

Equipping for the Future



by Col Gregory Matte

Canadians expect their Air Force to respond to operational demands when called upon, and that means that there are a number of critical tasks that must be conducted around the clock with little margin for error. These include delivering immediate assistance in remote land and sea locations through Search and Rescue (SAR) operations and emergency airlift, maintaining surveillance and control of Canada's airspace, conducting North American Aerospace Defense Command (NORAD) sovereignty patrols and supporting Arctic, maritime and fisheries surveillance.

In addition, our Air Force currently provides airlift and surveillance services and support to the Canadian Forces' mission in Afghanistan and we also deliver humanitarian aid where needed in almost every theatre of military operations around the world.

Carrying out these taskings effectively requires that Air Force equipment be rugged, technologically capable and suitably fitted to support the operational level commands of the Canadian Forces (CF); primarily Canada Command for operations in North America and Canadian Expeditionary Force Command for international operations. Maintaining interoperability with our Allies is also a key factor in the air assets we choose and operate. Our equipment acquisitions must not only satisfy today's requirements, but be upgradable and adaptable to whatever challenges may come around the corner tomorrow, and well into the future.

Fleet Recapitalization

A relevant and interoperable military aircraft fleet is a key factor in determining world class, peer-nation status among NATO countries. In order to maintain the

operational effectiveness necessary to carry out Air Force missions, the ongoing recapitalization of our aircraft fleet is absolutely critical. We are currently recapitalizing Air Force equipment at an almost unprecedented level to bring the average age of our aircraft down and achieve a balance of capable, modern, relevant and interoperable equipment. The average age of our aircraft is now 25 years. While older aircraft remain operationally functional, safe, and effective to fly, they provide challenges with serviceability and technological relevance. The acquisition of new aircraft will continue to bring the average age of the fleet down and reaffirm the position of Canada's Air Force as a cutting edge, responsive and highly effective military organization. This article outlines some of the projects the Air Force is looking at.

Next Generation Fighters

Canada's fleet of CF-18 Hornet fighter aircraft went into service between 1982 and 1988. In 2001, the Air Force launched an eight-year, two-phase initiative called the Incremental Modernization Project (IMP) that made significant upgrades to the

<< A CF-18 from 441 Tactical Fighter Squadron takes off from 4 Wing Cold Lake, Alberta.

CF PHOTO: WO SERGE PETERS

Hornets' radio, avionics and weapons systems, as well as to the structural integrity of the fuselage, wings and tail sections. This modernization program will ensure that Canada has a state-of-the-art CF-18 fighter force that is completely interoperable with our NATO allies and will remain effective and operationally viable until at least 2017.

We are now planning for the "next generation fighter" to replace the CF-18 Hornet. The Air Force has created the Next Generation Fighter Capability Office to begin looking for a viable fighter option to meet Canada's needs when the Hornet reaches its estimated life expectancy (ELE) towards the end of the next decade.

The procurement strategy for our next fighter is in development – our target date to have Canada's new fighter platform in place is 2017. We are engaged in discussion and planning with the U.S. Joint Strike Fighter program for the purposes of industrial cooperation and information sharing.

Aurora Upgrade Program

Canada's strategic maritime surveillance aircraft, the CP-140 Aurora, was originally designed for anti-submarine warfare (ASW) and the current fleet has been in operation since 1980. It is a multi-purpose aircraft with a 17-hour endurance and a range of more than 9000 kilometres – or 5000 nautical miles – without refuelling. Besides being able to detect and destroy the latest generation of stealth submarines it is also ideal for an evolving variety of operations. These range from searching out illegal fishing, immigration, drug trafficking and

CF PHOTO: CPL EVAN KUELZ



Aurora sits on the tarmac at the Iqaluit Int'l Airport in Nunavut.

polluting activity along the coastline to detecting violations of Canadian territorial sovereignty above and below the ocean's surface. With its air-droppable survival pods, the CP140 can also perform search and rescue (SAR) duties.

The Air Force launched the Aurora Incremental Modernization Project (AIMP) in 1998 to convert the Aurora into a multi-mission aircraft for over-land surveillance and reconnaissance, in addition to its traditional coastal functions. The modernization includes upgrading computer, navigation, communication and sensor systems as well as making structural improvements to several specific aircraft components. The AIMP will ensure that the CP140 Aurora remains operationally viable until 2020. Although that is still 12 years away, we are already looking at a succession plan towards acquiring a 21st century Canadian multi-mission aircraft to replace this versatile platform.

Fixed Wing SAR Aircraft Program (FWSAR)

The Air Force conducts Search and Rescue operations from five Wing locations that cover regions across Canada, in the Arctic and on both coasts. Currently the fixed wing SAR role is carried out principally by our fleet of CC115 Buffalo and CC130 Hercules aircraft. Both of these platforms have served Canada well in this mode, however there are serviceability and parts challenges, mainly with the Buffalo, due to its age.

We have a Fixed Wing Search and Rescue (FWSAR) revitalization program underway and are investigating the acquisition of a new SAR platform that will replace the current fixed wing SAR fleet. The Buffalo and Hercules airframes are



CF PHOTO: SGT SEAN MACEACHERN

CH149 Cormorant search and rescue helicopter taxis through the rinse facility (the 'bird bath') after a flight over salt water.

both good-to-go until the 2015 time frame in terms of operational life. The goal for the Air Force is to have a replacement fixed wing SAR platform in operation within six years.

Acquisition of New C130J Hercules Aircraft

The CC130 Hercules Aircraft has been a mainstay for Canada's Air Force since the 1960s, with the newest H models – five sub-models with air-to-air refueling capability, and two of the stretched-fuselage versions – being acquired between 1975 and 1996. These aircraft carry out a wide range of operational missions including troop transport, tactical airlift (including palletized or vehicular cargo), search and rescue, air-to-air refueling, and aircrew training and qualification for this aircraft type. These aircraft have delivered untold tons of humanitarian supplies, and elements of the CF's Disaster Assistance Response Team (DART), as part of Canada's contribution to disaster relief efforts around the world.

The Hercules is also one of the key aircraft employed for Air Force FWSAR

activities over Canadian domestic territory and adjacent maritime areas. It was also used for resupply of Canada's High-Arctic communications research station at Alert, Ellesmere Island in Nunavut Territory.

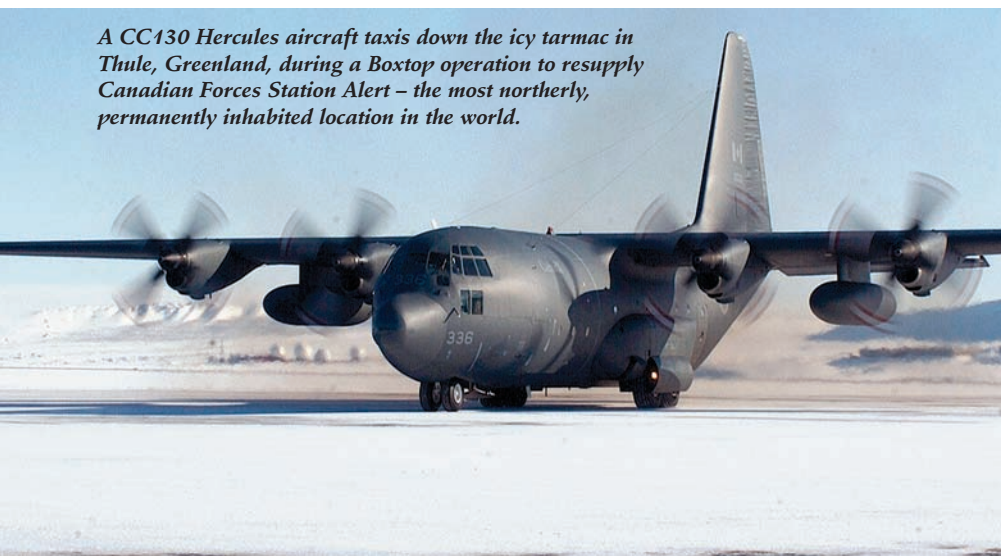
As venerable a workhorse as this aircraft has been, many of the airframes now in Canada's Air Force inventory are only a few years from retirement. The oldest E-model aircraft in the current Hercules fleet are slated to be replaced with the new C130J tactical airlift platform.

Although it may resemble the older Hercules aircraft, the C130J has been completely reengineered to be one of the most technologically advanced tactical airlifters available in the world today. It has a greater range than the older Hercs, is faster and more efficient on fuel. Virtually every system, component and structural part of the new aircraft has been reworked and upgraded to give it more durability and greater capabilities. It is also easier to maintain and operates at a lower cost.

In January 2008, the Department of National Defence awarded a contract to Lockheed Martin to acquire 17 new C130J tactical airlift aircraft. This contract is required to meet the current and future operational demands for tactical airlift to ensure the Canadian Forces continue to fulfill its mission.

The Government is confident that the C130J will provide Canada with a cost-effective, operations-proven tactical airlift capability. The first aircraft is scheduled to be delivered 2010 under this contract to replace the oldest aircraft in the Hercules fleet. Under the terms of this contract, the final aircraft of the group is to arrive in Canada's inventory by 2015.

A CC130 Hercules aircraft taxis down the icy tarmac in Thule, Greenland, during a Boxtop operation to resupply Canadian Forces Station Alert – the most northerly, permanently inhabited location in the world.



CF PHOTO: CPL JULIE WHYTE



January 2009 – Support personnel fuel up a Canadian “D” Model Chinook at Kandahar Airfield during Operations Training with members from JTF-Afg Air Wing in Kandahar.

PHOTO: CPL JAMES NIGHTINGALE

Medium- to Heavy-Lift Lease and Purchase

The Air Force is well underway with an initiative called the Medium- to Heavy-Lift Helicopter (MHLH) project. The project team has been in negotiations with Boeing to acquire a fleet of new Chinook helicopters. The project is focused both on the acquisition of the aircraft, a variant of the F-model Chinook to be equipped with a number of additional capabilities necessary to support Canadian operational requirements, as well as on ancillary issues such as infrastructure, logistic support and training for this platform. The addition of the MHLH Chinook helicopter will significantly enhance the Air Force fleet, making it even more relevant, responsive and effective. These aircraft will permit us to better respond to disaster situations and terrorist attacks, both here in Canada and around the world.

The arrival of the new Canadian Chinook helicopters, expected in 2012 with operations beginning in 2013, will fulfill our long term medium- to heavy-lift helicopter requirements for the next 20 years, or longer.

In 2008 the Government of Canada announced its response to the Canadian Forces’ aviation equipment needs in Afghanistan. To address the immediate helicopter lift requirements of our mission, the Air Force has chartered Mi8 medium-lift helicopters. In the medium term, we have procured six Chinook D-model helicopters, already stationed in Afghanistan, from the United States Army. The crews underwent training for these platforms with U.S. instructors in 2008 and we expect the aircraft to commence operations in theatre early 2009. These Chinooks will serve as an interim capability, specifically to support the existing operation in Afghanistan.

An Advanced Unmanned Aerial Vehicle (UAV)

Canada brought the CU161 Sperwer Tactical Unmanned Aerial Vehicle (UAV) into operational service in Afghanistan in 2003. In doing this, it assumed a leadership position in the operational deployment of these rapidly developing systems. The UAV immediately demonstrated its value in providing useful intelligence, surveillance and reconnaissance (ISR) capabilities in a military theatre of operations. UAVs provide a persistent, “eye-in-the-sky” capability, and the CU161 Sperwer proved its worth countless times in Afghanistan, both with the CF and also with other allied nations.

UAV technology advanced very rapidly however and just five years after it was introduced in Afghanistan, the era of the Sperwer CU161 is now drawing to a close. We are now looking at the next generation of these air platforms.

The lessons learned from the CU161 experience identified that UAVs with longer endurance and more sophisticated ISR capabilities could greatly enhance the flexibility and options available to a military commander on the ground.

The acquisition of a more advanced UAV to supersede the Sperwer CU161 will be handled in two phases. In the short term, through an acquisition plan known as Project Noctua, we have leased the Heron UAV. For the longer term solution to deliver the most advanced ISR capabilities for Canada’s military, an initiative called the Joint UAV Surveillance Target Acquisition System (JUSTAS) project is in place. The goal of the JUSTAS project team is to develop and acquire an advanced ISR system that will include domestic and deployed capabilities for well into the future.

Maritime Helicopter Acquisition

Canada’s current fleet of CH124 Sea King maritime helicopters is scheduled to be phased out and replaced with 28 new CH148 Cyclone helicopters, manufactured by Sikorsky Aircraft Corporation. The Cyclone, a state-of-the-art aircraft that has all-weather, day-and-night flight capability, will then become our main ship-borne maritime helicopter and will meet operational demands for the Canadian Forces well into the 21st century.

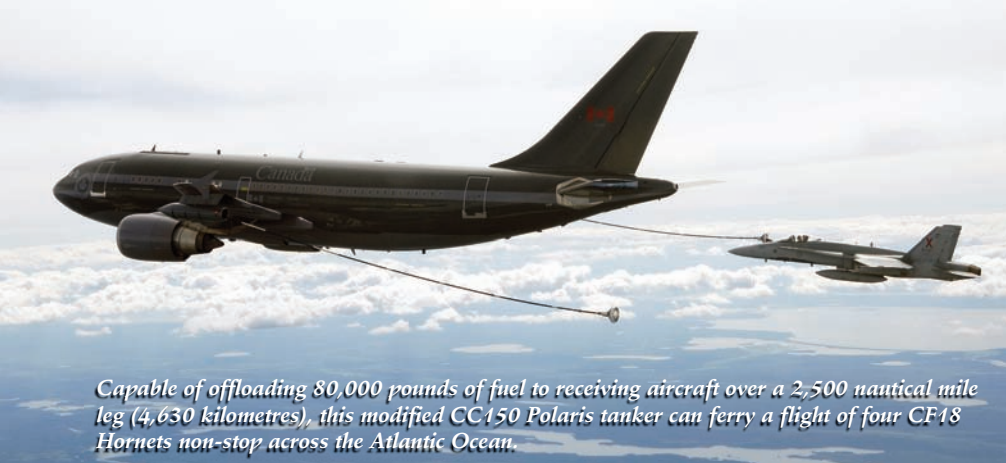
The Cyclone, with a state-of-the-art sensor suite, will conduct surface and sub-surface surveillance and control operations for the Canadian Forces. It will also be used on search and rescue missions and can provide tactical transport for national and international security efforts. It is a twin-engine helicopter that will operate primarily off Canada’s high-tech naval frigates. It has an aluminum and composite airframe that includes several new safety features like lightning-strike and high-intensity radio frequency pulse protection. The aircraft also incorporates flaw tolerance and engine burst containment.

The contract for the CH148 Cyclones, as well as necessary peripherals such as a simulation and training suite, integrated logistic support and ship modifications was awarded in 2004. We are now working with the manufacturer to minimize the impact of delivery delays and are continuing to move ahead with preparations, including the new infrastructure. The first Canadian Cyclone successfully completed its first test flight on November 15, 2008. We will ensure that the CH124 Sea King helicopter fleet is sustained and remains fully operational until the Cyclones are phased into service.

CH148 Cyclone helicopter’s first flight.



PHOTO: COURTESY OF SIKORSKY



CF PHOTO: MCPL PAUL GREEN

Capable of offloading 80,000 pounds of fuel to receiving aircraft over a 2,500 nautical mile leg (4,630 kilometres), this modified CC150 Polaris tanker can ferry a flight of four CF18 Hornets non-stop across the Atlantic Ocean.

Strategic Air-to-Air Refueling Capability

Strategic air-to-air refueling capability (SAAR) is a core requisite for a 21st century Air Force. Since our fleet of CC137 (Boeing 707) air tankers was retired in 1997, we have employed modified CC130 Hercules aircraft for tactical air-to-air refueling. The CC130 refueler, however, has limitations with regard to the distance it can fly and the amount of fuel it can off-load.

As the Air Force is committed to providing for safe and timely deployment for fighter aircraft when called upon to deliver support to international operations we have modified two CC150 Polaris (Airbus A310) aircraft for strategic air-to-air refueling (SAAR) of Canada's CF18 Hornet fleet, as well as other fighter aircraft.

The operational testing and evaluation of the Polaris aircraft for SAAR capability is ongoing at 4 Wing Cold Lake Alberta and initial operational capability for SAAR is expected early in 2009. When operational, a CC150 Polaris tanker, based at 8 Wing in Trenton Ontario, will be able to ferry a flight of four CF18 Hornets non-stop across the Atlantic Ocean.

CC177 Globemaster III

In 2008, Canada's Air Force completed delivery of its newest airlift purchase, four

CC177 Globemaster III strategic airlift aircraft. This platform now fully equips the Air Force to take on and carry out any strategic airlift tasking, anywhere in the world. The CC177's ability to fly long distances and land in remote locations makes it a premier transporter for military, humanitarian and peacekeeping missions. It will take off and land on unpaved runways as short as 3,500 feet.

The CC177 Globemaster III fleet provides us with a modern air platform that will move heavy equipment over long distances in response to domestic or international crises, rapidly, reliably and with great flexibility. The Globemaster III will handle everything from rapid strategic delivery of troops to cargo transport of oversized combat equipment from coast to coast, and to operational theatres overseas. It gives Canada world class and worldwide strategic airlift capability and is a vital part of the overall air mobility requirement for the Air Force.

In its first few months after delivery, this aircraft had supported hurricane relief efforts in Jamaica, provided essential transport for the Afghanistan mission and assisted in re-supply of our most northerly Canadian military outposts. The fleet of four CC177s flying together can represent more than one million kilograms of aircraft and cargo in the air at the same time.

Future Composition of Canada's Airlift Fleet

Making the transition to new platforms and new capabilities remains a work in progress. As part of the Air Force's Air Mobility Framework initiative, a capability study is now under way to develop recommendations for the composition of Canada's airlift fleet, looking far into the future. This will be based in large part on joint assessments with the Army and Navy regarding their future air-mobility requirements.

Revitalizing the aircraft fleet through recapitalization and modernization is a key strategic vector in Air Force Transformation. A revitalized and relevant Air Force fleet forms a principal building block within the Canadian Forces and helps maximize the return on the Government of Canada's defence investments.

Fleet revitalization will enable the Air Force to continue to support the CF in delivering excellence to Canadians here at home. Recapitalizing the core capabilities for the Air Force also means that Canada will continue to be a partner to count on, in the defence of North America.

A 21st Century Air Force

An Air Force equipped for the 21st century moves Canada to the front of the world's stage. It allows us to assume a peer position alongside our NATO allies and to demonstrate vision and leadership abroad. It also provides us with the tools to make a meaningful contribution to civilization anywhere on the globe, by supporting overseas military operations that maintain political stability, provide aid and relief and improve conditions for humanity.

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CF PHOTO: WO RON HARTLEN

CC177 Globemaster III takes off from CFB Greenwood.