Advances in Aviation for UN Peacekeeping: A View from UN Headquarters[*]

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The aviation fleet used in UN peacekeeping has changed significantly since the turn of the century. It has significantly expanded in size, fleet composition, utilization, route complexity and support. The UN aviation fleet is about to undergo another far-reaching change. This chapter describes the recent changes and looks at what can be expected in the future for the peacekeeping fleet. It does not include any discussion of the United Nations Humanitarian Air Service provided by the World Food Programme (this is the subject of Chapter 6) and the service of World Food Programme's own cargo fleet, or African Union aircraft, or any national air assets supporting UN mandates that are not under direct UN operational tasking and hence not carrying "UN" markings.

UN aviation is required to provide logistics support for the UN's peacekeeping and political missions. Such tasks include Very Important Person (VIP) liaison between political centres, which is often necessary due to the absence of reliable, convenient or safe local commercial air networks. Within mission areas, UN aviation transports food and materiel to UN troops and provides transport for UN staff for duty tasks. Operationally, aircraft provide aerial patrol, observation and monitoring, armed security protection force attack helicopters, search and rescue and, crucially, 24/7 aeromedical evacuation. In addition, UN aviation has increasingly conducted troop rotations between mission areas and home nations, which are otherwise flown using short-term contracts for airliners. In both cases, ground support in mission areas is invariably provided by the United Nations.

In 1999, the United Nations had 47 aircraft worldwide on long-term contracts. The fleet consisted predominantly of King Air B-200, L-100 Hercules, An-26 fixed-wing (FW) aircraft and Mi-8T helicopters with a number of military light and medium helicopters. Since then, peacekeeping missions such as the United Nations Mission in Liberia (UNMIL), the United Nations Mission in Sierra Leone (UNAMSIL) and the United Nations Transitional Administration in East Timor (UNTAET), have each had added dozens of aircraft, while large missions such as the United Nations Organization Mission in the Democratic Republic of the Congo (MONUC) – see Chapter 14 – THE United Nations Mission in Sudan (UNMIS; from 2005) and the African Union–United Nations Mission in Darfur (UNAMID) in the Darfur region of Sudan (from 2007) have each operated more aircraft than the entire UN fleet of 1999. In2011

the UN aviation fleet size reached 289 aircraft, comprising 111 FW, 108 civilian rotary wing (RW) aircraft and 70 military RW aircraft.

Peacekeeping missions have grown significantly in troop size and geographical area. Whereas aircraft usually operated largely out of capital cities with reasonably developed airport infrastructure, no matter how weakened by the ravages of war, missions are now found with major bases in remote areas and with virtually no infrastructure and poor runways.

The United Nations does not own any of the 200+ aircraft in its fleet. Rather, they are chartered. The provision of aviation services has always remained under the operational control of the air carriers chartered by the United Nations for long-term contracts. The quality of the service has often reflected the level of oversight available. The UN's non-aviation management with a non-aviation culture was in no position to fully appreciate the risks inherent in aviation. Simply knowing that aircraft accidents must be avoided did little to help managers recognize the causes of accidents and the subtle and less subtle impact of external influences. Some crews may have put themselves under pressure to carry out operations in unsatisfactory meteorological conditions, fly long hours, or operate from short runways under the perceived threat that their contracts were at risk if the customer was not fully served. For some crews this may even have carried over from their operational experience in their home countries, with such practices more prevalent among crews from countries with poorer safety standards. The highest standards were not seen as being necessary, applicable or affordable in war-torn regions in which peacekeeping operations occurred. Many UN staff with military backgrounds compared UN operations comfortably with their past experience, while ignoring the absence of training and awareness possessed by civilian passengers from many cultures, who spoke many languages and included the old, the frail and the casual. Some carriers even flew troop rotations for the United Nations using Ilyushin 62 jet airliners – a 1960s-era Soviet plane – having no oxygen supply and argued that it was acceptable. The United Nations routinely flew passengers on cargo aircraft, even with cargo on board, hindering exit routes, supposedly approved by the air operators' civil aviation authorities.

The tipping point came in 1998–1999 when UN air accidents reputedly caused more loss of life to UN personnel and troops than hostile action, even with a small fleet. There were many examples. An executive jet carrying a Special Representative crashed on approach in West Africa.[1] At the end of 1998, two L-100 aircraft were shot down while supporting the United Nations Observer Mission in Angola (MONUA). In1999 a helicopter attached to the United Nations Civilian Police Mission in Haiti (MIPONUH) flew into the ground in Haiti, killing 14. Senior management from the Secretary-General, Kofi Annan, down were determined to bring about change. No new resources were immediately provided, but the change of attitude had begun. Aviation officers were finding support in seeking higher standards. As the MONUC mission started, contracts for airport services now included firefighting, meteorological forecasting, air traffic control, passenger handling and cargo-handling. The use of cargo aircraft to carry passengers was stopped, with the limited exception of the L100 Hercules, in which strict compliance with Civil Aviation Authority requirements for forward-facing seating, oxygen, escape signage, lighting, emergency briefings and additional exits were applied, and passengers were never carried with cargo on board. Antonov 24 passenger aircraft and a Boeing 727 airliner

were introduced and more types such as Boeing 757, CRJ, MD-83, Let 410, ATR-42, DHC7 and DHC8 have since joined the fleet.

Crews were happy to accept the mantra "safety first". They were assured of the freedom to cancel a flight for safety reasons. Rules on crew duty periods became strictly applied. Alcohol abuse was not tolerated and crews were repatriated without hesitation if deemed guilty of infringing this rule. English language standards of crews were significantly tightened.

Over time, aircraft equipment standards were also raised to include colour weather radars, flight data and cockpit recorders, ground proximity warning systems, impact-operated Gswitches, digital 406 MHz emergency locator transmitters, aircraft collision avoidance systems and satellite tracking of aircraft.

All this has led to an improved perspective of the operating environment and the safety culture has risen with it, among managers, crews and passengers alike. There is much more to be done, since advances in infrastructure support and investment have not kept pace with changes in the aircraft operations. Staffing levels have improved in some areas, but always against a resistance to provide resources in good time ahead of operations commencing, making development of the aviation environment before the aircraft arrive difficult if not impossible. By way of example, MONUC commenced operations with one aviation officer and three aircraft. In 2005, UNMIS had only 32 personnel to support 51 aircraft flying seven days a week, with 10 of those staff required to cover 11 airfields where aircraft and customers were based. Staff levels inevitably increased over the following years. However, in 2008, the United Nations Mission in the Central African Republic (MINURCAT), in Chad, was funded for 96 staff to support 31 aircraft at five airfields from the outset. There was still a long way to go, but the improvement was remarkable.

Unlike most military forces around the world, the United Nations is simply not funded to retain standby capability for missions yet to exist. However, the United Nations is regularly called upon to react to crisis needs at very short notice. Many countries fund the provision and regular training of professional armed forces with no specific conflict in mind and at far greater cost than that of missions of the United Nations. Despite this, the nations of the world direct the United Nations to conduct over 15 peacekeeping and political missions worldwide. However, there is some progress. Following the Brahimi Report of 2000, it was recognized that significant equipment took many months to deliver, even once the lengthy procurement process was complete. Airfield equipment such as loaders and fire trucks are generally not put into production without firm orders. Thus, a "Strategic Deployment Stock" was established for such items at the United Nations Logistics Base in Brindisi, Italy. The United Nations now possesses a number of items such as mobile air traffic control towers, refuelling bowsers, main deck loaders, airport fire trucks, illuminated windsocks, ground power units and emergency runway lighting kits, ready to be deployed at all times.

Cargo Aircraft

The growth in the size of peacekeeping from 15,000 to over 100,000 personnel since 1999 has outstripped the ability of suitable cargo aircraft to provide support. Airfields with little or no infrastructure oblige the United Nations to use military-style cargo aircraft such as the L-100 Hercules, which is able to land on rough runways and has rear ramps, enabling easy loading and unloading. Unfortunately, very few suitable civilian types exist. The IL-76, with its ability to load sea containers directly onto flatbed trucks, is also becoming unloved in a greening environment and with rising fuel costs due to its enormous Jet A1 fuel burn rate of 9,500–11,000 l/hr. UN Headquarters in New York has been busy establishing the availability of ground-handling equipment able to support conventional freighters such as Boeing 777 and Airbus A-300 aircraft at fully surfaced airfields, in order to release L-100s to greater focus on semi-prepared strips. For the longer term, the United Nations is showing interest in very large airships and hybrid airships such as Sky Cat,[2] which can deliver heavy loads over long- and short-range distances with almost no requirement for ground support or runways. More immediately, the United Nations is also currently engaged in attracting Short Takeoff and Landing (STOL) FW cargo aircraft such as the Alenia C-27 and the Airbus C-235 and C-295 aircraft through the active encouragement and support of operators by the manufacturers. Such aircraft could suitably carry troops on journeys currently operated by helicopters. The increased speed may facilitate quick reaction forces arriving faster or from more centralized locations while increasing UN capability at lower cost.

Medium Helicopters

The UN requirement has grown so much that the demand has outstripped the availability of medium helicopters. Provision of STOL FW aircraft will go some way to alleviate this, particularly with emphasis on improving runways as the United Nations Mission in South Sudan (UNMISS) proposes. New sources of helicopters will contribute to the solution, as well as increasing operational capability and potentially reducing cost.

The United Nations has been supported by S-61, Puma and Super Puma helicopters in the past, but currently all large medium helicopters are Mi-8MTV helicopters, favoured for their single-compartment capacity, load capability and lon grange performance. However, these aircraft are slow to start up, slow in flight, lose valuable seats when carrying luggage, cannot be loaded by forklift trucks, are uncomfortable, noisy, fuel-inefficient and have a significant downwash hazard.[3] While these aircraft are safe enough, they could certainly be safer.

The United Nations recognizes that its contract terms may not be attractive to operators of other helicopter types that are in high demand for oil and gas companies, which require high standards of safety, equipment and service. However, the contracts the United Nations offers are long enough to make investment in new, efficient helicopters worthwhile over the long term. A review of past UN operators' views made it clear that large medium helicopters were generally not available for lease. Operators had to make US$20–$25 million investments in new assets such as the S-92, which would be delivered in two years. Hoping to satisfy an unknown UN

demand made no financial sense, given that the demand would only be revealed in an "Invitation to Bid" with three months' notice (including a three-week bidding period and eight to 10-week UN decision-making process, leaving successful bidders with two to three weeks' notice to position), which the contractor might not win and which could be cancelled at 30 days' notice. Any contract won would be on an uneven playing field with Mi-8 operators who knew the UN business well and were paid per flying hour, including lengthy start-up periods and additional hours to be paid for due to slow flying speeds. The procurement process took little account of value or past performance and was generally for a two-year contract with an option for a single year extension. The resultant near-monopoly of Mi-8 helicopters in UN operations has left other manufacturers unaware of the significant business opportunity that the United Nations presents.

The United Nations has engaged in active "enlightenment" of manufacturers such as Sikorsky, Bell, AgustaWestland and Eurocopter. It hopes to ensure that future UN contractors will be encouraged by original equipment manufacturers providing training, regional spares and technical support. Briefings to leasing companies at various aviation exhibitions and air shows are leading to lessors considering ways in which they can make assets available to operators in the future and thus de-risk the competition for UN contracts by operators.

Meanwhile, the United Nations is looking to tackle its problems holistically: it has considered virtually every aspect it can influence; has examined its own contract arrangements; and is considering the introduction of contracts lasting five to seven years. Most significantly, the United Nations is changing from its Initiation to Bid (ITB) process to seeking Request for Proposals (RFP). The ITB simply identifies mandatory parameters and specifications that aircraft and operators have to satisfy. All those bids that meet the minimum acceptable standard are then reviewed for price and the lowest acceptable bid is selected. Under the RFP system, the United Nations will be able to take account of useful operational benefits over and above the minimum necessary. It will be able to compare offers in terms of the overall cost of achieving the task and allow vendors to offer a range of solutions to a task-based requirement. For instance, operators could offer a greater number of smaller assets such as the EC-145 (Eurocopter twin engine light utility helicopter) to better match daily variance in demand, or offer faster helicopters such as the AW-139 (AgustaWestland medium-sized, twin-engine helicopter), or FW aircraft (or even a mix of the two) to reduce the number of assets required, or simply add operational benefit. Maintenance standards and reliability would be considered, which may also impact on the number of aircraft required. Fuel costs and the cost to the United Nations of housing crews can also be considered, along with past performance and back-office support. Early positioning may also be an important consideration, but for the first time, the United Nations will be able to recognize the value of small fast helicopters for emergency medical response. This is a major change for the United Nations and, while labour-intensive to implement, offers huge benefits and increased competition.

Operational demand in the United Nations Assistance Mission for Iraq (UNAMI) has forced the United Nations to introduce civil helicopters fitted with Civil Anti-Missile Protection Systems and Kevlar-protected floors. These have been purchased by the United Nations and installed on a pair of chartered EC-117 light medium helicopters. Operational techniques have also been revised for this service, with the EC117s flying as a pair at low level over threat areas, with each able to accept passengers "cross-decking" from the other aircraft in the event that one

should make an unplanned and undesired landing. While this capability might well be deemed valuable in many missions, financial constraints on all budgets have yet to make this advantage sufficiently attractive to be deemed essential and there is the potential for this capability to be lost in the near future.

Aerial Delivery

The United Nations is also looking to support its peacekeeping and political missions in new and novel ways as technological advances become more established elsewhere. These include the introduction of global positioning system (GPS)-guided parafoils (rectangular sports parachutes) to deliver supplies.

Being able to supply troops is an important role for the United Nations. This can include routine resupply or emergency reaction and may not be possible by road. Reasons for this include obstacles such as hostile areas, mines, poor road conditions, urgency, floods and unavailability of ground transport. Hostile acts, poor visibility, night prohibitions and the short range of helicopters may make resupply impossible or unsafe. GPS-guided parafoils are capable of flying autonomously 15–20 mi if dropped from 25,000 ft, thus keeping air assets in a safe environment while the delivery system descends to its landing zone in full cognizance of wind and predetermined ground obstacles.

Unmanned Aerial Systems

Technologically savvy military forces have been renowned for their increasing reliance on unmanned aerial vehicles (UAV) and systems (UAS). The United Nations has repeatedly considered the use of UAVs in its operations since 2005, when MONUC considered the provision of UAVs and included them in its 2006 Force Requirement. Also in 2006, the Special Committee on Peacekeeping of the General Assembly (the "C34") required the United Nations to "examine all forms of monitoring and surveillance technology, particularly aerial monitoring", and to "ensure the safety and security of peacekeepers". The Department of Peacekeeping Operations conducted a comprehensive study in 2007.[4] The United Nations recognized the following benefits of UAVs:

- able to fly day or night;

- much reduced risk to personnel;

- able to fly in hostile areas;

- view "over the hill" for troops;

- command aerial view of live operations;

- protect against ambush;

- protect civilian populations;

- live video to headquarters from long distances, 24/7;

- able to track targets for hours/days;

- able to detect targets at extreme range;

- covert or deterrent;

- over-horizon communications relay;

- able to intercept phone and radio messages;

- able to see through foliage (infrared- and radar-sensing);

- guide troops to action early, pointing to targets;

- support disaster relief/humanitarian efforts;

- continuous patrol enables immediate diversion response;

- where aircraft are only option, UAVs are lowest cost option.

The United Nations sought troop-Contributing countries to offer UAVs for MONUC in the Democratic Republic of the Congo DRC). With no offers forthcoming at the time, the United Nations then looked to contractors to fill the requirement to provide a contractor-owned and contractor-operated surveillance capability in the eastern DRC. Eight bids were received to meet the following requirement:

- (two systems comprising three UAVs, each offering day/night video;

- systems to be based in the eastern DRC cities of Gomaand Bunia;

- operating range 250 km, pre-programmable to 800 km or using additional relay UAVs or remote viewing terminals;

- night capability to peacekeeping operations;

- able to identify 2 m target at 5 km;

- safety modes;

- 10-hr operations, 5 days/week;

- 72-hr surge capability;

- self-reliant contractor embedded with UN military operations;

- provide view to forward and regional commanders of live operations;

- stealth or deterrence;

- relay for mission voice communications;

- able to relocate by C-130 in 48 hrs.

Political considerations are a reality with the United Nations and a UAV avoided the need to use relay satellites controlled by non-UN entities. A second UAV was therefore to be used as a relay to forward control data from the ground-station pilots to the mission aircraft and retransmit images from the aircraft back to the ground station. This would eliminate line-of-sight range restriction for regular communications and enable the United Nations to operate UAVs at lower altitudes to compensate for weather and civil airspace restrictions, while seeing over the horizon and mountainous terrain of the eastern Congo. The UASs that were offered and considered suitable for MONUC included the Elbit Skylark, the Elbit Hermes 450, the MMist Snow Goose, the Aeronautics Aerostar and the IAI Searcher.

The UAS was to be a great leap forward in UN capability and its adoption overcame the many concerns of governments. Typically, the United Nations can only operate in a country with the consent of the host government and this had been achieved in the DRC. Consideration, and the fears of neighbouring countries, were factors also considered. Other nations might express concerns that more properly reflect their regard for the United Nations later coming to use UAVs in their national areas of interest. While troop-contributing countries could find their troops better protected, some have expressed reservations that greater efficiencies and capabilities might lead to a reduction in the need for their troop contribution – the same might be felt by countries providing helicopters. The desire to provide military capability may result from an interest in exerting influence in the region or at UN Headquarters, or from the value of the experience and the training that the military receives from its peacekeeping operations; some countries may seek to contribute to the peacekeeping effort, others to receive monetary income from the United Nations. In some countries the decision to provide military capability may stem

from a combination of one or more of these factors. The validity of such concerns is not proven. Certainly, greater situational awareness through UAVs should enable the United Nations to place troops in the right place at the right time with less fear of exposure to undue risk. This could, in fact, result in the greater use of troops and the far greater impact of UN peacekeepers. Delivery of such troops will inevitably result in increased use of troop-carrying helicopters. Attack helicopters (the second type, in addition to utility helicopters) may also become more productive and be used effectively to deliver air power while not consuming as much time and fuel flying over benign areas. Just as computers have not eliminated or even saved on paper, UASs may be so effective that they actually result in more work and not less, but with far more beneficial results.

Sadly, financial pressure was brought upon the United Nations following the global credit crunch and the fiscal crisis of 2008–2009. This was coupled with a request from the government of DRC for MONUC to reduce its strength and resulted in the project being cancelled just as the procurement process was reaching a conclusion and award of contract was anticipated.

Nevertheless, the situation in the DRC continues to cause concern and the United Nations has once again sought to provide a UAS for the eastern parts of the country. Considerable political effort has been made to garner support from member states. Troop-contributing countries have once again failed to offer suitable UAS support, but contractor interest appears to have grown significantly and in January 2013 the United Nations once again commenced a procurement process for a UAS in the DRC.[5] The winning UAV was the Falco of Selex ES, a division of the Italian company Finmeccanica. The UAS achieved initial operating capacity in December 2013. Figure 16.1 shows one of the UAVs prior to its official launch by the Under-Secretary-General for Peacekeeping Operations, Hervé Ladsous (shown on the left). An Mi-35 helicopter can be seen in the background.

MONUC had not been alone in considering UAVs. In 2007 the United Nations Mission in the Republic of Georgia (UNOMIG) also considered their introduction to support surveillance operations of UN Military Observers in the Kidori Valley in the breakaway region of Abkazia. In 2008, the UNOMIG was called to investigate the shooting down of a Georgian Hermes 450 UAV. Although it was claimed to have been shot down by an Abkazian L-39 light fighter aircraft, after reviewing wreckage, radar tracks and film footage captured by the UAV itself – which included the firing of the missile from a MiG-29 and its approach to the UAV – the UN team investigating the incident concluded that the Hermes 450 had been shot down by an aircraft of the Russian Federation. In due course, following the Russian intervention in the South Ossetia region of Georgia, Russia vetoed renewal of the UN mandate for UNOMIG, preferring to conduct peacekeeping operations itself.

Figure 16.1 A Falco unmanned aerial vehicle before the official launch ceremony in Goma, Democratic Republic of the Congo, on 3 December 2013
Source: UN Photo 572910, S. Liechti.

Meanwhile, other UN missions have expressed interest in UAVs. The United Nations Operation in Côte d'Ivoire (UNOCI) has considered the suitability of such systems for its operations, mainly along the border with Liberia. Fighting in bordering Mali in late 2012 and into 2013 will only add to this potential requirement. If the United Nations is successful in operating UAVs in the DRC and the benefits become clear, short-term budgetary considerations that seek immediate offsets for increases in operational efficiencies may attract less credence and enable the United Nations to benefit from the great strides in technology that many armed forces and air operators of the world are already able to enjoy. For more information on UAV's and UN peacekeeping operations see Chapter 9 in this volume.

Summary

UN aviation today is a far cry from that of earlier times. Emphasis on safety and an increase in the scale of UN peacekeeping operations has led to a whole-scale change in the size of operations and the types of aircraft used. Much has been done but much remains to be done. This has been of particular note for passenger aircraft, which have been overhauled. Delivery of air cargo is primed for change, with airports and ground-support equipment being made available for freighter aircraft such as the Boeing 777 and the Airbus A-300 in lieu of IL-76 types. Focus in recent times has shifted to L-100 operations and the multiple benefits that STOL cargo aircraft such as the C-27 and the C-235/295 can offer. Helicopter provision is in the process of a radical change. Helicopters such as the AW-139, the Super Puma, the S-61T and the EC-145 may greatly improve UN operations and at reduced cost.

The United Nations now has experience of providing helicopters with missile defensive suites and is looking at a range of new technologies. The greatest change to UN aviation is likely

to come in the form of unmanned aircraft. While this might or might not result in a change to the remainder of the UN aviation fleet, UASs and their UAVs are primed to transform peacekeeping efforts.

Endnotes

[1] In June 1998, the UN Secretary-General's Special Representative to Angola, Mr Alioune Blondin Beye, was killed in a plane crash in Côte d'Ivoire while on mission.

[2] The SkyCat (short for "Sky Catamaran") is a hybrid aircraft proposed for heavy lift and ultra-heavy lift. The aircraft derives its lift from helium buoyancy and aerodynamic shaping. The hover cushion technology allows it to take off and land almost anywhere, including in remote locations. It is also alleged to be impervious to rifle and mortar fire. See for example: *Aerospace Technology Magazine*. "CargoLifter CL160". Project Data Sheet. London, 2012. Available at: http://www.aerospace-technology.com/projects/cargolifter/ [accessed 30 March 2013]. Dillon, R.M. "High-tech cargo airship undergoing tests". *The Associated Press*. 30 January 2013. Available at: http://www.militarytimes.com/news/2013/01/ap-high-techcargo-ship-being-built-california-013013/ [accessed 30 March 2013].

[3] *Editor's note*: Rotating blades produce air vortices that can, under certain circumstances, reduce the stability of an aircraft, especially for a helicopter near uneven ground or in walled-in areas.

[4] One study prepared for the C-34 and welcomed by it in2007 was Dorn, A.W. "Tools of the Trade? Monitoring and Surveillance Technologies in UN Peacekeeping", *Peacekeeping Best Practices*, 2007. That study formed the basis for the subsequent book, Dorn, A.W. *Keeping Watch: Monitoring, Technology and Innovation in UN Peace Operations* (Tokyo: United Nations University Press, 2011). See also: http://www.keepingwatch.net [accessed 29 March 2013].

[5] See, for example, Binnie, J. "UN peacekeepers request UAVs". Defense and Security Intelligence and Analysis: IHS Jane's. 14 January 2013. Available at: http://www.janes.com/products/janes/defence-securityreport.aspx?id=1065975094 [accessed 30 March 2013]