of cueing to maximize effectiveness and a new stand-alone system that would broaden line scanned search areas by 400%. The sensor is ground controlled as a line scanner or Forward Looking Infrared (FLIR) camera depending on the mode selected. Imagery is collected, compressed, and transmitted via data link at speeds up to 10.7 Mbits/s. In targeting mode, swath footprints up to eight miles wide with a resolution of 1 ft. can be achieved with the UAV at 12k ft. In the reconnaissance mode, line scanned images are "stitched" together to form a large area image. (Approx. 8x8 miles @ 12k ft) The ground control station personnel looking for targets of interest (TOI's) can analyze this image. The operator also has the ability to apply full resolution zoom of up to 25x within the wide area image.[7]

Manning

A typical Predator crew consists of a pilot and one to three sensor operators who control the aircraft from inside the Ground Control Station (GCS). For 24 hour operations, 55 personnel are required according to the RQ-1A Predator fast facts literature. Maintenance, communications, weather, intelligence, and medical personnel complete a deployable "kit". Previous conversation with a Predator pilot indicated a typical ratio of two sensor operators to one pilot for an eight hour shift. Further, for ISR missions based from fields with organic weather, intelligence, and medical assets (personnel), the size of the deployable unit can be reduced.

Notes

[1] William Wagner, *Lightning Bugs* (Fallbrook, CA: Armed Forces Journal International., 1982) 1-1.

[2] William Wagner, *Lightning Bugs* (Fallbrook, CA: Armed Forces Journal International., 1982) 1-1. Quoted in US Army Aviation Center: *Unmanned Aerial Vehicle Study* (Ft. Rucker AL., 1993).

[3] Dr. P. Worch, *Report on UAV Technologies and Combat Operations* (VOL1), (Washington D.C.: United States Scientific Advisory Board, 1996), 1-1.

[4] U.S. Department Of Defense, *Programs and Missions for Unmanned Aerial Vehicles*, (Washington D.C. Congressional Budget Office, 1998), Ch. 1, 3.

[5] U.S. Department Of Defense, *Programs and Missions for Unmanned Aerial Vehicles*, (Washington D.C. Congressional Budget Office, 1998), Ch. 3, 14.

[6] U.S. Department Of Defense, *Joint Project- Unmanned aerial Vehicles, FY-95 ACTD's*, (Washington D.C. Congressional Budget Office, 1998), 2.

[7] "CIRPAS Activity Summary." *Center for Interdisciplinary Remotely Piloted Aircraft Studies*: Naval Postgraduate School, Marina Ca., 1999. On-line website. Mindspring January 1999. Available from http://web.nps.navy.mil/~cirpas/.

Part 4

GENERAL CONSIDERATIONS FOR THEATER OPERATIONS

Weather

The general operations area of the predator in Southern Command's AOR is near the equator. Weather in this region can vary considerably. The typical westerly trade winds north of the equator produce considerable convective activity year around with an active hurricane season from June to November. The fairly durable airframe of the Predator should be able to handle most conditions with restrictions on forecasted icing greater than "light" and turbulence greater than "moderate". In addition, the Predator has a crosswind limit of 16 knots for takeoff and landing. Ground operations are halted if winds are greater than 30 knots in any direction. Weather minimums require 800 ft ceilings or better and visibility of 2 miles for takeoff and landings due to the inability of the Predator to divert.

These operational considerations seem restrictive however, as an experienced pilot having conducted operations in the Caribbean, I do not feel these wind conditions would adversely affect the mission success of Predator in an ISR role. During previous deployments flying from bases in Puerto Rico, Panama, and Honduras, typical weather of significance occurred in the vicinity of convective activity and was of short duration. Average windspeed during the day was usually no more than fifteen knots and dropped off dramatically at night. Operations conducted during periods of adverse weather would be precluded for aircraft safety or could be augmented by extra P-3 sorties as dictated by mission parameters.

The effect of headwinds on operating capability needs to be addressed. Assuming a track into and then downwind, over time the search area covered will be the same. The difference will be in the time required to revisit or track back into the wind. Given the average cruise speed of Predator (120km/hr)[1] this should not have a detrimental affect on a search and track mission. Even traveling upwind, a fast target of interest (TOI) with a speed over the ground (SOG) of 60 Kts is within the ability of the Predator to keep up. However, the ability to pursue other TOI's and revisit a speedy TOI will be lost without a greater fuel burn rate that would affect endurance. Overall this should not be considered significant based upon the extended loiter times of Predator.

Airspace

Airspace coordination difficulties between the Federal Aviation Administration (FAA) and the International Civilian Aircraft Organization (ICAO) agencies has been previously overcome through IFR flight plans, reserved block airspace, installed VHF /UHF radios, letters of agreement, and FAA flight following. Predator operations in the vicinity of foreign countries would be capable of maintaining required sovereign standoffs. Specific mission profiles will be discussed further in follow-on sections of this paper.

Notes

[1] Department Of Defense, *Programs and Missions for Unmanned Aerial Vehicles*, (Washington D.C. Congressional Budget Office, 1998), Ch. 1, 8.

Part 5

PREDATOR EMPLOYMENT (GOING SOLO)

The Predator UAV can be employed as the primary Intelligence, Surveillance, and Reconnaissance (ISR) counter-narcotic mission platform available to prosecute suspected drug smugglers. Equipped with EO/IR and SAR sensors, Predator is more than capable of locating, identifying, and tracking targets of interest for extended periods while maintaining relative covertness. Predator operates at a marginal altitude of 15-20-,000 ft. Although, a standard propeller driven aircraft powered by fossil fuel technology, Predators relatively small size and distance from the TOI makes visual or audio compromise unlikely to persons operating on the surface of the ocean. Also, the inherent noise of most large boat motors would mask any audible signature of the Predator.

According to the Air Force Operation manual, the minimum required runway length for safe operations is 5000 ft. Many military and civilian installations in the Southern Command AOR are adequate to meet this requirement. Naval Air Station (NAS) Roosevelt Roads Puerto Rico, Borinquen Puerto Rico, or Soto Cano Air Base in Honduras would suffice. All have sufficient American military or customs infrastructure and security to base UAVs for counter narcotics operations. Operations in Borinquen, P.R. would co-locate customs aircraft and the Predator ground control station, enhancing potential inter-operability between counter narcotics agencies in the Caribbean. Further, each has geographic significance regarding potential UAV coverage areas that overlap typical smuggling routes.

Control of the Predator is facilitated by the newly developed Tactical Control System (TCS), which is designed to provide single command, control, data receipt, data processing and dissemination systems that is interoperable with all present and future tactical UAVs.[1] Assuming a 1/2 ratio of UAV pilots to sensor operators, continuous 24-hour coverage would be attainable using three pilots, six operators (on eight-hour shifts), and two roving mission supervisors (one pilot, one technician). The supervisors would coordinate mission requirements, oversee crew turnover, and temporarily relieve personnel for various reasons. The personnel requirements of this team equals the manpower required for one 9-12 hour P-3C Orion mission and can accomplish nearly the same amount of sensor coverage while enjoying more than thirty hours of loiter time.

For cost comparison sake, an average P-3C Orion mission loosely translates to ~$7000 per flight hour. (PMA-263 unsubstantiated source) Predator operations with the same crew requirements as a P-3C Orion offer around the clock coverage with the added benefit of covertness for $2500 per flight hour.

A typical mission in support of counter narcotics operations would follow standard military guidelines. Mission requirements, planning, training, aircrew coordination, risk assessment, potential problems, and logistics would all be required prior to deployment. The following hypothetical mission scenario is what I feel would most likely describe the role of Predator in counter-narcotics operations.

Notes

[1] "CIRPAS Activity Summary." *Center for Interdisciplinary Remotely Piloted Aircraft Studies*: Naval Postgraduate School, Marina Ca., 1999. On-line website. Mindspring January 1999. Available from http://web.nps.navy.mil/~cirpas/.

Part 6

OPERATION "NO SEE UM"

In support of Joint Interagency Task Force (JIATF) East requirements to augment the deployed P-3C Orion assets currently deployed in the AOR; one system of Predator UAVs are tasked to setup an operation center based in Soto Cano, Honduras. Money expropriated from the Joint Task Force Six (JTF6) Columbia Contingency Fund will provide 24 hour coverage in the western quadrant of the Caribbean for three months. Top level agencies have reason to believe major shipments of cocaine will be transported from the Colombian coast to sites in Mexico or Belize in the near future. The mode of transport will most likely be via high speed deep V-hull "Scarab" style boats commonly called "go fasts". The use of low profile vessels (LPVs) is also possible. LPVs have minimal exposed freeboard and are made of non-reflective materials such as fiberglass or wood. Radar identification ranging capability of aircraft or ships is limited against LPVs. Aircraft must nearly fly directly over the vessel to see it.

Three DEA agents are embarked to assist with TOI identification. Further, The law enforcement agents will separate military personnel from the law enforcement side of the mission, provide *Posse Comitatus relief*, and Detection and Monitoring authority for military forces.[1]

Transportation to the site is accomplished via two Air Force C-17 sorties. Adequate mission training preparations are complete and Predator will be mission capable within 24 hours of arrival. ICAO letters of agreement have been filed with the appropriate agencies for UAV operations. Standard instrument departure and arrival routes are predetermined to deconflict other air traffic in the vicinity. Predator will operate within a specified block altitude. Radar flight following will be standard operating procedure. Transponder codes will mirror typical military operations. Anti-collision rotating beacons and position lights will be on in accordance with ICAO rules during the entire operation period. During terminal phase ascent and recovery the local airfield practice pattern will be closed for safety.

The first operational mission proceeds with normal launch from Soto Cano. By the third watch on the 2nd day, 325 separate contacts have been identified, mostly type III civilian cargo carriers, tankers, or fishing boats. The second Predator sortie has been airborne for 13 hours. At 0127Z, contact 4326 is identified by sensor technicians as a high speed go fast heading 345T at 55Kts with multiple "gas can" containers strapped down in the cockpit area. Sensors indicate three people on board. The contact appears to have originated out of a small village on the northwest Colombian coast near Cartagena. The location of the TOI is approx. 120nm NNW of Cartagena.

At 0139Z, imagery transmitted from the GCS to JIATF East operations center is confirmed as a TOI and interdiction preparations commence. Customs confirms suitable endgame assets are available and on call in Panama. At 0201Z the U.S. Coast Guard medium endurance cutter (WMEC) Mohawk operating in the vicinity of 'Puerto Cabezas', Nicaragua is diverted to interdict the go fast.

By 0420Z, Predator sensor operators indicated a course change directly towards a slow moving radar contact just to the north. At 0441 Predator operators observe the go fast off-loading small bales of unknown identity to a group III vessel matching the description of a

Panamanian flagged vessel “Margarite”. Twenty-five minutes later the go-fast has disembarked and is traveling due west. The group III course is 330T, speed 12 Kts. At 0527Z the Coast Guard Cutter Mohawk hails the “Margarite” close aboard with demands to inspect her cargo for contraband. Radio reports to headquarters two hours later confirm that over 500 kilograms of cocaine worth millions on the street, has been seized.

Meanwhile, Predator is following the progress of the go fast towards the western Nicaragua coast. With positional information forwarded through the American attaché to Nicaragua, Nicaraguan patrol boats intercept the go fast and arrest the smugglers. Over the three month period of operations, 2162 kilograms of cocaine are seized resulting in 57 arrests.

The previous scenario does not contain known factual information of actual counter narcotics operations. It is merely representative of the capabilities of the Predator UAV and the synergistic effect added by its participation in this area. The scenario was developed using my own past P-3C Orion experiences while on patrol in the Caribbean. However, there is basis for the likely use of the UAVs in counter narcotics operations. Actual UAV operations in the Imperial Valley, California area using Pioneer UAV aircraft occurred during the spring of 1999. This operation was extremely successful in the apprehension of many illegal aliens attempting to cross the California border. Further, significant quantities of illegal narcotics were seized.

PREVIOUS UAV EXPERIENCES IN COUNTER NARCOTICS/SMUGGLING OPS

Joint Task Force Six (JTF6) from Ft. Bliss Texas initiated OPORD JTF-154-99. The mission was to detect and monitor movement of persons, vehicles, and aircraft along the US/Mexico border from the US side. The UAV reported all detection’s to law enforcement officials working in cooperation with military personnel. The UAV operated at night with full

ATC and FAA airspace compliance, including 3-mile territorial standoff from the Mexican border. Flight safety was paramount. IFF modes C transponder, rotating beacon and position lights were used at all times. A total of 26 sorties were flown over 13 nights with and overall sortie completion rate of in excess of 80%. The results of this operation included the confiscation of over 6,107 pounds of illegal drugs (mostly marijuana) worth almost nine million dollars and 438 illegal aliens apprehended.[2] Obviously UAVs can significantly enhance the abilities of law enforcement in these areas.

Notes

[1] LCDR Seagle, David. "*JTF 154-99 OPORD Power Point Brief Presentation*., Patuxant River, Md. March 1999.

[2] LCDR Seagle, David. "*JTF 154-99 OPORD Power Point Brief Presentation*., Patuxant River, Md. March 1999.

Part 7

PREDATOR OPERATIONS UNDER P-3 CONTROL

The command and control requirements of the Navy's Predator Tactical Control Station (TCS) or its current equivalent would fit nicely inside the P-3 Orion. Installation would be facilitated via temporary mounting racks located in the main cabin area. Weight considerations and effects on aircraft center of gravity (CG) are unknown by the author, however suitable adjustments should be fairly easy to coordinate. Typical P-3 operations in the patrol mode use only the majority of the crew directly. Two sensor operators are available to take operational command of the UAV in this role. With crew augmentation by qualified Navy Predator pilots and extra sensor operators embarked, the P-3C Orion could serve as a mobile UAV control station. Interestingly, Predator has been previously controlled by submarine.[1] The proven ability to transfer command of the Navy Predator between ground and mobile controlling stations would allow one minimally manned ground station to control the UAV during the terminal ascent and descent phases and OPCON the UAV to the P-3 Orion when onstation. This mission role has two major advantages.

First, the uniquely capable APS –134 Inverse Synthetic Aperture Radar used by the P-3 has the ability to locate surface radar contacts in excess of 150 miles away. Typically, a P-3 in a patrol or surface surveillance mode will examine a block of ocean surface identifying each target through electronic, infrared, or visual means. Using these methods small targets such as low profile vessels or other vessels with a small radar return will be, either missed by the radar as a result of surface clutter, confirmed as suspect or otherwise, or unidentifiable which requires visual confirmation as to their origin. The predator UAV has the sensor capability to take queuing from the P-3 to localize and covertly track the target of interest. The endurance of the Predator UAV allows covert tracking to continue even during P-3 turnover to a relieving asset. Further, by covertly tracking a target of interest while remaining relatively immune to endurance limitations, the Predator facilitates Coast Guard or Customs intercept to achieve endgame results.

Second, a P-3 Orion aircraft operating alone with questionable information regarding a target of interest (TOI) will visually confirmation the suspect vessel by low altitude over-flight or infrared illumination at a greatly reduced range. In either case, covertness is usually compromised and the suspect vessel will immediately jettison whatever contraband cargo is aboard. While this is a victory in the short term, covert tracking to produce end game confiscation and the accompanying arrest of all participants is lost using the P-3 Orion alone. Predator is the answer.

Notes

[1] U.S. Department Of Defense, *Joint Project- Unmanned aerial Vehicles, FY-95 ACTD's*, (Washington D.C. Congressional Budget Office, 1998), 2

Part 8

CONCLUSION-PAINFUL REALITIES

Currently, the Pentagon's UAV budget is small ($620 million in 1999).[1] The ability of DoD to field sufficient number of operable UAV systems to meet the demands of the theater and battlefield commanders has been marginal at best. The full scale commitment to a "fleet" of UAV systems has not received the level of funding necessary to facilitate the advantages outlined in this paper. Heated battles over the ownership and control of UAVs continue unabated. The Airforce argues it should maintain control of all UAVs in order to maintain the integrity of the Air Tasking Order (ATO) and to prevent inadvertent downing of UAVs by friendly fire. The Army, increasingly views the 'deep battle' as its responsibility and wants UAV control to facilitate "maneuver warfare" with emphasis on the Shadow tactical UAV as its platform of choice. The Navy is concerned with UAVs that are shipboard or tilt rotor capable to operate within a confined deckspace.

A single UAV system developed for multiple service requirements has the advantage of reducing redundant development efforts that invariably occur when services try to field their own systems. Problems occur when each service has technical or mission requirements that make the Joint UAV unworkable or just too expensive. So far, the problems have been much greater than the solutions. Further, "when demand for UAVs outstrips their availability-as has often been the case – the needs of the tactical commanders may be sacrificed to those of higher echelons."[2]

Joint Vision 2010 embraces the revolution in military affairs and weighs heavily on the side of technology and information superiority. As a up and coming darling of the revolution, UAV systems and continued UAV development should be given a dramatically larger piece of the budget pie. Options for UAV development as outlined in DoD publications needs to be acted upon decisively one way or another. Limits on design mission creep must be imposed to move a viable system to production more quickly. Until DoD decides upon a far-sighted course of action for future systems funding, the meager UAV assets available to the battlefield commander at the tactical or operational level of war will be wholly inadequate. Concept of UAV operations like the one outlined in this paper may never be pursued due to asset allocation and prioritization. That is the painful reality for the operational commander.

Notes

[1] Department Of Defense, *Programs and Missions for Unmanned Aerial Vehicles*, (Washington D.C. Congressional Budget Office, 1998), Ch. 1, 14.

[2] Department Of Defense, *Programs and Missions for Unmanned Aerial Vehicles*, (Washington D.C. Congressional Budget Office, 1998), Ch. 2, 5.

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