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RCAF Force Protection Modernization

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Exercise Solo Flight

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INTRODUCTION

The need for robust force protection of aircraft and airfield infrastructure is a necessity born of experience, compounded by both the high value nature of the targets, and the inherent fragility of air power. Generally speaking, aircraft are most vulnerable when they are on the ground, and their high level of support dependency means that they can be neutralized through sufficient damage to infrastructure or logistics support, even if the aircraft themselves remain unharmed. As a result of these factors, ground force protection is a serious consideration in Royal Canadian Air Force (RCAF) planning, and requires varying levels of active, passive, and reactive measures to shield the force, and enable air power delivery of joint effects to the battlespace.

The escalatory history of ground attacks on air assets demonstrates the increasingly complex nature of the threats they face in the modern era, as the RCAF engages simultaneously in conventional, irregular, and humanitarian mission set. These shifts demand a re-evaluation of current force protection methods in use by the RCAF. Existing models are disorganized and vary in effectiveness and reliability, resulting in potential vulnerabilities that can be exploited. The RCAF requires a dedicated force protection entity that is more capable of protecting RCAF aircraft, air crews, and infrastructure from the wide variety of modern threats.

GROUND THREATS TO AIRCRAFT AND AIRFIELDS

The first major incorporation of aircraft into warfare occurred during the First World War, as technological advances and the need to break the static stalemate of trench warfare drove aerospace innovation. Following the war, professional discussions of the

ramifications of air power to modern warfare became a prominent field of research. It was in this context that, as early as 1921, air power theorist General Giulio Douhet noted "it is easier and more effective to destroy the enemy's aerial power by destroying his nests and eggs on the ground than to hunt his flying birds in the air."[1]

It is a simple truth that even the most robust and capable combat aircraft becomes nearly defenceless while sitting on a runway or ramp. Aside from a paucity of integral defensive capabilities for aircraft on the ground, aircraft are generally extremely highly support dependant, requiring well-trained technicians, high quality fuel, and specialized logistical support. In fact, for every hour a combat aircraft spends in flight, it may require upwards of 20 man-hours of maintenance support.

These two characteristics of air power: fragility and support dependence[2], are particularly relevant to aircraft while on the ground, and the infrastructure and personnel required to support them. In terms of targeting, it follows that aircraft can most easily be neutralized by attacks while they are vulnerable – as Douthet so eloquently put it, like eggs in a nest. Furthermore, one need not even damage the aircraft themselves, as sufficient damage to airfields infrastructure has the potential to neutralize their ability to deliver effects in the battlespace.

CONVENTIONAL THREATS

It was within the context of Douthet's revelations that air power found itself facing new threats in the Second World War. The largely static nature of the previous war meant that it was unlikely enemy ground forces could infiltrate deep enough behind

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[1] Douhet, Giulio, Joseph Patrick Harahan, Richard H. Kohn, and Dino Ferrari. "The Command of the Air" (University of Alabama Press, 2009;2012): 54.

[2] Canada. Department of National Defence. B-GA-400-000/FP-001, "Royal Canadian Air Force Doctrine". (Trenton, ON: Canadian Aerospace Warfare Centre, 3rd Edition, November 2016): 14-15.

friendly lines to attack aerodromes. As a result, airfield defences were largely arranged to provide basic access control security and air defence against enemy aircraft. This perception changed when German Blitzkrieg tactics incorporated the use of air-dropped paratroopers into their invasions of Poland, Norway, and France. While these forces were often used to capture key terrain such as bridges and fortification ahead of armoured and mechanized forces, they were also widely used to capture airfields, allowing the Germans to deny their use to opponents and fly their own forces into the airhead.

The emerging conventional threat to airfields well behind friendly lines became clear over the course of the war. In Crete, Germany marked the first use of airborne forces en masse, allowing them to attack the defenders in depth. While their eventual victory was largely pyrrhic, they had great success in capturing Maleme airfield, despite the number of defenders, by exploiting their ineffectiveness in the close fight in the immediate vicinity of the airfield[3]. This experience formed the impetus for significant restructuring of the defence of airfields by Allied forces, with Prime Minister Winston Churchill himself weighing in following the easy German victory at Maleme.

> Churchill flatly declared he would no longer tolerate a half-million air force personnel without a combat role. All airmen were to be armed and trained, ready "to fight and die in defense of their airfields; ...every airfield should be a stronghold of fighting air-ground men, and not the abode of uniformed civilians in the prime of life protected by detachments of soldiers."[4]

In the years following the Second World War, the use of air power support to military operations increased, particularly with the advent of rotary wing helicopters. By the time of the Vietnam War, increasingly expensive and effective aircraft were fully

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[3] Vick, Alan, Rand Corporation, and United States. Air Force. Snakes in the Eagle's Nest: A History of Ground Attacks on Air Bases. Vol. MR-553. (Santa Monica, CA: Rand, 1995): 33.

[4] Fox, Roger P. 2014. Air Base Defense In The Republic Of Vietnam 1961-1973 [Illustrated Edition]. [San Francisco]: Normanby Press. eBook Chapter I, The Second World War.

incorporated into operations at the strategic, operational, and tactical levels. However, added to the conventional threat facing air forces during the Second World War, the asymmetric and insurgent character of the Vietnam War introduced new threats to airfield operations from sabotage, insider, and infiltration attacks. In addition, the increasing use of helicopters in support of air mobile operations and medical evacuations highlighted the vulnerability of rotary wing aircraft operating in front line landing zones, adding a new layer of threat to be considered and mitigated.

INSURGENCY THREATS

The complexity of the threat that insurgencies pose to air operations was foreshadowed in Vietnam, and continued in more contemporary NATO counterinsurgency operations in Afghanistan. In both wars, there remained the persistent threat of harassment, which eroded the morale of defenders, and the acute threat of coordinated direct attack in force. This acute threat was highlighted during the famous Tet Offensive in Vietnam with attacks launched against Tan Son Nhut and Bien Hoa airfields; and perhaps no single action during NATO's years in Afghanistan is more infamous than the Camp Bastion attack that resulted in casualties, damage to infrastructure, and destroyed aircraft[5].

The Tet Offensive of 1968 saw massive, coordinated attacks against high profile US and Republic of Vietnam targets all over the country. Included in these targets were the airfields of Tan Son Nhut and Bien Hoa, both crucial to the war effort, and significant bases of US air operations in Vietnam. The attacks were coordinated en mass, featuring five battalions attacking at Tan Son Nhut and three more at Bien Hoa, with the intent of

[5] Camp, Dick. "The Taliban Attack on CAMP BASTION." Leatherneck 100, no. 3 (03, 2017): 18.

overrunning defenders and causing maximum damage to personnel, aircraft, and infrastructure. While the Tet Offensive achieved operational-level surprise, the attacks on both airfields, coming in the hours after widespread attacks occurred across Saigon, did not achieve tactical surprise, and as a result both attacks were defeated at great loss to the attackers[6].

Camp Bastion in Afghanistan was the largest coalition base in Southwest Afghanistan, and the main hub for US Marine Corps and UK forces in the region. On September 14th, 2012, a well-planning and highly coordinated attack was launched by 15 Taliban insurgents, who breached perimeter defences and infiltrated the airfield flight line wearing US uniforms. Within minutes, the well-organized attackers successfully engaged multiple aircraft and critical infrastructure on the airfield. Over the next several hours, they managed to kill two US servicemen, wound 17 US and UK personnel, destroy six AV-8B Harrier jets, damage eight more aircraft, destroy three fuel bladders, and damage multiple maintenance hangars and aircraft parking bays[7]. While 14 of the infiltrators were killed and the remaining individual captured, the damage done was a serious propaganda coup for the Taliban, and a significant embarrassment for coalition force credibility.

PEACE SUPPORT AND HUMANITARIAN OPERATION THREATS

While the lessons of the two World Wars and counter-insurgency experience in Vietnam and Afghanistan were indicative of the nature of the threat adversaries pose to airfields, the full spectrum of air operations present unique threats within the scope of

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[6] Fox, Roger P. 2014. Air Base Defense […], eBook Chapter III, Battalion-sized Attacks.

[7] United States. Department of National Defense. AR 15-6 Investigation Report, "14-15 September 2012 Attack on the Camp Bastion, Leatherneck, and Shorabak (BLS) Complex, Helmand Province, Afghanistan". (Fort Bragg, NC: Headquarters, United States Army Forces Command, 19 August 2013): 2.

peace support, stability, and humanitarian operations. While in these complex environments there often remains some low intensity threat to airfields the RCAF may operate from, it is also increasingly likely that this lower threat will see aircraft operating in austere environments, far from the relative security of well-defended airfields. In these scenarios, there remain threats to individual aircraft and crews from criminal or unconventional entities, as well as danger from crowds of people seeking assistance or escape. By way of example, multiple incidents of competition and infighting between rival militia groups in Tripoli, Libya, presented a significant collateral threat to aircraft attempting to use the Tripoli International Airport. For an example of the danger of crowds of desperate civilians, the evacuations of Afghans in Kabul during the fall of the government to the Taliban in 2021 serve as an excellent reminder.

Following the NATO air campaign in 2011 and the fall of the Ghaddafi regime, efforts were made to reopen the Canadian embassy to assist restoring stability and normality after the First Libyan Civil War[8]. In the years the followed, various regional and tribal militia groups that participated in the civil war competed for power and prestige, resulting in a multitude of attacks and incidents at the Tripoli International Airport. There were clashes between rival militias wishing to control the airport as a lucrative source of income in 2012, and the high profile kidnapping of government officials in 2013. Eventually, the airport was severely damaged during surging violence from the Second Libyan Civil War, and it – along with the Canadian Embassy – were forced to close in 2014[9]. These incidents occurred with little notice, and would be

[8] Blanchfield, Mike. The Canadian Press. Canada to reopen embassy in Tripoli. Toronto, ON: Toronto Star. 12 September 2011.
[9] The Canadian Press. "Canada shuts diplomatic operations in Libya, pulls staff", (Toronto, ON: Toronto Star. 29 July 2014)

extremely difficult for intelligence professionals to predict, presenting a significant threat to any aircraft and air crews operating from the airfield.

As US forces withdrew from Afghanistan in 2021, the Taliban surged forward, routing Afghan security forces in their path. This resulted in an extremely chaotic non-combatant evacuation operation, as many countries scrambled to evacuate their citizens and other entitled persons[10]. The security situation at the Kabul airfield was tenuous, and local security forces were bolstered by quickly-deployed troops from the US 82nd Airborne Division. In order to support Canada's need to shepherd entitled persons from Kabul city to the airport and onto awaiting aircraft, members of Canadian Special Operations Forces were deployed to provide force protection to evacuees as well as Canadian aircraft and crews[11]. The threat facing them varied from the potential for direct, indirect, or suicide attack, to the less intentional and more chaotic threat of stampedes and swarming by locals desperate to escape Afghanistan. The situation was so volatile that at least one US C-17 flight resulted in multiple Afghan civilians dying inside the aircraft wheel wells, and others falling to their deaths when they attempted to cling to the sides of the departing aircraft.

THREAT SUMMARY

Aircraft on the ground, their supporting crews, and airfield infrastructure are all inherently vulnerable to a variety of threats, ranging from conventional military attack by enemy forces to acts of desperation or criminal intent carried out by civilians. The nature of these threats has evolved over time, as the mission set for military aircraft has evolved

[10] Canada. Department of National Defence. "Operation AEGIS", (Government of Canada Website. 4 October 2021)

[11] Zimonjic, Peter. "Special forces working outside of Kabul airport to escort Canadians, Afghans on to flights to Canada: official", (CBC News. 23 August 2021)

to incorporate operations beyond conventional warfare. While the last several decades have seen a greater emphasis on the threats from unconventional, terrorist, and peace support operations, Russia's recent invasion of Ukraine, and their repeated airborne and air mobile attacks on Hostomel Airport near Kyiv[12] were a stark reminder that the conventional threat of ground attack on airfields remains very relevant in the modern age.

AIR FORCE PROTECTION MODELS

As new threats emerged to target air power at its most vulnerable ground-based points, so to did the models of force protection used to secure valuable air assets and preserve their ability to deliver effects in the battle space. In the First World War, threats to aerodromes from the ground were largely criminal, sabotage, or air attack; as a result, access the main focus was on access control and air defence. As the threat of airborne forces appearing deep behind friendly lines emerged, significant changes were made to airfield security.

DEVELOPMENT OF DEDICATED DEFENCE FORCES

The German invasion of Crete in the Second World War – specifically their capture of the Airfield at Maleme – spurred the creation of specialized air base defence forces within both the UK and the US[13]. Analysis following the battle for Crete indicated a specific weakness in the close defence of Maleme airfield, as assigned UK Army defenders had focused primarily on strongpoints around the perimeter and approaches to the airfield. Once this perimeter was breached, RAF personnel on the airfield were

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[12] Marson, James. "Putin Thought Ukraine would Fall Quickly. an Airport Battle Proved Him Wrong. Russia Wanted to use Hostomel Airport Outside Kyiv to Bring Troops Directly to the Capital. A Band of Ukrainian Soldiers Fought to Keep the Russians from using the Landing Strip, Forcing them to Move Soldiers and Supplies Over Land." *Wall Street Journal (Online),* Mar 03, 2022.

[13] Vick, Alan, Rand Corporation, and United States. Air Force. "Snakes in the Eagle's Nest […], 21.

extremely vulnerable to German attackers. Worse still, poor coordination between the RAF and Army commanders meant that rather than counter attack at critical places and times, Army forces withdrew[14]. In order to harden the ability of the RAF to defend its own assets and infrastructure – in no small part driven by the extreme displeasure of the Prime Minister – the RAF Regiment was created. Following suit based on their shared perspective of the results of the Battle of Crete, the USAF created Air Base Defense Battalions.

The role of the RAF Regiment and what would later become USAF Security Forces was to provide protection to air installations, particularly close-in defence of critical equipment, personnel and infrastructure internal to the airfield. While Army or host nation forces may supplement air base defences external to the airfield, it was the intent of these dedicated forces to maintain the capability to detect, defend, and destroy attackers. Suitably trained and equipped with weapons and vehicles designed to ensure their ability to quickly bring sufficient firepower to bear to supress of defeat infiltrating attackers, air base defence forces became a core element of every air base through the remainder of the Second World War and beyond. During the Vietnam War, faced with and increased threat from insurgent attackers, USAF Security Forces put significant time and effort into training Republic of Vietnam air base defense forces, determining that the complexity of defending airbases required specific preparation and training[15].

In the period following the Cold War, as counter-terrorism, counter-insurgency, peace support and humanitarian operations began to place increased demands on military air power, the threats faced by aircraft – particularly air mobility transport aircraft,

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[14] Vick, Alan, Rand Corporation, and United States. Air Force. Snakes in the Eagle's Nest […], 32.
[15] Fox, Roger P. 2014. Air Base Defense […], eBook Chapter V, Training in RVN and the United States.

increased. No longer operating solely from well-defended coalition airfields, air mobility aircraft were often employed landing in austere or less-secure locations – as observed in previous examples of Tripoli, Libya, and Kabul, Afghanistan. As a result, in addition to their responsibilities in protecting airfields, both the RAF Regiment[16] and USAF Security Forces[17] developed specialist capabilities for fly-away security teams. These are specially trained teams – normally two to eight in size – who accompany air mobility missions and provide protection to the crew and aircraft while on the ground, as well as a measure of security to the air crew while in transit on occasions where they may be carrying passengers who present a threat. This capability is considered crucial to the security of air mobility operations in environments of degraded security, where an isolated high-value and high-profile transport aircraft could make an appealing target to many nefarious actors.

DEVELOPMENT OF AIR BASE DEFENCE MODELS

Air base defences are typically constructed based on a combination of both passive and active measures. Passive measures include barriers such as walls, fencing, or ditches; hardening of infrastructure such as hangars, fuel, and ammunition dumps; camouflage and deception to hide the location of critical infrastructure and communications equipment; and dispersal, to reduce the impact of damage to any one area of the airfield. While important, this paper is focused primarily on the active measures of defence, intended to deter, detect, mitigate, and respond to threats to airfield and aircraft.

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[16] Ripley, Tim. "RAF Regiment Takes on Aircraft Protection Role." Jane's Defence Weekly 53, no. 48 (2016).
[17] Garland, Chad. “Air marshals of Afghanistan’: Fly-away security teams guard planes, crews on high-risk flights.” Stars and Stripes. 21 October 2016.

The same event that precipitated the creation of specialized air base ground defence forces also resulted in the development of improved models for their defence. One of the critical failures highlighted by the attack on Maleme airfield was the problem of close-in defence. Once the initial perimeter was overrun, there was little to protect critical airfield infrastructure, equipment, and resources; nor were there any forces at the ready to launch counterattacks. This same flaw in German airfield defence was exploited during the African Campaign of the Second World War, when members of the UK Special Air Service were able to use light vehicles and barren desert terrain to raid airfields deep behind German lines, and then withdraw before any serious defence could be mustered[18].

The improved concept – which remains largely relevant to modern airfield defence – involved the creation of concentric layers of defence, in what could be referred to as "zones of increasing resistance.[19]" The first layer of defence is the perimeter of the airfield which would use a combination of active and passive measures to deter attackers and prevent close reconnaissance by presenting outwardly imposing defences; detect intruders; inform defenders of the incoming attack; and if possible engage them to delay or disrupt their attack[20]. This line often includes fences, manned fighting positions near entrances, observation towers, and active patrols of the area outside the perimeter. In modern settings this first line is often supported with the addition of cameras, alarms, and other sensor and ISR systems to improve their ability to detect intruders, even in the absence of patrols or observation towers.

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[18] Vick, Alan, Rand Corporation, and United States. Air Force. Snakes in the Eagle's Nest […], 42.
[19] Fox, Roger P. 2014. Air Base Defense […], eBook Chapter V, Concept of Operations.
[20] Canada. Department of National Defence. B-GA-405-001/FP-001, "Aerospace Force Protection Doctrine". (Trenton, ON: Canadian Aerospace Warfare Centre, 2008): 36.

The second layer occupies the space inside the perimeter between that line and critical airfield infrastructure such as fuel and ammunition dumps. This typically comprised of checkpoints, fighting positions at key locations, and roving patrols. The purpose of this layer is to detect intruders who manage to breach the first line, a raise the alarm and attempt to engage and delay or disrupt the attack. While the first layer often contains mostly static defences, the second is often highly mobile, and more reliant on vehicles to patrol and respond to threats.

The third layer comprises close-in defences for operational infrastructure, equipment, and personnel. These are typically static sentries and fighting positions intended to provide robust point-defence for high value assets like alert aircraft or command and control nodes. The intent of this layer is to prevent the successful destruction of mission crucial operational capabilities, and to block and ideally fix enemy forces as their attack loses momentum. The final component of this layered defence is the ability to respond and counterattack to defeat the attack. This typically comprises some form of high readiness and highly-mobile Quick Reaction Force (QRF), which can organize and mobilize to any location on the airfield within a short period of time – typically within minutes of an incident or attack.

It is worth noting that the layered defence described above requires significant investment of resources to function properly. It requires construction of infrastructure, development and maintenance of policy and procedures, sufficient manpower to maintain a constant state of security, as well as multiple enabling capabilities such as intelligence and transportation support. For this reason, it is often scaled appropriately to the level of threat faced. For example, while a deployed operation in a high threat environment might have a battalion responsible for defence of the airfield complex, and a QRF platoon

armed with vehicle-mounted heavy weapons, a domestic military airfield in a low threat environment might rely on fencing, security cameras, unarmed access control sentries, and an armed response of little more than a pair of military police cars.

While the layered concept of air base defence has proven effective at preventing and repelling attacks, the attack on Camp Bastion in 2012 offers significant insights into what can go wrong with this model when the required investment of resources is paid lip service. Complacency and competing demands for resources were both critical factors in the success of the Taliban attack, despite what on paper would appear to have been a well-defended and heavily-armed coalition base. However, lax security procedures permitted the Taliban to conduct close reconnaissance of the base, and to discover vulnerabilities in the first layer of perimeter defence[21].

Responsibility for the manning of perimeter observation towers was somewhat unclear, and insufficient personnel were allocated to man all positions. As a result, the Taliban were able to infiltrate the airfield undetected, and their presence was not known until the shooting began. To their credit, air and ground servicing crews of the aircraft that were attacked took up arms and fought well, with US Marine Corps air crew in particular killings several of the attackers. However, despite these efforts, this third layer of defence was unable to prevent the destruction of a significant number of critical operational assets. While QRF forces from the RAF Regiment and USMC arrived on the scene quickly, it still took over four hours for the attackers to be located and defeated.

RCAF FORCE PROTECTION

[21] United States. Department of National Defense. AR 15-6 Investigation Report, […], 4.

RCAF force protection finds its foundation with the operational function of Shield, which "protects a force, its capabilities, and its freedom of action"[22]. From this conceptual and functional basis, the RCAF published in 2008 its Aerospace Force Protection Doctrine as a guide to operational planning and the development of specific force protection policies and procedures for RCAF formations and units. It defines the various force protection actions as Precautionary Measures, Detect and Warn, Mitigate, Respond, and Manage Consequences[23]. These actions are in keeping with allied concepts of operation for air base defence, leveraging a combination of active and passive defensive measures designed to prevent, detect, and defeat threats to maintain operational capabilities.

In order to determine what procedures and resources need to be applied to a given operation, the RCAF uses a complex risk management process, which assesses threats against friendly vulnerabilities. The resulting assessed risk must be mitigated using appropriate protective measures in order to lower residual risk to operations to an acceptable level. In practice, this means determining what actions or resources are needed to deter or defeat threats to RCAF mission success.

TYPES OF RCAF OPERATIONS

RCAF operations can be broadly divided into domestic and deployed categories. For domestic operations, there are several force protection requirements, including NORAD mission assurance, aircraft security – when operating outside main operating bases – and base/airfield security. While each of these mission sets are normally carried

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[22] Canada. Department of National Defence. B-GA-405-000/FP-001, "Canadian Forces Aerospace Shield Doctrine". (Trenton, ON: Canadian Aerospace Warfare Centre, 1st Edition, February 2012): 1.
[23] Canada. Department of National Defence. B-GA-405-001/FP-001, "Aerospace Force Protection Doctrine". (Trenton, ON: Canadian Aerospace Warfare Centre, 2008): 23.

out in a relatively low-risk environment, critical to the scalability of force protection capabilities is the ability to surge during periods of heightened threat. To this end, the RCAF requires deployable and scalable security forces at relatively high readiness to surge when and where they are needed within Canada.

Of particular note for domestic operations is the requirement to provide NORAD mission assurance – a level of security that ensures that alert force operations cannot be effectively impeded by known threat actors. To meet these requirements, persistent elevated security forces at the NORAD-associated main operating bases (MOBs) in Cold Lake and Baggotville; the ability to surge elevated security forces at deployed operating bases (DOBs) such as Comox, Trenton, and Greenwood; and the ability to deploy security forces to forward operating locations (FOLs) like Yellowknife, Inuvik, and Iqaluit[24]. Because of the constant high readiness of NORAD alert aircraft, force protection security forces must also be available on short notice, and available in sufficient numbers to permit maintenance of security in numerous locations at the same time. It is not outside the realm of possibility that the RCAF could be required by NORAD to maintain alert status in both MOBs and multiple DOB/FOLs at the same time.

For deployed operations, force protection requirements include airfield security and aircraft security – particularly air mobility and aviation assets. Both these requirements are especially necessary when airfields or landing zones – either those being used as a base of operations, or those being projected to by transport aircraft – are austere or otherwise lacking in sufficient integral security. Whereas domestic missions are typically carried out in low-risk environments, it can be anticipated that deployed

[24] Canada. Department of National Defence. "1 Canadian Air Division Orders, Volume 3". (Winnipeg, MN: 1 Canadian Air Division, 21 March 2022): 123.

operations may occur within high-risk environments, necessitating a more robust and capable force protection capability. While many deployed operations are of a deliberate nature that allow for sufficient time to generate required forces, others such as NEO or crisis response operations may occur on condensed timelines, leading to a requirement for high readiness forces capable of providing forces protection to deploying aircraft on condensed timelines.

DOCTRINAL RCAF SOLUTIONS

The RCAF currently meets their various force protection requirements through a patchwork of security forces, many of which are generated from outside the RCAF. Day-to-day security of airfields is provided-for by the CAF Military Police (MP) branch, who typically shoulder this security responsibility on RCAF Wings alongside their policing duties[25]. In addition, the MP branch provides specially-trained deployable security teams for RCAF air mobility aircraft in the form of tactical aircraft security officers (TASOs), whose role is to protect air mobility crews and aircraft on missions with an elevated risk level generated by passengers and/or destination locations[26].

Operating in both a surge capacity and in support of day-to-day NORAD security requirements, the RCAF relies upon the Wing auxiliary security force (WASF). As per CAF Aerospace Force Protection Doctrine:

> The WASF is an augmentation force formed and trained to provide an armed guard force for an expanded security role that is generated by a threat or incident outside of normal operations. The WASF is drawn from wing

[25] Canada. Department of National Defence. B-GA-405-001/FP-001, "Aerospace Force Protection Doctrine". (Trenton, ON: Canadian Aerospace Warfare Centre, 2008): 49.
[26] Canada. Department of National Defence. "1 Canadian Air Division Orders, Volume 3". (Winnipeg, MN: 1 Canadian Air Division, 21 March 2022): 313

> personnel as a secondary task to their primary role and is comprised of personnel from any occupation.[27]

The role of the WASF is to supplement existing MP security on RCAF Wings, and maintain readiness to support with access control, cordon and search, security patrols and vital point security. In practice, this means WASF is generally activated in response to changes in force protection levels at a wing; however for fighter wings in Cold Lake and Bagotville in particular, WASF personnel have an active full-time role in vital point security in support of NORAD mission assurance. In addition, WASF makes up the core of the RCAF domestic deployable security capability for fighter operations at DOB and FOL locations. While WASF personnel receive training and are issued equipment specific to their security taskings, it must be noted that as this is a secondary duty, they cannot be considered highly-trained in the role, and generally rely on support and leadership from MPs located at each Wing. In addition, the primary source of manpower for WASF is typically drawn from among aircraft maintenance personnel on each wing, meaning that every time WASF is activated, there is an impact on the ability of the wing to sustain its routine operational tempo.

For international deployed operations, the RCAF relies upon support from the MP branch, the Canadian Army (CA), allied and host nation forces, and occasionally upon the Canadian Special Forces Command (CANSOFCOM). In addition, 1 Canadian Air Division orders indicate that "WASF personnel could be tasked to support expeditionary missions by augmenting security forces operating inside the Close Defence Area (CDA)

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[27] Canada. Department of National Defence. B-GA-405-001/FP-001, "Aerospace Force Protection Doctrine". (Trenton, ON: Canadian Aerospace Warfare Centre, 2008): 49.

of a deployed airfield.[28]" The preferred force protection model for deployed RCAF operations relies upon CA or host nation forces to provide close approach and perimeter security for airfields, with the RCAF supplementing CDA security with MP forces and/or WASF[29]. When it comes to aircraft security for air mobility and aviation assets, the RCAF typically relies on MP TASOs, CA door-gunners for helicopters, or on ad hoc solutions developed for specific operations wherein CA or CANSOFCOM forces are assigned to protect aircraft operating in elevated risk environments.

A core vulnerability of the deployed models is that they rely upon support from organizations outside the RCAF, whose availability is not always assured, and who may end up reprioritized elsewhere once an operation begins. For deployed aircraft security in particular, the RCAF has no provision for the training or use of WASF in this role, meaning they are entirely reliant upon the MP branch. As the CAF faces growing issues of manpower shortages, the ability of these outside organizations to continue providing the RCAF with the same level of support is in question. As a 2018 evaluation of military police services report pointed out, "CAD utilizes MP to conduct TASO/Ground Security FP tasks. The continued evaluation of these tasks has reached a point that they now significantly hinder the CFPM/Comd CF MP Group to deliver policing, custody, and security services.[30]"

MODERNIZING RCAF FORCE PROTECTION

[28] Canada. Department of National Defence. "1 Canadian Air Division Orders, Volume 3". (Winnipeg, MN: 1 Canadian Air Division, 21 March 2022): 131.
[29] Ibid, 132.
[30] Canada. Department of National Defence. 1258-3-018, "Evaluation of military police services". (Ottawa, ON: Assistant Deputy Minister (Review Services), June 2018): 36.

In general, RCAF doctrine and concept of operations towards air base defence and force protection mirrors that of allied nations such as the US and UK. It adopts a layered approach to ground defence, with the air force taking on primary responsibility for the close-in or close defence area component of airfield security. However, unlike our allies, the RCAF does not take primary responsibility for the security of deployed air mobility and aviation aircraft, nor does it have integral forces whose primary role lies in airfield defence. This difference represents a significant delta between the force protection capabilities of the RCAF and allied forces. More than that, it represents a risk to RCAF operations and our ability to ensure adequate force protection of our forces.

In investigations and analysis of what went wrong with force protection at Camp Bastion, US and UK reports identified a lack of resources, disunity of command and responsibility, and complacency as major factors in the outcome[31]. While sufficient infrastructure existed to establish an appropriate layered defence, insufficient personnel were assigned to the defence of Camp Bastion's perimeter and interior; insufficient emphasis was placed upon maintenance of proper security protocols; and there was insufficient coordination between the various units responsible for defence. These failures – the metaphorical alignment of holes in the Swiss cheese of security at Camp Bastion – bear striking resemblance to the current RCAF approach, where inadequate resources, complacency, and a complicated patchwork of force protection models create the potential for vulnerabilities to be exploited.

Most force protection tasks within the RCAF are outsourced as a matter of policy. Whether the MP branch, the CA, CANSOFCOM, or allied/host nation forces, the RCAF

[31] United States. Department of National Defense. AR 15-6 Investigation Report […] ,19-31.

appears to prefer handing off responsibility for force generation of security forces. While it could be argued that this is merely the most efficient way to make best use of limited CAF resources, this argument conveniently overlooks the fact that reliance on outside sources carries risk – the greatest being that they will say no. As the world enters an era of a return to great power competition, so too will competition for resources increase within the CAF and allied forces. While the MP branch has indicated as far back as 2018 that their resources to support the RCAF were growing thin, it is easy to envision a future where the CA has too much on their plate to contribute combat arms forces to force protection on behalf of the RCAF. It is worth noting that during their contribution to force protection of RCAF crews and medics in Task Force Mali[32], the CA did not have significant competing demands for resources elsewhere. It is very likely that had the same request been made during the height of the war in Afghanistan, the CA would have been unable – and unwilling – to provide.

There are significant inherent risks baked into the current RCAF force protection model – risks with the potential to damage not only to personnel, equipment, and capabilities of the RCAF but to reputation of the CAF should our vulnerabilities be exploited. To mitigate these risks, the RCAF should pursue the creation of dedicated integral security forces whose primary task is devoted to the force protection of RCAF assets and personnel, focused particularly on maintaining an effective deployable capability. While allies in the RAF and USAF have sizable elements devoted to this task, it is likely that the RCAF could achieve a significant capability with as little as two

[32] Thatcher, Chris. "Force Protection in Mali: Infantry on the ground; Medics in the air." (Canadian Army Today. 27 March 2019)

companies-worth of security forces with the primary mission to deploy in support of NORAD or overseas operations.

CONCLUSION

Military history from the 20th century tells us that airfields and aircraft are a likely high payoff target for adversaries and malign actors, and emerging 21st century trends in Libya, Syria, Afghanistan and Ukraine indicate that this problem remains extremely relevant. With the expansion in roles air forces take on – including those other-than-war such as humanitarian and evacuation operations – the ground threat to air operations has become more varied and complex. Within the context of the maturing of the role of – and threat to – air forces in warfare, it is crucial that the nature of force protection modernize alongside it. Canada's allies each learned through hard experience the need for dedicated air force security forces. While Canada has thus far been spared that experience, we would do well to learn from theirs and adapt before a crisis occurs. To this end, it is imperative that the RCAF modernize and increase its integral force protection capability.

BIBLIOGRAPHY

Blanchfield, Mike. The Canadian Press. Canada to reopen embassy in Tripoli. Toronto, ON: Toronto Star. 12 September 2011.

Camp, Dick. The Taliban Attack on CAMP BASTION. Leatherneck 100, no. 3. 03, 2017.

Canada. Department of National Defence. B-GA-400-000/FP-001, Royal Canadian Air Force Doctrine. Trenton, ON: Canadian Aerospace Warfare Centre, 3rd Edition, November 2016.

Canada. Department of National Defence. B-GA-405-001/FP-001, Aerospace Force Protection Doctrine. Trenton, ON: Canadian Aerospace Warfare Centre, 2008.

Canada. Department of National Defence. Operation AEGIS. Government of Canada Website. 4 October 2021.

Canada. Department of National Defence. 1 Canadian Air Division Orders, Volume 3. Winnipeg, MN: 1 Canadian Air Division, 21 March 2022.

Canada. Department of National Defence. 1258-3-018, Evaluation of military police services. Ottawa, ON: Assistant Deputy Minister (Review Services), June 2018.

Douhet, Giulio, Joseph Patrick Harahan, Richard H. Kohn, and Dino Ferrari. .The Command of the Air. University of Alabama Press, 2009;2012.

Fox, Roger P. Air Base Defense In The Republic Of Vietnam 1961-1973 [Illustrated Edition]. San Francisco, CA: Normanby Press, 2014.

Garland, Chad. Air marshals of Afghanistan': Fly-away security teams guard planes, crews on high-risk flights. Stars and Stripes. 21 October 2016.

Marson, James. "Putin Thought Ukraine would Fall Quickly. an Airport Battle Proved Him Wrong. Russia Wanted to use Hostomel Airport Outside Kyiv to Bring Troops Directly to the Capital. A Band of Ukrainian Soldiers Fought to Keep the Russians from using the Landing Strip, Forcing them to Move Soldiers and Supplies Over Land." *Wall Street Journal (Online),* Mar 03, 2022.

Ripley, Tim. RAF Regiment Takes on Aircraft Protection Role. Jane's Defence Weekly 53, no. 48. 2016.

Thatcher, Chris. Force Protection in Mali: Infantry on the ground; Medics in the air. Canadian Army Today. 27 March 2019.

The Canadian Press. Canada shuts diplomatic operations in Libya, pulls staff. Toronto, ON: Toronto Star. 29 July 2014.

United States. Department of National Defense. AR 15-6 Investigation Report, 14-15 September 2012 Attack on the Camp Bastion, Leatherneck, and Shorabak (BLS) Complex, Helmand Province, Afghanistan. Fort Bragg, NC: Headquarters, United States Army Forces Command, 19 August 2013.

Vick, Alan, Rand Corporation, and United States. Air Force. Snakes in the Eagle's Nest: A History of Ground Attacks on Air Bases. Vol. MR-553. Santa Monica, CA: Rand, 1995.

Zimonjic, Peter. Special forces working outside of Kabul airport to escort Canadians, Afghans on to flights to Canada: official. CBC News. 23 August 2021.