

Canadian Tankers and the F-35



View of a modified Airbus A-310 tanker refuelling a CF-18 Hornet. The CC-150T (tanker) aircraft is shown here in 2008 being tested and evaluated at 4 Wing Cold Lake, Alberta for this purpose. Canada's Air Force had not had such capability since retiring its fleet of CC-137 (Boeing 707) aircraft in 1997.

In a flap over the F-35 in Canada late last year, the issue of tanking came to the fore. And if one considers both the F-35 and the issue of a new tanker, this provides a good entry path into discussing 21st century air power and its role in a forward thinking military strategy. If one is buying a new aircraft – whether transport, combat or tanker – it's a good idea to add the discussion of what one expects air power to do in the coming decades.

This strategic discussion has been absent throughout the entire F-35 “debate” in Canada. The tanker interlude is simply one more example of this strategic void.

The core problem, as I see it, is that Canada has an aging tanker fleet. The question naturally arises: as the old tankers fade away, are new ones needed? And if so, what kind of tanking capacity for what kind of strategic environment?

There clearly is a strategic gap, but it's the tanker that needs to be questioned. Is Canada choosing a 21st century combat aircraft based on compatibility with the existing 20th century tanking fleet?

First, some background on Canada's current tanking situation. The Airbus A310 aircraft – of which Canada has five (designated as CC-150 Polaris) – was designed for lift and support, not tanking. Germany requested a tanking capability for its A310s and Canada took advantage of this modification to convert two of its Polaris aircraft to the Multi Role Tanker Transport (MRTT) “probe and drogue” configuration. The aging C-130 Hercules tankers can also provide

tactical re-fueling, but neither can provide the “boom” refueling required for its four C-17s or to its projected new F-35s.

Canada's MRTT Polaris tankers successfully participated in NATO operations off of Libya. According to one report, the “two aircraft were deployed at Trapani for Operation Mobile, transferring more than 10 million pounds of fuel to a variety of allied receivers (F-18, Rafale, Super-Étendard, Tornado) in 250 sorties. The A310 MRTT was well endorsed by the NATO receiver community.

In contrast, the C-130 Herc tankers are used largely to support domestic operations, or to support the combat aircraft that are protecting Northern American airspace.

Before examining the nature of Canadian tanking practices and whether they are adequate for the future, let us turn to the “flap” over the F-35 and Canadian tankers. Media and political discussions about F-35 “broke” the story that the F-35A could not be tanked by the current fleet of tankers. Rather than recognizing this significant strategic gap in tanking capability, the facts were masterfully spun into a negative comment on the F-35.

This concern over tankers and the F-35 was initiated in the context of the “audit” of the cost, 40 years into the future, of every aspect of operation for an aircraft that is still in various stages flight testing.

On air-to-air refueling requirements for the F-35, KPMG's final audit report, which was released in February 2013, reads: “DND will rely on (the U.S.), coalition part-

ners, or commercial refueling assets to meet operational requirements.”

Let us provide a bit of analysis on this problem. First, Canada needs new tankers. Full stop. The question becomes, should new tankers be expected to be globally compatible with most coalition air forces, capable of both boom/receptacle and probe/drogue refueling?

If Canada for some reason decides not to get new tankers (a decision that would need to be looked at in and of itself), an increased tanking capability is still a likely requirement. Perhaps a transitional tanker strategy would work; one option would be to ask Airbus Military to convert Canada's other Polaris aircraft to MRTTs, and perhaps modify them for boom refueling – after all, the A310 was used as the test bed for the A330 Aerial Refueling Boom System.

Certainly, the F-35A has room to add a probe (for probe/drogue refueling) but it would be more cost-effective to modify the current tankers with boom receptacles, or add new tankers to the fleet.

The RCAF has investigated adding a boom to the CC-150 instead of adding the probe to the F-35A. It was a fraction of the cost of the fighter modifications.

Modification of the F-35A would provide two methods of aerial refueling but would diverge from the commonality of 2500+ worldwide fleet of CTOL variants, thereby reducing the benefits of the economies of scale through-life.

As a bonus, modifying the CC-150s would enable them to tank the CC-17s.

Indeed, one aspect seemingly left out of the “debate” is that Canada cannot tank its 21st century air lift asset, the CC-17s.

Any new combat aircraft choice will have greater fuel capacity and range than the F-18s they are replacing. For instance, the F-35As carry 50% more fuel internally than F-18s and, when operating in projected Arctic missions sets (operating at medium range), will have 50% more operating time for typical missions. The F-35A’s greater range and enhanced capacity to carry fuel means that it will require no tanking in situations where the F-18s require them.

F-35 critics have been asserting that Canada would have to outsource its tanking requirement. Earth to analysts: this is often already the case. Most NORAD tanking support for CF-18s today is done by KC-135s with a basket attached to the boom. The USAF provides tanking support widely for Canadian aircraft, and this is an “outsourcing” function.

Outsourcing is a strategic issue. Air crews with the specialized knowledge and skill sets to do this sort of refueling have to be available to support Canada’s F-18s. In short, context is everything.

- Canada already outsources refueling.
- Canada has limited tanker support.
- The domestic support of the sort provided by the C-130s will be obviated by the F-35As inherent capabilities.
- Overseas deployments and extended operations in the High North, require a new tanker, and in this case, such a tanker would clearly be built around a boom.
- The boom-receiver system is capable of transferring fuel at a much higher rate than the long, flexible hose of the probe-and-drogue method.

As Richard Shimooka, an analyst with the Conference of Defence Associations Institute, puts it: “Transitioning towards the boom system will increase the Canadian Forces’ flexibility. It would allow Canada to refuel all its aircraft, including the CC-177

transport, which is currently not possible with the Polaris. Moreover, booms would enhance interoperability with allies, particularly the United States.” And one could add as well, with all allies who have bought or are buying the F-35 fighter aircraft.

The challenges of utilizing an incompatible system can be witnessed in day-to-day operations of the RCAF. To support Canadian CF-18s on a NORAD mission, USAF KC-135s were re-equipped with a drogue basket and crewed with qualified personnel. Unfortunately, the latter is not always available, because only a few crews are capable of undertaking probe and drogue refueling compared to the nominal boom system. This can limit the RCAF’s ability to respond to threats against Canadian and American sovereignty.

The evolving strategic context is central to any discussion of the F-35 and tanking as well. To make a simplistic point, Canada needs 21st century air systems. With the Arctic opening and the emergence of a rejuvenated air and maritime Russia, the problem for Canada is that its future is going to be on the front lines. Is it ready?

The opening of the Arctic is an event somewhat parallel to the building of the Panama Canal. It took awhile but, once the Canal was built, the United States became a different country. It will take awhile as well for the full impact of the opening of the Arctic to be realized, but the country whose destiny will be most altered will be Russia, an emerging maritime country. You read that correctly, the great landlocked power will emerge as an important maritime player and with it, different roles for Canada, the United States, Asia and Europe.

As the sea lanes in Arctic-bordered regions become capable of longer periods of transit, the Northern sea routes or the Northwest passage becomes a link at the top of the world which can connect Europe and the Northern Pacific in ways that rival the traditional Southward transit routes through the world’s great canals.

But this grand change is not simply transit. It is about access to raw materials as well. The Arctic holds significant oil, natural gas, rare earth minerals, and other commodities vital to global economic development. Exploitation is challenging and costly, but the long term trajectory is very clear: the Arctic region will be a central economic zone for the global economy.

These two trends – transport and raw material extraction – will become combined. For example, states like Japan and South Korea (which, unlike China, have no landward reach to raw materials) will now have an alternative path to acquire raw materials and have them transited to their factories. Rather than simply relying on the Middle East, for example, South Korea and Japan could work with Russia and others to gain access to Liquid Natural Gas, and be capable of transporting it directly to their own ports.

Russia is at the center of these developments, but the infrastructure investments required for full success are beyond its current ability. It can be anticipated that outside engagement and capital will be involved, which in turn, will pressure the Russians to be more effective in shaping capital investment and foreign engagement policies that will be more conducive to regularized foreign business involvement. However, the erratic behaviour of the Russian state is an even more limiting factor on the prospects for development in the region than the harsh Arctic climate.

The impact on Russia will be dramatic, and with it, to the entire Pacific dynamic. Russian European ports look forward to direct connectivity with Pacific ports, and with it the growth of infrastructure, ports, facilities and shipping, along the way.

This transforms Russia’s defence and security challenge to one of securing the trade and resource development belt. It also will see a significant upsurge over the next 30 years of commercial and military traffic through the area.

It will, therefore, be in Russia’s interest to build air and naval assets that can provide for the various defence and security needs in the region. Search and rescue, communications, maritime domain awareness, significant ISR capabilities, bomber coverage, submarine and surface fleet coverage – all related efforts will become prioritized and this will dramatically change the situation for Canada. During the Cold War, NORAD was built around American and Canadian cooperation to

CC-150 Polaris from 437 Sqn is getting refuelled before taking off to do an air-to-air CF-18 refuelling.



defend their territories against various Russian threats – first bombers, then strategic submarines and then ICBMs (Inter Continental Ballistic Missiles). As this threat receded, Canada could focus on military operations of choice rather than necessity.

The emergence of the Arctic as a strategic zone ends this situation, and puts Canada in the front lines. To secure and exploit its own claims to resources, Canada will need to augment its efforts to significantly enhance its relevant security and defense capabilities as Russia becomes transformed, along with increased presence of other powers in the Arctic as well.

It is not difficult to see why 21st century air systems are central to the future of Canadian defense. An F-35 coupled with the A330MRTT would be a nice combination. The US Marines consider the F-35 to be a C5ISR D aircraft, an information warfare aircraft, with not just situational awareness but situational decision-making built into the fleet.

The A330MRTT tanker builds nicely on the Canadians own experience with the A310MRTT. With Canada an active participant in the MRTT user group, it maintains growing familiarity with the fleet.

The A330MRTT can provide broad support for High North Operations, and is able to sustain combat and surveillance aircraft, and search and rescue assets as well. Duration is important, and if Canada purchased a refuelable version of the aircraft, could build in significant duration.

It should be noted that the surplus electrical power on the plane can support the evolution of onboard C5ISR assets and fleet-wide efforts, such as storing and processing data in support of fleet operations – manned, unmanned, combat, or surveillance – to provide enhanced High North security.

With key Arctic allies (Norway, USA) flying boom-enabled air systems, it makes sense to support projected coalition operations in the area as well.

Airpower is central to 21st century security; but not by supporting them with limited tanking assets. Whether new aircraft or a transitional strategy of reconfiguring its existing fleet to full tanker status with boom capability, this is an important consideration that should be debated now if Canadians want to be ready to thwart evolving threats. ■

Robbin Laird is the co-founder of Second Line of Defense and has worked for many years with the USAF and USMC on global issues.



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