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CANADIAN FORCES COLLEGE / COLLÈGE DES FORCES CANADIENNES
CSC 30 / CCEM 30

EXERCISE/EXERCICE NEW HORIZONS

**THE DOCTRINAL MORASS OF INTEGRATING JOINT OPERATIONS
BEYOND THE FIRE SUPPORT COORDINATION LINE (FSCL)**

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CSC 30

The Doctrinal Morass of Integrating Joint Operations Beyond the Fire Support Coordination Line (FSCL)

Major J.V. (John) Pumphrey

ABSTRACT

Fire Support Coordination Measures (FSCMs) are instrumental in integrating joint fires and reducing the risk of confusion and fratricide within the Joint Operational Area (JOA). There has been an evolving doctrinal debate concerning the placement of the Fire Support Coordination Line(s) (FSCL) and how it has been interpreted from Gulf War 1991 to the present. The debate underscores the importance of having to rationalise component doctrine at the joint level in order to better integrate combat power of land and air forces in the deep battlespace. Canada needs such a joint doctrine and is particularly inadequate regarding air component doctrine. Recent innovations have yielded encouraging results during exercises and during Operation Enduring Freedom in Afghanistan. The use of kill boxes as the FSCM of choice may reduce or eliminate the need for a FSCL in the future as the battlespace becomes more network-enabled. If Canada wants to fight alongside US Forces in the future, it will have to become more interoperable from a doctrinal, then technological sense.

Doctrine provides a military organization with a common philosophy, a common language, a common purpose and a unity of effort.

General George H. Decker, U.S. Army

The Joint Force Air Component Commander (JFACC) normally has the preponderance of air power assets in a theatre of operations, and is responsible to plan, task, and control joint air operations in a theatre of operations. The JFACC may also have tactical control (TACON) of air assets made available from other component commanders. The Joint Force Land Component Commander (JFLCC), and other component commanders, would typically be assigned a geographic responsibility within the joint area of operations; operations that are phased and synchronised with dynamic boundaries that will be adjusted to reflect operational requirements and manoeuvre.

Although the JFACC has Fire Support Coordination Measures (FSCM) and Air Support Coordination Measures (ASCM) that apply, he is a functional commander that is able to rapidly deploy resources throughout the JOA. The JFLCC will strive to integrate and synchronise the activities of large surface tactical units, with the other component commanders within the CJTF. Although there are several component commanders, the focus of this paper will address the air-land components. The doctrinal dissonance that is observed is where the air force and land forces meet at the operational level of the battlespace; the deep operation.

The question that has not been resolved is where the tactical land battlespace ends and deep operations begin. The doctrinal debate centres on the placement of the FSCMs, and specifically, the Fire Support Coordination Line(s) (FSCLs). The FSCL is a

geographically visible, permissive control measure that has a number of coordination requirements that tend to increase as the risk to friendly forces increases. Inconsistencies in joint doctrine at the operational level threaten the principles of unity of effort and security of friendly forces from fratricide in the deep operations area.

Land and Air component doctrine must be rationalised at the joint level in order to better integrate combat power of land and air forces in the deep battlespace during warfighting. Presently, Canadian Air Force doctrine is woefully out of date and needs to be revised and then harmonised with other components doctrines to produce a new joint document that would be more reflective of modern combat operations that Canada may find herself. Moreover, the close relationship that Canada enjoys with the United States, suggests that it is prudent to learn from some of the issues that U.S. Forces have addressed over the last few years in order not to replicate the problems within the Canadian Forces.

This study will begin by reviewing the state of Aerospace and Army doctrine within the Canadian Forces. Having established that the Air Force is in need of an overall doctrinal update, the specific emphasis will be placed on FSCMs; specifically the demarcation point of close and deep battle areas, the FSCL. As the United States seeks to institutionalise the use of killboxes as their primary Airspace and Fire Support Coordination Measure in counterland operations,¹ there is an opportunity for the Canadian Forces to be in step with the United States and to have the option of participating in counterland operations in partnership with U.S. troops in the future.

¹ Major General Dave Deptula, USAF, "Direct Attack: A Needed Concept," letter to the editor, *Air & Space Power Journal*, Vol 17, Iss 3: 13. General Deptula is the Director, ACC Plans and Programs, Langley AFB: Virginia.

Given that the Canadian Army has deferred to use US Army doctrine above the tactical level, US publications will be used in the absence of unique Canadian publications at the operational level concerning the debate that surrounds the FSCL. This paper admits to an air-centric bias in presenting Canadian Forces doctrine development. This was intentional given the concern that the author has regarding the relatively stagnant production of any doctrine by the Air Force in recent years. In comparison, Canadian land forces have taken a relatively aggressive approach and have been getting their publications up to date. Before the discussion on FSCMs, the strategic context regarding possible Canadian Forces air doctrine development will be considered because of the impact that this may have on focusing resources.

The Chief of the Air Staff Planning Guidance 2003 provided their tacit concurrence of the Aerospace Doctrine Study of 30 April 2002.² Essentially, the Study concluded that existing Canadian aerospace doctrine publications were out of date, incomplete, and required substantial revision. They have yet to be revised, as the notional Air Warfare Centre has not been established and there is, quite frankly, not enough human capacity to undertake a doctrine-writing initiative with existing positions in the Chief of the Air Staff (CAS) or Canadian Air Division (CAD) staffs.³ This is a querulous point, if we accept that the purpose of Canadian Forces (CF) doctrine is to:

CF doctrine provides the fundamental tenets for the employment of military forces to translate the CF mission and strategic objectives into action. More specifically, it provides commanders with underlying principles to guide their actions in planning and conducting operations.

² Canada, Department of National Defence. *CAS Planning Guidance 2003*. Ottawa: National Defence Headquarters, 21 June 2002.

³ Based on seminar discussion, “Does Canada Need Operational Aerospace Doctrine?” held during the jointly sponsored Canadian Forces College – Chief of the Air Staff Air Symposium 2004, 9 March 2004.

While CF and Environment specific doctrine are separate bodies of doctrine, the two must be compatible....

Canadian Forces Operations, Edition 2, Ratification Draft, 2003⁴

Canada's Air Force must carry its fair share of the environmental level doctrine workload in order to roll up the lessons of the past and apply these lessons to the present and future.⁵

Although Canada does have basic (strategic) aerospace doctrine as represented in the capstone manual, B-GA-400 Out of the Sun, there does not exist an overarching operational level doctrinal manual that links the 'how' of the various functional aerospace roles, which in large, have not been developed in any event. In sum, it is accepted that there is a void at the operational level of aerospace doctrine in Canada. Notwithstanding, it is likely that Canada will continue to participate in operations, with our principal ally, the United States.

[Canada] Defence Strategy 2020, published in June 1999, identifies the United States as our principal ally now and for the future, and emphasises strengthening CF interoperability with US Forces. Improving interoperability includes efforts to ameliorate doctrine.⁶ A five-year target is to: "develop a comprehensive program to adopt new doctrine and equipment compatible with our principal allies."⁷ Doctrine is important to the CF as a whole, so it is perplexing why so little effort has been exerted by the Air Force establishment to get on with what needs to be done, notwithstanding the possibility

⁴ Canada, Department of National Defence. *Canadian Forces Operations*, Ratification Draft. Ottawa: National Defence Headquarters, 12 December 2003.

⁵ Canada. Department of National Defence. *Out of the Sun: Aerospace Doctrine for the Canadian Forces*. Winnipeg: Craig Kelman & Associates Ltd., 1997, 2.

⁶ Canada. Department of National Defence. *Defence Strategy 2020*. Ottawa: National Defence Headquarters, 1999, 8.

⁷ *Ibid.*, 10.

of conflicting priorities and lack of personnel to do such work in the first instance. This paper is being crafted in March 2004. There is still time to achieve the five-year target espoused in Strategy 2020, of having a comprehensive program to adopt new doctrine. This is a dubious goal given the recent confirmation that the Air Warfare Centre implementation plan is still being studied and that the CAS staff only has two desk officers assigned to doctrinal matters.⁸

This somewhat apathetic approach to doctrine is indicative of an organisation that pays little more than lip service to the importance of doctrine within an air environmental construct. This may sound harsh, but it certainly is not without precedent. Even the most potent air force in the world, the USAF, recognises that doctrine has in the past, been of little import to air force planners. It has only been since the mid-1990s that the USAF has begun to capture the various lessons learned and codified a body of knowledge that has put them in good stead in doctrinal circles. The USAF recognises that it has, "... moved beyond the past practice of operating under unspoken rules of thumb, and bits of handed-down wisdom on what worked and why."⁹ Similarly, the Royal Air Force, which has been described as a 'medium' air power, similarly stresses the importance of doctrine. They indicate, "...a knowledge of doctrine and its application enables the resolution of complex activity and aids clarity of thought in the chaos of crisis and war. Sound doctrine provides a common way of thinking, which is not bound by prescriptive

⁸ Based on seminar discussion, "Does Canada Need Operational Aerospace Doctrine?" held during the jointly sponsored Canadian Forces College – Chief of the Air Staff Air Symposium 2004, 9 March 2004.

⁹ United States, Secretary of the Air Force. Air Force Doctrine Document 1 [AFDD1]: *Air Force Basic Doctrine*. 2003, 1.

rules.”¹⁰ Why is this important for Canadian Forces generally, and the Air Force specifically?

As General Henault, the Chief of Defence Staff (CDS), pointed out during a Deputy Chief of Defence Staff (DCDS) retreat in February 2003, future CF operations are likely to be expeditionary in nature and, “Canada’s military contributions to international operations...tend to be employed with their environmental niches.”¹¹

Although the term “expeditionary” does not appear to have a detailed description within CF or Air Force doctrine, as a small to medium air power it is likely that Canada will be operating within a NATO or US led coalition, in times of combat operations. Like our strategic partners, it behoves not only the Air Force but also the Army and Navy, to understand how combat operations are integrated and synchronised, in order to achieve synergistic effects in the battlespace of present and future conflicts. This is more than a question of efficiency and interoperability with national and international partners in conflict. There is a real risk of getting things wrong that could result in fratricide and strained international relations amongst our partners during warfighting. Tactical procedures, based on sound doctrine helps to mitigate such risk and, as the RAF has pointed out, provides a mechanism of resolving complex issues via a baseline knowledge and lexicon.

An obvious area of potential problems occurs at the operational level of war, where joint and combined operations requires that service specialised doctrine is unified to achieve synergistic effects within the battlespace. One specific difficulty is conducting

¹⁰ United Kingdom, Directorate of Air Staff. AP 3000: *British Air Power Doctrine*, Third Edition. Norwich, UK: Her Majesty’s Stationary Office, 1999, 1.1.14.

¹¹ Allan English, ed., *Canadian Expeditionary Air Forces*, Bison Paper 5. Winnipeg: The Centre for Defence and Security Studies, 2004, 1.

operations in the deep battlespace where land and air component doctrine must be rationalised in order to integrate better, combat power at the joint and/or combined level. Because of Canada's lack of Air Force operational doctrine, USAF doctrine has been chosen as the basis for further discussion given the close working and training relationship that Canada's Air Force has with the USAF. The future importance of being a networked and interoperable air force with the USAF is consistent with the key mission espoused in the [Draft] Strategic Vectors document of the CAS:

Great focus, therefore, will be given to being *interoperable* to conduct operations effectively as part of a coalition – one that will generally be comprised of army, navy and air force formations. Equipment, doctrine [emphasis added] and planning must take into account interoperability requirements with the United States and those of other coalition partners given the leading role the United States often plays and is expected to continue to play in regional and international security operations.¹²

Being interoperable with the United States is a laudable goal and one that is important for the coordination of air assets during operations in North America and deployed operations. Recognising the close relationship to the US, lessons may be observed or possibly learned from points of friction that exist within US doctrine in order to appropriately recognise the impact that such difficulties may have on Canadian Forces assets. To illustrate an area of evolving and current doctrinal debate, the use of FSCL(s) will be considered as a Fire Support Coordination Measure (FSCM) that is used during combat operations. US Forces are quite prolific with their writing of doctrine, so a number of publications may be consulted concerning FSCMs: basic doctrine is found in Joint Pub 3-0, Doctrine for Joint Operations, supplemented by Joint Pub 3-56.1, Command and Control for Joint Air Operations; and Joint Pub 3-03, Doctrine for Joint

¹² Canada. Department of National Defence. *Strategic Vectors*. Ottawa: National Defence Headquarters, Unpublished Draft dated 17 December 2003, 11.

Interdiction Operations. Increasing levels of detail is contained in other documents within the '3' series of publications: Joint Pub 3.03.1, Doctrine for Joint Interdiction of Follow-on Forces, discusses the role of second echelon forces in interdiction operations; and Joint Pub 3-09, Doctrine for Joint Fire Support, strikes at the heart of the problem of the integration of combat power beyond the FSCL. All of these publications relate, in varying degrees, to the FSCL discussion in speaking about interdiction and/or deep operations. The Canadian equivalent reference for information regarding the FSCL can be found in B-GL-300-007, Firepower.¹³

Joint Pub 3-09 had been in draft for a decade before it was finally published in 1998, due in part, to the difficulties encountered in trying to reconcile divergent Service notions related to the FSCL and other operations in the deep battle.¹⁴ The challenge of joint operations and the capabilities of modern weapons and platforms has increased the complexity of the targeting process. By way of comparison, there is less of a requirement to coordinate actions in the close battle area and, therefore, focus is placed in the area of doctrinal friction; the more difficult deep operations area. Specifically, primary divergence concerning joint fires from the air and land forces perspective of prosecuting combat operations in the deep area; between the FSCL and the outer boundary of the land forces' Area of Operations.¹⁵ The notion of close, rear, and deep battle is a late Cold War product and has evolved over the last two decades.

¹³ See for additional information regarding FSCL: Canada. Department of National Defence. *Firepower*, Ottawa: National Defence Headquarters, 1999, 44-47.

¹⁴ Lieutenant Colonel (USA) Dewayne P. Hall, *Integrating Joint Operations Beyond the FSCL: Is Current Doctrine Adequate?*, Maxwell Air Force Base, Alabama: Air War College, 1997, 5.

¹⁵ Robert J. D'Amico, "Joint Fires Coordination: Service Competencies and Boundary Challenges," *Joint Forces Quarterly*, Spring 1999: 71.

Historically, the templated vision of the battlefield into close, rear, and deep battle areas occurred during the 1980s as a response to planning requirements to deal with a hostile Soviet threat. The land forces commander typically established the FSCL at the maximum effective range of his organic tube artillery. Battle from the forward line of friendly troops to the FSCL required a high degree of coordination with the supported land forces commander; the close battle. From the FSCL to the boundary of the AO, the deep battle area, less coordination was required with the commander. The land forces commander was the supported commander within his AO. Outside of designated land force(s) commander(s) AOs, the air force(s) commander was often the supported commander. Essentially, whoever could mass the preponderance of effects in a particular AO was the supported commander.

In the case of the air force commander in support of the designated surface commander, the focus prior to the Gulf War 1991 was on air interdicting targets before they could bring their combat power to bear against friendly ground forces in the close battle.¹⁶ As land forces commanders have obtained more organic firepower with the Apache helicopter, longer range rockets (MLRS), and Army Tactical Missile Systems (ATACMS), the range of 'Army influence' has pushed the FSCL out from 10 to 20kms of the Forward Line of Own Troops (FLOT), to 80km in front of the Corps in Operation Desert Storm.¹⁷ Today, ATACMS provide a range of approximately 165 to 300kms.¹⁸

¹⁶ Albert R. Hochevar *et al.* "Deep Strike: The Evolving Face of War," *Joint Forces Quarterly*, Autumn 1995: 81. See also, Mark Mandeles, Terry Hone and Sanford Terry, "Lt. Gen. Charles A. Horner as the First Joint Force Air Component Commander," Chapter 5, *Managing Command and Control in the Persian Gulf War*, Westpoint, Conn.: Preager, 1996, 121-148.

¹⁷ R. Kent Laughbaum. *Synchronizing Airpower and Firepower in the Deep Battle*. Maxwell Air Force Base, Alabama: Air War College, 1999, 37.

¹⁸ Lockheed Martin Corporation, *ATACMS Brochure*, Missiles and Fire Control Business Development, 2003, 2.

The difficulty for a land force commander is to set the FSCL at an appropriate location that is neither too deep nor shallow that may negatively affect potential for successful engagements. A FSCL that is too shallow may prevent effective manoeuvre of land elements, whereas a too deep FSCL may be outside of effective weapons range and inadvertently create a sanctuary for the enemy.¹⁹ As General “Chuck” Horner remarked:

I had trouble with the Fire Support Coordination Line placement.... At one point after the ground war started [in the Gulf War of 1991], the FSCL [moved to a position] well north of the Tigris River, yet all the Iraqi army was on the interstate highway between Kuwait City and Basrah approaching the river from the south, making the river an ideal FSCL.... The Iraqi army was getting across the river, giving them a free ride since we [air component forces] had to attack under close air support rules with no [forward air controllers] in the area.²⁰

Lieutenant-General Charles “Chuck” Horner, USAF
Desert Storm Air Component Commander

For years following, this incident has continued to spark the debate regarding where the elusive FSCL should be placed and under what criteria. It has also been suggested that the publishing of Joint Pub 3-09 was unduly delayed due to the impassioned parochial desires of component commanders to command resources to prosecute the battle in a manner that they decided.²¹ Politics notwithstanding, the position of the Air Force was that the FSCL should be positioned at the boundaries of where land power ceases to provide the preponderance of effects upon the enemy and aerospace effects are in the majority.²² Such a placement would further enhance the command and control of the Joint Force Air and Space Component Commander

¹⁹ Lieutenant-Colonel Mick Quintrall, “A Change-Challenge: The Fire-Support Coordination ‘Box’,” *Air & Space Power Journal*, Vol. 16, Issue 3, 2004: 9.

²⁰ Lieutenant-General Charles Horner, as quoted in Quintrall..., 8.

²¹ Colonel Jay M. Vittori, USAF, *Fighting Fires with Fire: An Airman’s Perspective on the Development of Joint Publication 3-09, Doctrine for Joint Fire Support*, Maxwell Air Force Base, Alabama: Air War College, 1999, 8.

²² United States. *JFACC Primer*, Washington: Government Printing Office, February 1994, 33.

(JFACC), who is normally the Joint Force Commander's (JFC) supported commander for theatre Air Interdiction (AI) efforts, and does not apply only to AI outside of the FSCL. The JFACC, "...[also] executes AI to provide effects for friendly forces executing land scheme of maneuver."²³

The point to be made here is that such counterland operations have to be controlled by the supported commander; land forces or amphibious forces commander, when short of the FSCL. During the drafting of Joint Pub 3-09, the Air Force asserted that the FSCL was a *restrictive* FSCM for conducting fires in the deep battle area. This was not the position of the land or amphibious force commanders that recognised the boundary as a permissive measure that required coordination. These points of view seemed to reinforce the observations that came out of Operation *Desert Storm*. An extreme example of "...the most important and misunderstood term in this war seemed to be the FSCL".²⁴

Unlike the Army, the US Marine Corps interprets the FSCL as authority to fire beyond it, regardless of boundaries, without coordination. The Air Force interpreted the FSCL as a restrictive fire support coordination measure directly opposed to joint and Army definition.²⁵

Desert Storm Deep Battle Observations

After years of debate, Joint Pub 3-09 supported the land forces view that the FSCL was not, in fact, a boundary for JFLCC and JFACC command and control demarcation. JP 3-09 supported the notion of the FSCL as a permissive fire coordination

²³ AFDD1, 54,55.

²⁴ JULLS [Joint Universal Lessons Learned System] Lessons Learned- Operation Desert Storm, 1992, 26. http://www.dtic.dla.mil/gulflink/db/army/080596_jun96_declas_17_0001.html; Internet; accessed 25 December 1996, as accessed and quoted by: Lieutenant Colonel (USA) Dewayne P. Hall, *Integrating Joint...*, 8.

²⁵ As quoted in Lieutenant Colonel (USA) Dewayne P. Hall, *Integrating...*, 8.

measure to be controlled by the land forces commander.²⁶ The JFACC is the supporting commander within the land forces Area of Operations (AO), except that Air Interdiction efforts outside of the AO have the JFACC as the supported commander.

USAF Air Force basic doctrine speaks plainly and makes it clear that from an airman's perspective that they are not pleased to be the supporting commander in the battlespace. Air doctrine points out "doctrine is about **integration... not just synchronization.**"²⁷ As it is highlighted from a passage in Joint Pub 0-2, "synchronization is the arrangement of military actions in time, space, and purpose to produce maximum relative combat power at a decisive place and time."²⁸ AFDD1, published in November 2003, goes on to assert that synchronization is "for surface forces... very useful for managing their scheme of maneuver. However, from an airman's perspective, synchronization is a tactical tool and doesn't necessarily scale up to the operational level."²⁹ It is hard to envision such a statement not sparking the ire of a land forces commander, as the implication is that surface manoeuvre elements are someeetD4p is 97 Tm(th)Tj1221 0 21527.93677 316.619 t is the a

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‘yesterday’s news’ and it is an accepted U.S. and NATO practice to organise the operational level HQ around the CJTF Commander and his functional component commanders, amongst others, to achieve the integrated and synergistic effects required in a truly joint HQ. In fact, the term *integrate* may not be enough for a modern military force of the future. In a transcript from an interview regarding lessons learned from the IRAQ conflict 2003, Major General Gordon Nash, USMC, opined:

You know, when I started out as a young lieutenant, we were worried about de conflicting – the Marines stayed on one side, the Army stayed on one side, the coalition forces stayed on one side. But we’ve done better to integrate these forces and in the future through the training, through the development of tactics, techniques, and procedures through the Joint National Training Capability, we want to no longer even have to integrate, we want to be totally one battle that combines both our service core competencies, the contributions of our civilian and military agencies. And we’ve got to look at it from a multi-national coalition perspective as well.³¹

If the key for the air force is the integration of scarce air resources to achieve synergistic effects,³² then General Nash is taking the argument to a different level. Intuitively, if there existed one amorphous joint force, then there should be less of a requirement to coordinate. This smacks of the promise of ‘network-centric warfare’ or perhaps more aptly labelled, ‘network-enabled warfare.’³³ Given the speed of capital acquisition, it is hard to imagine that during the next decade Canada would possess a complete network-enabled Canadian Forces that could offer a common operating picture to the level of fidelity the CF would be considered a truly combined battle force, as

³¹ Major General Gordon C. Nash, USMC, “Major General Gordon C. Nash (USMC) [Commander, Joint Forces Command Joint Warfighting Center] Holds News Briefing on Lessons Learned from Iraq Conflict,” News Briefing, FDCH Political Transcripts, Item: 32V2496169184; June 3, 2003.

³² AFDD1, 7.

³³ For a general overview of network-centric warfare and the implications of military command, see: Colonel Pierre Forgues, “Command in a Network-centric War,” *Canadian Military Journal*, Vol 2, No 2, Summer 2001: 22-30.

General Nash might envision. The CF needs to ‘walk before it runs’ and focus on being joint and interoperable with our own Forces first. In the interim, it is recognised that the hegemonic hyperpower south of the border is rapidly becoming network enabled over the next ten or fifteen years.³⁴ The CF will need to plan now if it wants to participate as a meaningful partner in the conflict operations of the future.

In addition to the more radical revolution of military affairs promised by the technology of NCW/NEW, the current paradigm for considering the geometry of the modern battlespace is already beginning to change. USCENTCOM has rethought its concept of operations for joint fires and how component commanders employ permissive and restrictive FSCMs. Specifically, CENTCOM is reducing the reliance on traditional FSCLs to coordinate joint fires and advocate the use of Close Air Support (CAS) and Air Interdiction (AI) grid boxes which are based on 30x30 nautical mile grid zones, which may be further sub-divided, that extend into the three dimensions. These three-dimensional boxes can be opened and closed to air or land forces in a myriad of configurations and are more suitable for non-contiguous operations than other FSCMs. These grid boxes may be opened on either side of the FSCL and provide greater flexibility and less coordination for the supported and supporting commander(s) during operations.³⁵

This evolutionary way of considering battlespace geometry is a more dynamic process than the traditional FSCMs and incorporates airborne C2 navigation and GPS to coordinate actions.³⁶ Although the concept of grid boxes appears somewhat radical, it is

³⁴ Forgues..., 24.

³⁵ Quintrall..., 10-12.

³⁶ *Ibid.*, 7.

not a replacement for existing doctrinal FSCMs...although it could be in the future.

USCENTCOM sees grid boxes as being a complementary FSCM and are still referring to the FSCL. CAS/AI grid boxes have proven dynamic and flexible to the needs of the warfighter on extensive exercises and during OP ENDURING FREEDOM in Afghanistan. As one USAF senior officer observed:

Codified CAS and AI grid-box procedures result in more permissive air fires, allow rapid ground maneuver across a three-dimensional battlefield, reduce the chance of fratricide, and mute parochial FSCL fights among the services by minimizing the overlap of battle-space fires and clearly defining the supported/supporting relationships in the ground commanders' areas of operations.³⁷

Ignoring for a moment the possible parochial interests of individual Services in the US or the military Environmental leadership in Canada, doctrine should be a reflection of collective lessons learned in conducting operations. Because Canada does not necessarily participate in all warfighting operations with US Forces, it does not bely the strategic imperative of being interoperable with the American military. Not only does this make good fiscal sense, it means that Canada can benefit from learning from the operational observations that have been learned by our southern ally.

It is likely that the most dangerous operation that Canada will likely be asked to participate is warfighting operations, likely in partnership with the United States and/or NATO. NATO also has a vested interest in being interoperable with the United States. Rather than spend scarce personnel resources on trying to develop a Canadian grown operational doctrine, it seems that the pragmatic alternative would be to embrace US military doctrine at par, with perhaps the proviso that the CF may choose to not adopt a particular aspect(s) of their doctrine. Notwithstanding, concerning the direction that the

³⁷ *Ibid.*, 16.

United States seems to be heading, it is a series of first steps towards a possible end-state of network-centric warfare capability. The addition of kill boxes to primary status as the FSCM of choice for air-land battle, seems to be only a matter of common technology and training limitations to be able to implement this FSCM. The benefits of adopting such an approach were highlighted and the interim step of adding kill boxes to the Canadian repertoire of FSCMs seems to have merit.

This essay began with the thesis that land and air component doctrine must be rationalised at the joint level in order to better integrate the combat power of land and air forces in the deep battlespace during warfighting. Given that aerospace doctrine is in such a poor state, it is probable that synergies would be found by first establishing a clear set of air force doctrine that would get rolled up into joint doctrine.

With a virtual blank canvas, the doctrinal discussion deduced that it was prudent to develop doctrine and procedures that would help Canadian Forces interoperate with US Forces. This economy of effort should reduce manpower requirements than if Canada wanted to develop doctrine in isolation. To narrow the beam further regarding the doctrinal debate concerning specific FSCMs in the deep areas, the FSCL was reviewed in some detail. Perhaps time may be in Canada's favour as the ample coordination requirements required when operating around the FSCL may be reduced significantly with the use of kill boxes and some C2 platforms and GPS systems.

In sum, land and air components must use a common language, purpose, philosophy, and unity of effort in order to better integrate combat power in the deep battlespace. During warfighting, any mission could be fatal. Joint doctrine promises to mitigate the risk of such an event, and therefore it should be pursued vigorously.

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