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Canadian Forces Photo by: MCpl Danielle Bernier

MISSION READY: CANADA'S ROLE IN THE KOSOVO AIR CAMPAIGN

On 24 March, 1999, just before midnight Adriatic time, four CF 18 Hornets launched from Aviano Air Base in Italy en-route to a pre-planned target located in Kosovo. These Canadian tactical fighters were four of sixteen dedicated bombing aircraft situated in the centre of a much larger strike package of NATO aircraft — Electronic Warfare (EW), Suppression of Enemy Air Defences (SEAD) and fighter escort aircraft. Communications jammers, Airborne Command, Control and Communications (ABCCC), air-to-air refueling tankers and Airborne Warning and Control (AWACS) aircraft provided additional vital support. The Canadian Hornets of Task Force Aviano successfully navigated to and positively identified their military target. The GBU-12 Precision Guided Munitions (PGMs) subsequently delivered were five-hundred-pound bombs designed to be laser guided to their targets. Of the four aircraft involved in the attack, two hit their targets. Of the remaining two aircraft, one missed the target, and the fourth made a deliberate and prudent decision not to drop his bombs because he failed to achieve a completely satisfactory identification of his aim point.

The learning curve was very steep. This mission, conducted on Day One of the Balkan air campaign, represented the first Canadian air combat mission in Europe since the end of the Second World War, and the begin-

ning of the most extensive Canadian Air Force combat operation since the Persian Gulf War of 1991. Over the ensuing 78 days and nights, the six, then twelve, then eighteen Canadian CF 18s from Aviano flew a total of 678 combat sorties over nearly 2600 flying hours. They delivered 532 bombs — nearly half a million pounds of high explosive munitions — including 361 of the laser-guided five-hundred and two-thousand-pound variants on a variety of targets throughout Kosovo and the Federal Republic of Yugoslavia, all without loss to participating Canadian aircrew and aircraft.¹ This article will highlight the Canadian air operations over Kosovo, along with the lessons learned during the air campaign and their implications for future planning and operations.

PRELUDE TO WAR

During the past decade, air power has increasingly been called upon in situations which have degenerated from peace to conflict as the initial 'weapon of choice' because of the inherent speed, flexibility, global reach and precision engagement capability of combat aircraft. Air power is, of course, most effective when applied in conjunction with land and maritime force. But, as demonstrated with Canada's commitment to the

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1991 Gulf War and more recently, during conflicts in the Balkans, bringing air power swiftly into an area of strife to deter an aggressor and preserve international peace and security has validated the continued need for a globally mobile and combat-capable Canadian Air Force.

Circumstances suggested the use of air power over the territory of the former Yugoslavia, particularly to promote stability in Bosnia-Herzegovina. But having defined its role as one of “peacekeeping”, and not “peacemaking”, the United Nations role there was seriously undermined: “there was no peace to keep, because hostilities had just started.”² Furthermore, the United Nations ground presence was not equipped to alter the behaviour of the various local groups by force. As early as February 1994, air forces provided by the North Atlantic Treaty Organization (NATO) were in essence sub-contracted by the United Nations to monitor compliance with UN-defined exclusion zones — areas in which military hardware was not permitted — and, from August 1995, to maintain no-fly zones.

How these NATO air forces came to provide close air support for UN troops, attack primarily Bosnian Serb artillery positions around Sarajevo, and even shoot down Bosnian Serb aircraft is a story in itself. It involved negotiations within the United Nations, between the United Nations and NATO, and among other interested parties. And the decision to employ air power was not taken easily. Early on, the countries with sizeable army contingents in the area were the least likely to support the idea, for fear of retaliation against their troops. Generally speaking, the United States, which had no ground forces in the area at the time, was the most willing to use air power. But, in the end, the employment of air power in strictly limited missions against purely military targets seemed to bear fruit. It caused the Bosnian Serbs to back away from Sarajevo, and by 25 February 1994, NATO spoke of applying the “Sarajevo model” to other zones.³ Indeed, it was not just the use of air power, but also the threat of its use, which appeared to modify the behaviour of the Bosnian Serb government and, it was assumed, of Slobodan Milosevic, president of what was left of Yugoslavia. The success of the 1994 “Sarajevo model” was not long-lived, but when NATO responded to the 28 August 1995 mortar and grenade attack on Sarajevo, attacking the Bosnian Serb integrated air defence system in Operation “Deliberate Force”, the success was again manifest. By mid-September 1995, the Bosnian Serb authorities had signed a cease-fire agreement, which is still in effect.

When the horrors of reported ethnic cleansing in Kosovo could not be ignored — and there was no realistic expectation that NATO or any other international grouping could move sufficient land forces to the area — the model of

Bosnia-Herzegovina, which seemed to have worked on Slobodan Milosevic, provided a compelling solution.

In 1997, Canada deployed six Hornets from 416 Tactical Fighter Squadron (4 Wing) in Cold Lake to Aviano, Italy for a one-time, three-month deployment. The experience gained on this exercise allowed the CAF to react quickly to the deteriorating situation in the Balkans in June 1998, which culminated in the re-deployment of six CF 18s to Aviano, this time from 3 Wing in Bagotville. Once back in the theatre, Task Force Aviano was well positioned to provide both a Canadian presence and a credible and flexible Canadian Forces reaction to the rapidly changing Balkan political landscape. The Alliance went to the brink of open conflict in October 1998, again in January 1999, and, after much sabre rattling by Serbian President Milosevic, finally entered into combat as part of Operation “Echo”/Operation “Allied Force” during March. The commencement of hostilities could not have come at a worse time for Task Force Aviano, which was in the process of a major change-over of personnel from 3 Wing Bagotville to 4 Wing Cold Lake. Compounding the challenge to the unit was the governmental decision to double the number of fighter aircraft committed, with a corresponding increase in personnel. That the Task Force was able to transition from a peacetime to a wartime footing despite these difficulties was one of its many successes, attributable to the training, professionalism, good discipline, solid leadership and downright gumption of all concerned.

TO WAR IN HORNETS

I have never had the privilege to be part of a team that was so highly charged and dedicated to mission accomplishment.

Colonel D.A. Davies
Commander Task Force Aviano

While Canada’s fighter force performed magnificently over the Balkans in their most intense combat operation since the Second World War, and contributed significantly to the success of the air campaign, personnel and equipment were both stretched to the limit. Colonel Davies recalls that prior to the beginning of hostilities, the Joint Force Air Component Commander (JFACC), USAF Lieutenant-General Short, “... assembled all the senior national representatives and requested that we all tell our nations not to send or offer any more day, Visual Flight Rules, air defence fighters. He needed precision bombers, and particularly wanted multi-role aircraft that could be employed where and when needed. He then singled out the CF 18s (with their day/night PGM [precision guided missile] capabil-

ity) from Canada as the exact capability for which he was looking.”⁴ The ability of Task Force Aviano to integrate its operations with other NATO air forces and participate each night as part of a multinational package of dozens of coalition tactical fighters speaks highly of the expertise developed over the years in exercises such as Maple Flag in Cold Lake, Red Flag in Nevada and other NATO exercises in Europe. This ability to participate competently in a coalition air operation is not a skill that has been developed overnight. Canada’s long-standing joint and combined operations experience with the United States Air Force, the United States Navy and the Royal Air Force paid high dividends during the NATO air campaign. However, Major Todd Balfe, one of the most experienced and successful Canadian mission leads during the war, while not disputing the significance of the Canadian contribution argues, “... the point must be made very clearly that it is not an indication of our true capability, nor was it sustainable. On the contrary, the Canadian contribution was, I believe, an affirmation of training and resources spent in previous years when the fighter force was more robust. A key indicator of this was the varying performance level of the pilots involved. There was a vast discrepancy in experience levels, and it’s safe to say that the more senior aviators very much carried the younger ones.”⁵



Canadian Forces Photo by: MCpl Danielle Bernier

Clearly, one new aspect of this bombing campaign was the process by which targets assigned to Canadian pilots were reviewed and validated. For every mission flown and every bomb dropped, a Canadian Forces legal officer examined the assigned target very carefully with regard to its legitimacy and relevance to Canadian and international legal standards. There were cases where the relevance of a target was questionable, or where there just was not enough information to make a determination as to its legitimacy, which then resulted in a decision by the Canadian Task Force Commander to refuse that particular target. In addition, the pre-mission planning process for each bombing attack took into account the stringent requirement to avoid collateral damage to infrastructure surrounding a specific target. If at any time during the actual bombing attack the pilot was either uncertain about the target itself, or if he was concerned about the potential for collateral damage, he was under very clear instructions to abort his mission and bring his bombs home. This happened on many missions where Canadian pilots were either not comfortable

with the target identification or the possibility of collateral damage. This aspect of aerial warfare is one of the new challenges for today’s modern warriors.

Another unique and related characteristic of Operation “Echo” has been highlighted by Colonel André Viens, Commander of Task Force Aviano for the latter portion of the air campaign. “The media coverage of the air campaign and subsequent news reports on collateral damage were extremely intense”, wrote Viens. While every conceivable effort was made to avoid collateral damage — indeed, no Canadian involvement has been assigned to any of the war’s very limited number of high-profile errors — Colonel Viens suggests that “...While military forces must remain accountable for their action, the general expectation that intense combat operations is possible without hurting any non-combatants must be appropriately balanced.”⁶ Further, it must be clarified that the operational security policy which clothed NATO flyers in anonymity for the duration of hostilities was not

an attempt by the military authorities to provide impunity to aircrew making errors of judgement during combat. Rather, this policy was instituted to protect the aircrew and their families from very real threats of retribution threatened by elements sympathetic to the Serbian cause, in Canada and abroad. This additional stress factor, which had also been an issue for Canadians during the 1991 Persian Gulf War, generated a further measure of anxiety in men and women already under significant mental and physical strain from the rigours of combat.

The flexibility of a multi-role fighter such as the CF 18 became readily apparent during this conflict. While most of the coverage of the Canadian contribution has focussed on the air-to-ground bombing role with precision-guided munitions, Canadian pilots also flew 120 sorties (18 percent of all Canadian combat missions) in the air-to-air, Combat Air Patrol role. Even during the bombing missions, all CF 18s were armed with both Sidewinder and Sparrow air-to-air missiles, which provided a potent self-defence capability. There were a few occasions when, returning from a bombing mission, Canadian fighters were asked to divert back into Serbian airspace as air-to-air fighters to investigate “pop-up” enemy air activity. Thus, air-to-air and air-to-ground tasking on the same mission. Our CF 18 pilots proved to be fully capable in both roles, unlike some of the other NATO air forces.

MISSIONS ACCOMPLISHED AND LESSONS LEARNED

Returning to the 24 March mission, the first of so many more to follow, there was clearly room for operational improvement. For the next 78 days, Canadian pilots were almost continually either airborne or preparing to fly missions against military targets in Kosovo or Yugoslavia. As the intensity of the conflict increased, so did the Canadian commitment to the NATO force. The first increase doubled the number of aircraft in the contingent to twelve, doubled the number of pilots to 24, and doubled the number of combat sorties to twelve per day while only increasing to 250 the total number of personnel in the Task Force. The failure to increase the number of support personnel to a level commensurate with the increase in combat operations would eventually have a negative effect on



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the health of the men and women from the overworked support side of the operation. The effects of stress and burnout were intensified when the political decision was made to increase the contingent size to eighteen aircraft and 32 pilots, and to commit to between sixteen and twenty combat sorties per day. This last increase brought the size of the Task Force up to 300 personnel.

As soon became clear, the support personnel could not keep pace with the tripling of the force. Extraordinary performance became commonplace, but some individuals gave even more. One of these was Sergeant D. M. Neal of 1 Air Maintenance Squadron from Cold Lake. In addition to his full-time task of building some two dozen laser-guided bombs each day, Sergeant Neal often visited the flight line where he would share his expertise with newly-trained Weapons Load Officers, ensuring that they were fully prepared for the hectic pace of operations. He also set up training programs to qualify load crews on the newly cleared GBU-10 two-thousand-

pound laser-guided bombs, and made suggestions and adjustments to improve the safety and efficiency of combat operations. Leading through tireless example, Sergeant Neal was frequently on the job for continuous eighteen-hour days during the conflict. He established a superb rapport with co-located USAF armament personnel, routinely negotiating for the loan of spare parts needed to sustain Canadian production of bombs.

As the stocks of modern GBU bomb-guidance kits began to dwindle for all NATO forces, the allies were compelled to use less-than-modern guidance kits. This brought about a great deal of extra work for all national contingents in Aviano as they required an individual laser code to be manually 'burned' into their circuits. Faced with this problem, Sergeant Neal, on his own initiative, became the local expert on this guidance system. Through tireless research he determined that the Americans were incorrectly using their own system to burn laser codes, and then tactfully showed the USAF armament technicians how to do it properly. This enabled the Americans to salvage over 90 percent of the bombs previously considered to be unserviceable, saving them literally tens of millions of dollars. Of greater importance, Sergeant Neal's initiative and ingenuity saved the bombing campaign from suffering critical shortages, as bomb stocks had been severely depleted by this point. His efforts resulted in replacement bombs quickly becoming available where few had existed before.

With respect to combat operations, yes, there were misses and there were malfunctions — inevitable by-products of the fog of sustained conflict, no matter how stringent the precautions — but not many. In fact, the 70 percent overall success rate is close to that of Canada's most proficient allies, even those possessing more advanced weapons technologies.⁷ Such confidence and faith was placed in Canadian aircrew professionalism and expertise that, in this massively American-dominated air campaign and despite interoperability problems due to lack of equipment commonality, Canadians were often selected to lead the strike 'packages':

We led over half of all of the packages we flew. While the Brits led some, the bulk of the remainder was led by US forces. This is indicative of the high degree of professionalism and excellent training of our pilots. Interoperability, given the absolute predominance of the US forces, meant interoperability with US procedures. We train frequently with them and have a capability second to none in this area.

Colonel D. A. Davies

Although the Canadian contingent was extremely fortunate not to lose any aircraft or crews during this con-

flict, this was not the result of a benign defensive environment. On the contrary, the Serb Integrated Air Defence System proved to be both robust and redundant. The opposing fireworks of enemy AAA ground fire and SA3 and SA6 surface-to-air missile launches accompanied virtually all missions flown into Kosovo and Serbia. In fact, as that first NATO attack package, including the four CF 18s, crossed into Kosovo on the first night, one of the first radio calls was from MAGIC, the NATO AWACS aircraft, warning the strike package that hostile MIG-29 Fulcrum fighters were closing on them. The fighter escorts, Royal Netherlands Air Force F 16s, promptly engaged them and one was shot down. The absence of Canadian combat losses in the Balkan air campaign, as was the case in the Gulf War, will undoubtedly lead to similar expectations in a future conflict.

Weather proved to be a serious limitation to operations during Operation “Echo”. Of the 945 combat sorties planned, 176 (18.6 percent) of them were cancelled because of weather conditions at the target, an issue more predictive of future combat operations than the Allied Coalition experience during the Gulf War. A further 85 missions were called off as a result of a variety of operational factors. However, a truly staggering statistic of the war is that only six sorties (0.6 percent of those planned) were cancelled because of maintenance problems. This meant a 99.4 percent aircraft-availability rate sustained over the entire 79-day period of combat operations; a compelling testimonial to the tenacity, dedication and resolve of the ground support staff.⁸

While possessing only two percent of the combat aircraft involved in the campaign, Canadian aircraft flew in nearly ten percent of the Battlefield Air Interdiction (BAI) missions, arguably amongst the highest risk and most significant missions of the war. In addition to flying 120 Combat Air Patrol (CAP) sorties, the high-risk BAI missions and a significant number of Close Air Support (CAS) taskings represent over 82 percent of the Canadian air effort — a higher percentage of these perilous missions than any of the other NATO nations.⁹

While Canada can take great pride in the accomplishments of some very dedicated and highly-motivated people who were able to overcome daunting hurdles and meet formidable challenges, significant investment in personnel and equipment will be necessary to permit a war deployment of this nature in the future. In the words of Colonel Davies, “As it sits, we could not repeat the same level of activity, and in most scenarios we would not be permitted to participate to the same extent, due to

our increasingly outdated equipment.”¹⁰ Many Canadian military aviators believe that the Canadian fighter force made a truly important contribution to the campaign, but this was possible only because of “... the vestiges of a time when we were capable of retaining greater readiness levels and overall expertise. We need to articulate the requirement for a credible fighter force and point clearly to the manner in which it is atrophying as a result of a dwindling resource base.”¹¹ While Task Force Aviano contributed significantly to the air campaign, it should not in any way be used as an indicator of future perform-



Canadian Forces Photo by: Vic Johnson

ance. Without further resources, the fighter force risks being marginalized, which is the precursor to extinction.

One of our strongest arguments, politically, for maintaining this credible force is manifest in the strategy of the air campaign itself, which was, of course, to avoid or minimize the use (and attendant casualties) of ground forces. While it is expensive to maintain fighter forces in peacetime, it is politically much cheaper to use them in war. If Canada, as a prosperous member of the First World wishes to make a meaningful contribution to the new world order, which has much more to do with peace enforcement than peace keeping, a credible fighter force is essential.¹²

During the Balkan air war, NATO did not follow its own doctrine in terms of the *decisive* application of air power, that is, *overwhelming* use of force as opposed to carefully meted-out penny-size packages designed to progressively test Serbian resolve while possessing

undertones of political correctness. The result? The air war lasted much longer than anticipated, and this significantly affected pilot manning, operational equipment and ammunition availability.

With respect to manning levels, it was quickly determined that in order to *sustain* operations, at least two pilots for each aircraft were needed for each daily mission. For the eventual sixteen sorties per day of flying,

As a result of the “limited PGM capability” that the Air Force was able to fund, Canada did not have a war stock, and had not been able to clear other than the GBU-12 for use. Fortunately, the CAF was able to purchase additional GBU-12s from the USAF before the initial lot had been exhausted. Despite repeated requests prior to the conflict to clear the 2000-pound GBU-10 for use, the CAF had been unable to devote the resources needed for this initiative. When it became evident that the original requests were justified and that the 500-pound GBU-12s were not destroying the targets despite pilots risking their lives to get to them and getting direct hits, the entire Canadian Forces machine leapt into action. In record time, all the necessary things were done to clear the weapon for use, train the personnel, purchase the weapons, and get them into the theatre. This is a story of superhuman effort by staffs that were already over-stressed and over-tasked.

Finally, without significant investment, it must be stressed that Canada will not be able to repeat this performance. Canada was the *only* nation not equipped with anti-jam radios, which forced the entire NATO air strike effort to use single-frequency, jammable equipment. Although the enemy did not demonstrate any significant jamming capability, had they done so, in all probability Canada would have been told politely to go home. The lack of night vision goggles reduced the Task Force’s overall effectiveness, resulting in a number of missions where the pilot flew into harm’s way and had to return with ordnance, having accomplished nothing for his efforts because he could not find the target. Similarly, a Global Positioning System (GPS) would have eliminated navigational drift, which would, in turn, have permitted aircrew to locate targets much more readily, again reducing the need for pilots to return to base with their bombs after facing enemy defences and achieving nothing. Since the most technologically-sophisticated air forces are now riding the cusp of the Revolution in Military Affairs (RMA) with respect to the application of air power, the absolute reduction or, ideally, the elimination of collateral damage will in future be a true measure of success in battle. The shortcomings identified need to be addressed to take this new combat direction and, coincidentally, to ensure Canadian interoperability with the forces of our southern neighbour. For the same reasons, resources need to be dedicated to the acquisition of an improved FLIR with greater magnification, an Identification Friend or Foe (IFF) interrogator and a secure data distribution system, such as the Joint Tactical



Canadian Forces Photo by: MCPi Danielle Bernier

Canada thus needed at least 32 pilots, representing at least half of all available CF 18 combat ready aircrew. Given the policy of holding a pilot in combat no longer than sixty days without a break, the Canadian Air Force was committed at the highest possible activity rate. In short, the operational commitment pushed the available pool of combat ready pilots to the limit.

The limited Precision Guided Missile (PGM) capability purchased for the CF 18 fleet as a result of the Gulf War is what allowed Task Force Aviano to be “on the first team” with its valuable day/night capability to deliver laser-guided bombs. However, the limited Forward Looking Infra Red (FLIR) pod purchase, an integral part of the capability, included only thirteen pods, with few spares and limited repair equipment. When one considers the requirement to train replacement pilots in Canada, and to have spares available to sustain operations in theatre, the CAF did not have enough equipment to outfit more than the original six jets. In fact, the only reason Canadians were able to fly the sixteen-sorties-per-day that was eventually attained, was because additional pods were acquired. Even at that, Task Force Aviano never had enough to outfit the final six aircraft that were deployed, so they could be used only as spare aircraft, for air defence, or for missions that did not call for use of PGMs.

Information Distribution System (JTIDS), for real-time targeting. In the words of Major Norm Balfe:

Aircraft were flying with this equipment in the air campaign and I believe it will very much be the standard in the *next* campaign. It is significant to note that *Rafale* and *Typhoon II* (the Eurofighter) are entering service shortly and will be the mainstay of our European allies. Additionally, the proper training must be parcelled out with these improvements, and that translates into an increase in minimum Yearly Flying Requirements (YFR) for aircrew. At this juncture, the Air Force authorizes a minimum of 187 flying hours per individual, which must be increased appropriately for every additional sensor/capability added to the weapons platform.¹³

The Air Force recognizes Major Balfe's assessment, but "in this era of limited resources, the challenge is to employ all means of training, including simulators and synthetic trainers to maximum benefit."¹⁴

The Canadian participation in the campaign for Kosovo was a significant demonstration of Canada's resolve to support both NATO and the UN. It was a resounding success, and showed how magnificently Canadian service personnel can rise to a critical situation. It also demonstrated how thin the Canadian Forces

are now stretched, and highlighted the urgency underlying the national need to reinvest in this capability. In many ways, the Kosovo air campaign is more predictive



of future conflicts than was the Gulf War. Canada and all Canadians can be justifiably proud of all that was accomplished by Task Force Aviano.



NOTES

1. Major J.J.C. Ouellette, A4 Aircraft Maintenance Officer, Task Force Aviano, *Final Milestones/Statistics for the War*, p. 1.
2. Dick A. Leurdijk, *The United Nations and NATO in Former Yugoslavia, 1991-1996: Limits to Diplomacy and Forces*. (The Hague: Netherlands Atlantic Commission, 1996), p. 9.
3. *ibid*, p. 45.
4. Colonel D.A. Davies, *The Campaign for Kosovo-Canada's Fighter Force in Action*, 03 Feb 00, p. 2.
5. Major T. Balfe, TN@AFTCC@ColdLake, 03 Feb 00, p. 1
6. Colonel A. Viens, *Operation Allied Force Post Air Campaign Report, Task Force Aviano*, 05 Aug 99, I-1-3/9.
7. Lieutenant General D.N. Kinsman's address to

- The Aerospace Industries Association of Canada, Mt. Tremblant, 27 Sep 99.
8. During the Second World War, the average Circular Error of Probability (CEP) for putting ordnance on a 100 foot by 60 foot target was approximately 3,300 feet using over 9,000 bombs. By Korea, that distance had shrunk to 1,000 feet using 1,100 bombs and in Vietnam, a mere 176 bombs were required to attain a CEP of 400 feet. In the Persian Gulf, a much more benign war due to the decisive commitment of air power and the attainment of complete air superiority, only eight aircraft dropping just thirty bombs were required to attain a CEP of two hundred feet. Richard P. Hallion, *Storm Over Iraq: Air Power and the Gulf War*. (Washington: Smithsonian Institution Press, 1992), p. 283. By 1999, PGMs were providing a

- target hit probability percentage based upon *one* bomb per attack. Therefore a 70 percent hit probability in a non-permissive environment such as the Balkan theatre is a formidable improvement.
9. The Americans contributed 28.62 percent of their operational missions in these specialities, the French, 50.11 percent and the British, 62.88 percent. General Wesley K. Clark, *Operation Allied Force Statistics*, 6 January 2000, p. 3.
 10. Davies, p. 1
 11. Colonel M. J. Donihee, MJ@HQ@ColdLake, 02 Feb 00.
 12. Balfe, p. 1.
 13. Balfe, p. 3.
 14. Colonel Rick Williams, Director of Air Strategic Plans, NDHQ Ottawa, 9 Feb 00