

CANADIAN FORCES AEROSPACE MOVE DOCTRINE





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CANADIAN FORCES
AEROSPACE
MOVE
DOCTRINE



PREFACE

This manual provides the operational-level doctrine for the Move sub-function of the Royal Canadian Air Force (RCAF). While intended primarily for the operational level, it also describes fundamentals applicable at the strategic and tactical levels. This manual has been designed for use by the following:

- a. Canadian Forces (CF) schools and academies that train, indoctrinate and develop personnel in air mobility and personnel recovery operations, including search and rescue (SAR);
- b. CF aerospace units and headquarters; and
- c. other CF elements proposing to command or support CF aerospace forces.

This manual is presented in four chapters:

- a. **Chapter 1 – Fundamentals.** Provides an overview of Move, including rationale for RCAF Move, the principles of war applicable to Move, and factors and characteristics driving Move solution options.
- b. **Chapter 2 – Air Mobility.** The air mobility capability includes both airlift and air-to-air refuelling roles. The airlift role involves the domestic and international airlift of personnel and materiel. In addition to providing the airlift needed for global military operations, CF airlift forces are also employed in the deliverance of humanitarian assistance following a natural disaster, and may be used for the airlift of personnel during non-combatant evacuation operations. The air-to-air refuelling role permits either extended range or extended duration of operations involving receiver aircraft, thereby enabling air force reach on a global basis.
- c. **Chapter 3 – Personnel Recovery.** The personnel recovery capability spans the spectrum of recovering persons in distress and/or isolated personnel from no-threat to high-threat environments. Associated roles include domestic SAR, combat recovery, combat SAR, and hostage rescue. Aside from robust military domestic SAR forces that operate in conjunction with the Canadian Coast Guard, the balance of personnel recovery roles are normally conducted in partnership with allied forces and/or Canadian special operations forces.
- d. **Chapter 4 – Command and Control.** Command and control organizations accommodate air mobility and personnel recovery forces conducting domestic and global operations, as well as in the support of Canada Command (Canada COM), Canadian Expeditionary Force

Command (CEFCOM), and Canadian Special Operations Forces Command (CANSOFCOM).

The manual is to be used in conjunction with:

- a. B-GA-400-000/FP-000, *Canadian Forces Aerospace Doctrine*;
- b. B-GA-401-000/FP-001, *Canadian Forces Aerospace Command Doctrine*;
- c. B-GA-402-000/FP-001, *Canadian Forces Aerospace Sense Doctrine*;
- d. B-GA-403-000/FP-001, *Canadian Forces Aerospace Shape Doctrine* (to be promulgated);
- e. B-GA-404-001/FP-001, *Canadian Forces Air Mobility Doctrine* (to be promulgated);
- f. B-GA-404-002/FP-001, *Canadian Forces Search and Rescue Doctrine* (to be promulgated);
- g. B-GA-405-000/FP-001, *Canadian Forces Aerospace Shield Doctrine*;
- h. B-GA-406-000/FP-001, *Canadian Forces Aerospace Sustain Doctrine*; and
- i. B-GA-407-000/FP-001, *Canadian Forces Aerospace Generate Doctrine* (to be promulgated).

Recommendations for amendments to this publication are welcome and should be forwarded to the Canadian Forces Aerospace Warfare Centre (CFAWC), attention: Doctrine Development Branch.

The Commander 2 Canadian Air Division (2 Cdn Air Div) is the ratification authority for this doctrine.

KEYNOTES

These keynotes are the fundamental beliefs upon which Move doctrine is built:

- ✦ Royal Canadian Air Force “Move is a ‘time and space’ concept,”¹ providing rapid and precise positioning of personnel and materiel over potentially great distances (i.e., getting the right stuff to the right destination at the right time).
- ✦ The paramount benefit of RCAF Move is saved time in moving personnel and materiel; however, it must be leveraged in light of its limitations.
- ✦ “Move is ‘effects’ driven,”² meaning that desired operational effects drive the means of accomplishing those effects.
- ✦ Canada’s expansive domestic region, along with its commitment to global events, requires effective and responsive RCAF Move.
- ✦ Air mobility is a generic capability that encompasses the roles of airlift and air-to-air-refuelling.
- ✦ Both rotary- and fixed-wing airlift forces are critical to the success of Move-related operations.
- ✦ “Airland delivery, as opposed to airdrop [delivery], is the preferred method of delivery when conditions permit, because it is the more efficient, safer, and less expensive way to deliver personnel and materiel.”³
- ✦ Air-to-air refuelling permits increased range, payload, persistence, and flexibility of receiver aircraft.⁴
- ✦ Personnel recovery is an umbrella capability that addresses the sum of military, diplomatic, and civil efforts to recover and reintegrate isolated personnel and/or recover persons in distress, and covers a spectrum of roles from no threat to high threat.
- ✦ Centralized control of air mobility is essential given its “global responsibility, multiple competing common users, and the necessity to prioritize and apportion limited resources.”⁵

1 Canadian Forces School of Aerospace Studies (CFSAS), Air Force Officer Development (AFOD), *AFOD Block 3, System Perspective*, Module 8, 3.

2 Ibid., 7.

3 US AFDD [Air Force Doctrine Document] 2-6, Air Mobility Operations, March 1, 2006, http://www.dtic.mil/doctrine/jel/service_pubs/afdd2_6.pdf, x.

4 Ibid.

5 Ibid., 13.

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CHAPTER 1

FUNDAMENTALS



INTRODUCTION

Air forces exist to exercise aerospace power on behalf of the nation. This is accomplished primarily through the exploitation of the air and space environments to achieve assigned objectives. A century of air warfare has demonstrated that all effective air forces, whether they are large or small, are capable of performing a number of specific functions.

These functions are influenced by the physical possibilities and limitations imposed by the environments and by each other. One cannot efficiently or effectively work without the other; however, it is the unique capabilities of each function that when integrated with the other functions ensure the proper application of aerospace power. Aligned with CF doctrine, Canadian aerospace doctrine consists of the following six functions:

Move

The sub-function that exploits global reach and speed of aerospace power to rapidly deploy and position personnel and materiel to achieve desired effects.

COMMAND – SENSE – ACT – SUSTAIN – SHIELD – GENERATE

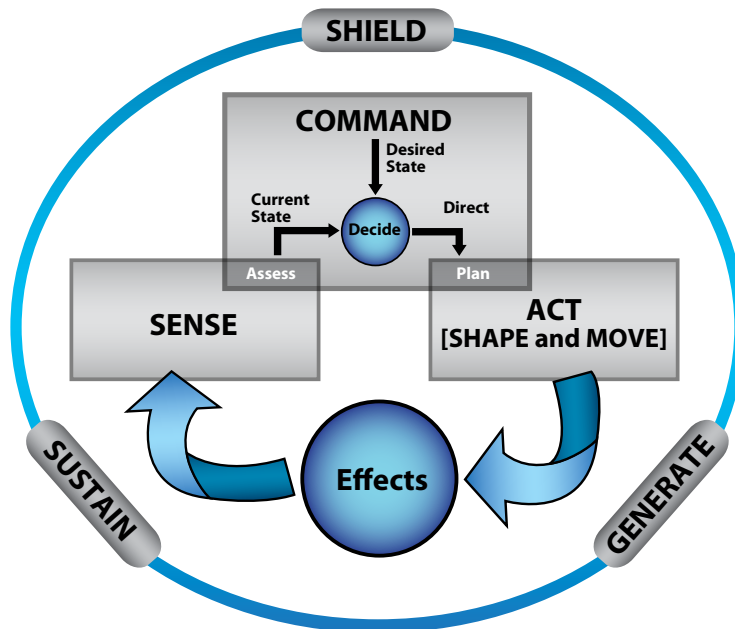


FIGURE 1-1. THE ROYAL CANADIAN AIR FORCE FUNCTIONS ^{1,2}

¹ The Act Function comprises the two sub-functions of Shape and Move.

² Refer to the keystone aerospace operational doctrine handbooks for a detailed discussion of the other RCAF functions or sub-functions.

In order to conduct aerospace operations and activities, the core functions of Command, Act, and Sense operate within a continuous cycle of activities. The outputs of the Sense activities are assessed during the Command activities to determine the current state. After evaluating the current and desired states, Command activities direct and plan actions. The Act activities create effects that will achieve the desired state. Sense activities assess the results of these effects, and the cycle is repeated. As well, this cycle of activities will influence—or can be influenced by—the ongoing enabling function activities of Sustain, Shield, and Generate.

The Sustain, Shield, and Generate activities must be performed continuously in order to effectively maintain, protect, and develop air force assets and capabilities. Without the activities of these functions, the Command, Act, and Sense activities could be compromised or even eliminated. Consequently, a weakness in, or failure of, one function will negatively impact not only the other five functions but also the force's ability to achieve a desired state.

With the foregoing brief description of the RCAF functions, this doctrine handbook will now devote its focus to Move,³ which is a sub-function of Act. Within the RCAF, Act integrates manoeuvre, firepower, and information operations to achieve desired effects. Moreover, Act actions that rapidly move personnel and materiel within and between areas of responsibility equates to the sub-function of Move. Specifically, in the RCAF, Move exploits the global reach and speed of aerospace power to rapidly deploy and position personnel and materiel to achieve desired effects.

A key component of any military operation is ensuring that the forces, including their equipment and supplies, are at the right destination at the right time. Without the means to accomplish this critical task, the capacity to concentrate forces, while also ensuring economy of effort, would not be possible. Within the RCAF, Move addresses the needs of repositioning resources and self-contained capabilities⁴ from one location to another in a timely manner in order to meet the commander's objectives. This sub-function is utilized across the spectrum of conflict, and is a key element of Canada's national power. Together with Shape to form Act, Move complements the other RCAF functions of Command, Sense, Act, Shield, Sustain, and Generate.

Move is an essential element of all modern military forces, particularly when those forces are small and have extensive, wide-ranging global commitments. The CF is an expeditionary-focused force, called

³ Throughout this document, "Move" refers to "air Move" only.

⁴ Examples include the Disaster Assistance Response Team (DART), Quad radar, and Major Air Disaster (MAJAD) kit.

upon to operate worldwide. Air mobility, the first RCAF capability associated with Move, is the backbone of expeditionary operations as it enables the prompt, global application of combat power and plays a crucial role in supporting Canadian strategies. Military airlift provides the fastest and most flexible method of moving personnel and materiel over long distances or over rough terrain, and is therefore in high demand during all phases of global operations. Therefore, the RCAF's expeditionary capability concept⁵ is predicated on having a robust national airlift system, able to deploy and sustain operations anywhere in the world. Similarly, tactical air mobility provides commanders with the capability to rapidly move and sustain combat power throughout their area of operations with speed and surprise, largely unconstrained by terrain or infrastructure. These characteristics of speed and reach are the hallmarks of the Move sub-function of aerospace power. Complementing airlift forces are air-to-air refuelling (AAR) assets that permit either extended range or extended duration of fighter force operations.

Consisting of more than just aircraft, the air mobility system requires highly trained personnel, suitably manned and equipped bases, and a command structure that is able to operate as well within Canada on domestic operations as it does on the international stage, either alone or as part of a multinational force. In addition to meeting the needs of expeditionary military forces, airlift is essential for quickly responding to domestic and international humanitarian-relief efforts, and for providing efficient and effective movement of personnel and materiel between various types of operating bases and military stations.

In fulfilling Move demands, air mobility forces may be called upon to provide airlift in an integrated approach to support military operations, other government departments (OGD), and non-governmental organization (NGO) activities. This airlift may be in response to routine, contingency, or rapid-response operations involving a single aircraft and crew, or multiple aircraft supporting joint, combined, or integrated operations. Royal Canadian Air Force units involved in conducting Move-related operations include both fixed-wing and rotary-wing forces. While any aircraft in the CF may be, and often are, employed in the Move sub-function, the aircraft, personnel, and support structure of the Air Mobility force⁶ play the predominant role in this capability. Within the Air Mobility force are dedicated fixed-wing assets capable of strategic and tactical airlift, aerial delivery operations in support of land forces, and air-to-air refuelling. In the air-to-air refuelling role, tanker aircraft can be employed

⁵ Air Force Expeditionary Capability Concept of Operations (CONOPS), dated 28 Jul 09.

⁶ There is no dedicated organization for the Air Mobility force, similar to that of Air Transport Group of the former group structure.

either to extend the range of the receiver aircraft, thus allowing it to reach its destination without stops en route, or to enable the receiver aircraft to take-off with a higher weapons load and then top up its fuel tanks while airborne, thus enhancing its combat effectiveness. Within 1 Wing are rotary-wing tactical aviation assets that are capable of tactical airlift in direct support of a joint task force (JTF) or task force (TF).

Personnel recovery, the second RCAF capability associated with Move, integrates military, diplomatic and civil efforts to recover and reintegrate isolated personnel, and/or the recovery of persons in distress.⁷ The roles associated with personnel recovery include SAR, combat recovery (CR), combat SAR (CSAR), and hostage rescue (HR). The personnel recovery role selected depends on the level of hostilities and the individual training of the isolated person(s). Figure 1-2 details the constituent parts of Move.

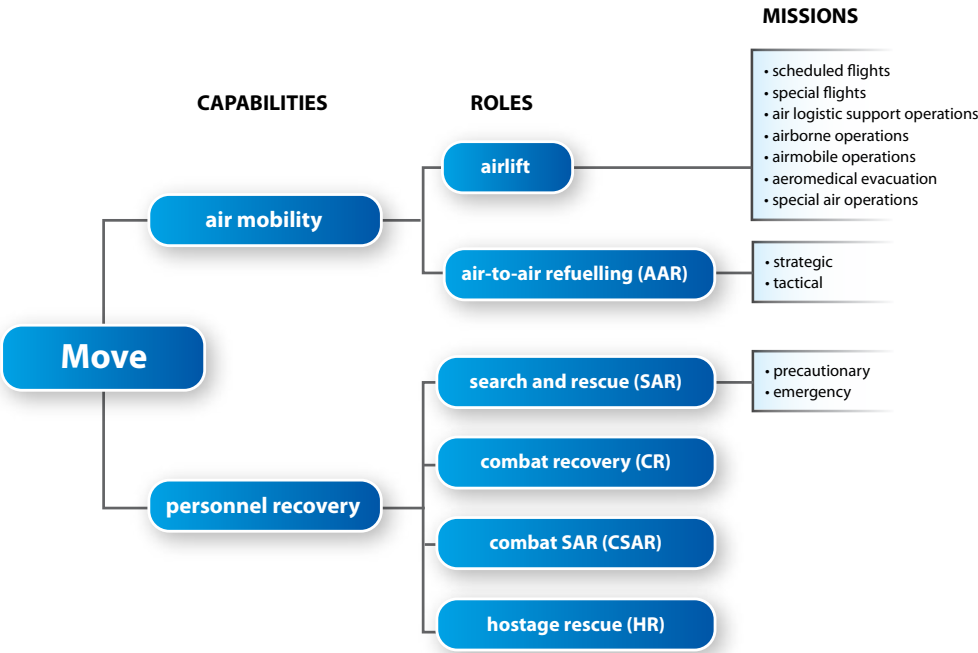


FIGURE 1-2. THE MOVE SUB-FUNCTION⁸

⁷ Definition of “distress” as listed in Defence Terminology Bank (hereafter cited as DTB) record 35794 is, “Condition of being threatened by serious and/or imminent danger and of requiring immediate assistance.” An isolated person is not by definition in distress. They may be successfully evading and surviving, all the while waiting for the opportunity to be recovered. It is therefore incorrect to combine the concept of “isolated personnel” with “distress” because it implies an urgent and imperative requirement to intervene regardless of circumstances.

⁸ A placement within this schematic is not meant to reflect the significance of the function, capability, role, or mission, but only how it relates to other functions, capabilities, roles, or missions.

WHY ROYAL CANADIAN AIR FORCE MOVE?

RATIONALE FOR ROYAL CANADIAN AIR FORCE MOVE

Military organizations need the capability to position and reposition resources effectively and efficiently in order to achieve the desired effects. “Challenges associated with movement of personnel and materiel can become very complex. For this reason, the Air Force [RCAF] dedicates personnel exclusively to this task.”⁹ As a primary job, these personnel are specially trained and equipped to plan and execute Move-related operations. Move doctrine captures the organizational framework associated with air mobility and personnel recovery capabilities, while leveraging the characteristics of aerospace power. The RCAF therefore identifies Move as a doctrinal function of aerospace power.

“Similar logic supporting why the Air Force [RCAF] doctrinally incorporates this function explains why the [Royal Canadian] Navy also identifies Move as a function. The obvious difference between the two is [that] the [A]ir [F]orce’s focus is on movement through the air, and the [N]avy’s focus is on movement over water.”¹⁰ By contrast, the Canadian Army regularly moves its own resources within the battlespace, but it does not have a separate Move function. “The [Canadian] Army is... primarily organized to manoeuvre, not [to] move.”¹¹ So the Army’s more limited movement capability is inherent within their existing operational functions.

The Canadian Army has movement specialists responsible for tasks such as securing contracted civilian sea, air, and land transport, but the Canadian Army is not resourced with the specialized equipment to carry out complex movements over large distances. Should the span and scope of a movement requirement call for resources beyond the Canadian Army’s inherent capability, then often it is through the use of air or naval power that these requirements will be achieved. “So, from a CF organizational perspective, the [Canadian] Army does have access to a Move function—it just resides in the Air Force [RCAF] and [Royal Canadian] Navy.”¹²

The RCAF possesses a Move function because it is in the movement business throughout the tactical, operational, and strategic levels. These movements present a need for specialization in planning and execution that is accommodated in a dedicated Move function.

⁹ AFOD, Move Module 3, 9.

¹⁰ Ibid.

¹¹ Ibid., 10.

¹² Ibid.

PRINCIPLES OF WAR

APPLICATION TO ROYAL CANADIAN AIR FORCE MOVE

The principles of war are fundamental guidelines for military action and are the most basic form of military doctrine. The Canadian Forces recognize ten fundamental principles of war, and these are defined in B-GA-400-000/FP-000, *Canadian Forces Aerospace Doctrine*.¹³ The principles must be considered and applied during any Move-related operation; however, when focusing on the characteristics of air mobility and personnel recovery, the following principles are the most pertinent and provide the primary considerations when employing Move¹⁴ assets:

- a. **Selection and Maintenance of the Aim.** With a clear and resolute selection of the aim, Move-related operations may be focused to achieve effective, efficient use of this valuable and finite resource. Limited availability of Move assets and restrictive payloads can lead to non-optimized assignment of assets due to the varying demands of different users. Therefore, the overall aim of any Move-related operation must be maintained and priorities for air mobility taskings should be set at the highest level necessary.
- b. **Security.** The vulnerability of military air mobility and its supporting infrastructure to hostile action highlights the importance of security in Move-related operations. Military air mobility operations may occur in an environment without air superiority;¹⁵ therefore, the risk in operating in such an environment depends on the threat level, aircraft self-protection capability, and aerodrome defence capability.
- c. **Surprise.** The range, speed, and flexibility of air mobility aircraft make them ideally suited to exploit the principle of surprise. Alternative delivery methods, especially airdrop of personnel and supplies, contribute to achieving surprise. Air mobility and personnel recovery operations should take full advantage of this principle.
- d. **Concentration of Force and Economy of Effort.** Limited asset availability and payload capacity make it crucial to carefully consider these two related principles in any Move-related operation. The ability of air mobility forces to deliver sufficient forces to achieve an objective will be affected by the range and support given. Commanders must carefully evaluate the size of

¹³ B-GA-400-000/FP-000, *Canadian Forces Aerospace Doctrine*, 2nd Edition, (December 2010), 25.

¹⁴ In Canada, the majority of assets utilized for personnel recovery operations are associated with the Air Mobility force fleets.

¹⁵ DTB record 3364.

force required to achieve the desired objective against the effort required for its delivery by air.

- e. **Flexibility.** Air mobility assets allow commanders to quickly position, concentrate, or reposition forces wherever and whenever needed. The flexibility and versatility of air mobility and personnel recovery forces enable the concentration of desired effects at the right time and at the right destination. Air mobility units should be equipped and trained to take full advantage of the multi-role capability of fixed-wing and rotary-wing transport aircraft, and be at a state of readiness to carry out assigned roles. This principle also extends to commercial airlift resources, as most nations utilize the inherent flexibility of civilian transport aircraft to augment military airlift capacity in times of crisis, tension or war, as well as during disaster-response or humanitarian-relief operations. Move fully exploits this principle.
- f. **Cooperation.** Most air mobility and personnel recovery operations are joint, combined, or integrated in nature. In order to fully exploit the capabilities of Move, a thorough understanding of user requirements is required. Opportunities to participate in joint and combined exercises and operations must be pursued, as the lessons learned from these activities will ensure the continued effectiveness of Move-related operations.
- g. **Administration.** To sustain successful Move-related operations, certain dedicated ground and logistic support is required. The extent of this support will vary with the complexity of the operation, but to take full advantage of the global and deployable nature of air mobility operations, support requirements must be identified and provided.

To ensure the proper employment of air mobility and personnel recovery resources in the execution of Move, as well as the continued development of sound doctrine, the applicable principles of war must be considered for Move-related operations.

ROYAL CANADIAN AIR FORCE MOVE – PLANNING CONSIDERATIONS

PLANNING ROYAL CANADIAN AIR FORCE MOVE

Planning factors that contribute to a movement solution may directly or indirectly link to selected characteristics and tenets of aerospace power. All identified factors are observations of physical properties that facilitate determining the appropriateness of using aerospace power to seek a

solution accomplished by the Move sub-function, and then the selection of air assets required to accomplish such a solution.

FACTORS

“Factors affecting movement are generally classified into two categories: fixed factors imposed by circumstances, and variable factors that depend on the movement solution. ... Each factor is important to movement planning.”¹⁶ Additionally, planning factors may also be grouped as follows:

Environmental	Environmental factors are threat environment, geography, weather, and distance . “These factors define the environmental conditions under which the movement will likely occur. They are made up of uncontrollable variables... that must be reacted to and considered in the decision-making process.” ¹⁷
Tasking	Tasking factors are mission objective, nature of cargo, flow, payload, and urgency/priority . These “factors relate to the movement ‘customer’... Generally, those responsible for planning and executing the movement have limited or no control over tasking factors as they tend to be defined by the customer. The movement must be planned and executed in accordance with tasking factors.” ¹⁸
Integral	Integral factors are responsiveness, infrastructure, cost, and reliability . “These are the essential factors pertaining to the actual movement process. These are the variables [that] those responsible for movement planning and execution can manipulate. For example, the ‘cost’ variable can change depending whether planners decide on air, rail, or vehicle transport.” ¹⁹

TABLE I-1. FACTORS AFFECTING MOVEMENT

ADVANTAGES/LIMITATIONS

Move capabilities are often the only means of achieving objectives set by the government in National Defence policy, whether in peace or conflict. Many characteristics and tenets of aerospace power apply directly to Move. The relationship between these and the various planning factors in a given situation determines whether selecting aerospace power to move is appropriate, and these linkages highlight advantages and limitations to employing Move on any given task. Careful assessment of the advantages and limitations of using Move assets must therefore be made prior to their employment.

16 AFOD, Move Module 2, 5.
17 Ibid., 8.
18 Ibid.
19 Ibid.

Advantages. The factors that exploit the advantages associated with a Move solution, coupled with the corresponding characteristic or tenet of aerospace power, are the following:²⁰

- a. **Urgency/Priority (Speed).** Urgency is an important time-related concept establishing how quickly given tasks need to be completed, whereas priority relates to the level of importance of accomplishing given tasks in a set sequence. Both of these relate directly to the speed at which Move tasks are accomplished. Air force airlift assets are able to deliver compact loads much faster than other forms of transport, thereby reducing the time required to accomplish a given objective. Movement can be achieved without aerospace power, but sometimes movement effects cannot. Moving an Army unit cannot create effect if it arrives on scene after the war is over.
- b. **Distance (Reach).** Military airlift forces possess a global capability to deliver loads. Combined with speed, the capability to overcome great distance facilitates the projection of power rapidly on a global basis. Combined with geography, the capability to move loads just about anywhere in the world also affects the time involved in getting them there.
- c. **Geography (Elevation).** Move is not susceptible to blocking or delays by surface obstructions en route to the destination. Hence, Move may be the ideal mode to supply isolated bases or communities, particularly during a siege or during disaster-relief efforts. Airlift may also be of key importance to reach remote, land-locked countries.
- d. **Responsiveness (Flexibility and Versatility).** Properly trained and equipped Move resources can respond almost instantaneously, carrying a wide range of loads and also carrying out more than one role using a given platform. This demonstrates flexibility, permitting aerospace operations to shift from one objective to another, quickly and decisively. It also shows versatility, in that the resources can be used for a broad spectrum of objectives at the strategic, operational, or tactical levels of conflict. Move has the advantage of being able to deliver compact payloads faster than surface transportation by sea and/or rail. Move reduces personnel requirements lost in transit and facilitates timely sustainment. High sortie rates can, in part, compensate for the limited load-carrying capability of aircraft. The relative speed of delivery of Move can be of crucial importance in establishing and sustaining presence when containing a rapidly developing crisis.

²⁰ This is not a complete listing of advantages associated with Move. Additional advantages are contained in B-GA-404-001/FP-001, *Air Mobility* (to be promulgated).

Limitations. The factors that expose the limitations associated with a Move solution, coupled with the corresponding characteristic or tenet of aerospace power, are the following:²¹

- a. **Payload.** Compared to surface transport, aircraft are limited in the volume and weight they can carry. The smaller payload capacity of an aircraft compared to a ship or train translates into a large number of sorties to move an equivalent amount of cargo. Moving by air could thus end up taking more time compared to moving via surface-based modes, depending on the scenario.
- b. **Weather (Sensitivity to Environmental Conditions).** Aerospace power is usually sensitive to environmental conditions. Aircraft operations may be affected by adverse weather conditions, creating difficulties with take-offs and landings, navigation, target acquisition, and weapons delivery.
- c. **Reliability (Sensitivity to Technology).** Once planning factors point to aerospace power as the best movement choice to create desired effects, any delay may cost critical time needed to meet an operational objective. An unforeseen technical problem (reliability factor) may jeopardize achieving desired operational effects.
- d. **Cost.** Moving personnel and materiel by air is usually more expensive than surface movement. Nevertheless, militaries opt to use Move resources primarily because of time considerations despite the associated higher costs. Although cost is a significant issue, it is rarely the primary planning factor; otherwise, movement would always be via surface-based modes. Despite the increased cost, Move is frequently the best choice to create desired operational effects.

²¹ This is not a complete listing of limitations associated with Move. Additional limitations are contained in B-GA-404-001/FP-001, *Air Mobility* (to be promulgated).

SUMMARY

Within the RCAF, Move is responsible for the rapid and proper positioning of personnel and materiel to support the commander's objectives, as well as recovering isolated personnel and persons in distress. Move is utilized across the spectrum of conflict, and is a key element of Canada's national power. Together with Shape to form Act, Move complements the other RCAF functions of Command, Sense, Act, Shield, Sustain, and Generate. Move may be conducted by any RCAF aircraft or chartered airlift, but the predominant force that conducts this function is the Air Mobility force, which is equipped and trained for global operations in the capabilities of air mobility and personnel recovery. To supplement fixed-wing assets, rotary-wing tactical aviation assets may provide tactical airlift in direct support of a JTF or TF.

Proper employment of air mobility and personnel recovery forces during operations should be driven by a number of the recognized principles of war. These principles include selection and maintenance of the aim, security, surprise, concentration of force and economy of effort, flexibility, cooperation, and administration.

Three categories of factors may influence the selection of a movement solution: environmental, tasking, and integral. Environmental factors define the environmental conditions under which the movement will likely occur. Tasking factors are the particulars of the movement, such as payload and priority, specified by the chain of command. Finally, integral factors are inherent and directly affected by the movement decision, such as infrastructure and cost.

Comparing the characteristics and tenets of aerospace power with movement decision-making factors leads to a conclusion that the paramount benefit of RCAF Move is saved time. The substantially high cost of movement by aerospace forces is usually justifiable when time is at a premium. Notwithstanding, the timeliness of moving by air must always be balanced against its cost.

Move, through its air mobility capability, provides the commander with a number of advantages over other means of "movement," including speed, reach, elevation, and responsiveness. Contrasting these advantages are the following limitations: payload, weather, reliability, and cost.

CHAPTER 2

AIR MOBILITY

The advantages gained by swift action or by getting the right men to the right spot at the right time are obvious. In Iraq the air is the only means of accomplishing this end....

—Wing Commander William Barker, VC, DSO and Bar, MC
and Two Bars, Director, RCAF, April–May 1924



INTRODUCTION

Any military organization responsible for defence and security must have the capability to rapidly deploy and move its forces, equipment and supplies across the spectrum of conflict. Because air mobility is global in reach, special attention must be given to balancing theatre demands for resources with national requirements and priorities. At the same time, air mobility forces performing strategic and tactical missions must function in close coordination with one another to provide seamless mobility to the supported combatant commander.

AIR MOBILITY ROLES

Air mobility is “the capability of conducting airlift and air-to-air refuelling roles.”¹ Airlift and AAR missions are integral to the success of most air operations and joint operations. Airlift is critical for deployment, redeployment, sustainment, and tactical mobility, while AAR is critical to enable and sustain intense air operations.

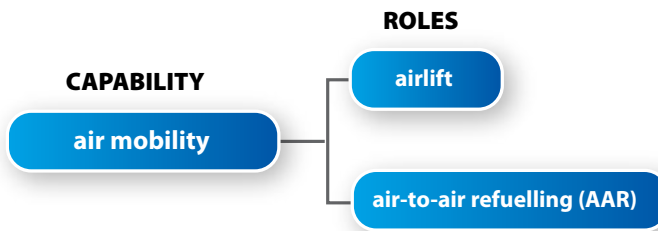


FIGURE 2-1. AIR MOBILITY ROLES

ASSETS REQUIRED

Successful air operations related to Move require not only operational crews and aircraft, but also a number of support elements which must be carefully coordinated and organized. These elements may be required along the intended air route structure or within the theatre of operations before the air mobility operation can be implemented, or they may be part of the initial air mobility operation. These elements include, but are not restricted to:

- a. a command and control system capable of controlling aircraft in such a manner as to realize maximum productivity and effectiveness from the resources available;
- b. trained movements personnel and specialized equipment are essential for the receipt, preparation, in-transit storage, onload and offload of any combination of loads, including those for aerial delivery;

¹ DTB record 37284.

- c. essential maintenance, logistics, communications, intelligence, and meteorological elements;
- d. navigational and air traffic control aids;
- e. intermediate staging bases with suitable runways, adequate aircraft parking and servicing facilities; and
- f. adequate accommodation and food services for all personnel.

ORGANIZATIONS/UNITS INTEGRAL TO MOVE

Without the efforts and support of a number of CF organizations and units, Move would not work. These organizations and units include:

- a. **4 Canadian Forces Movement Control Unit (4 CFMCU).**² As a component of the CF Joint Support Group (CFJSG), 4 CFMCU's primary mission is to plan, coordinate, and execute the provision of deployable movement control for CF operations. Canadian Operational Support Command (CANOSCOM) provides strategic movement control through the CFJSG and ultimately 4 CFMCU, the latter which maintains high readiness detachments to provide strategic movement control for CF personnel and materiel through domestic and foreign seaports and airports.
- b. **2 Air Movements Squadron (2 Air Mov Sqn).** This unit provides personnel to support both domestic and international airlift operations and is responsible for processing all airlift traffic including passengers, freight, baggage, and mail. 2 Air Mov Sqn maintains a significant operational expeditionary airlift capability in the form of 10-person mobile air movements section (MAMS) teams to sustain airlift operations around the world, especially for the deployment and redeployment phases of an operation.



CF Photo: Cpl Jax Kennedy

² It should be stressed that 4 CFMCU is a joint unit that is not dedicated or unique to Air Move.

AIRLIFT

Within the CF, military airlift operations are closely associated with Move. Whether in direct support of airlifting personnel and materiel into or within a theatre of operations, supporting the build-up of expeditionary units, providing regularly scheduled sustainment flights for deployed operations, conducting ship-to-ship and ship-to-shore airlift, or moving the Disaster Assistance Response Team (DART), the capability to quickly airlift personnel and materiel is critical to CF operations.

Military airlift operations can be categorized based on their associated theatre of operations, as well as defined by their specific mission type. First, the categories of operations will be presented, and then the various types of airlift missions will be addressed.

CATEGORIES OF AIRLIFT OPERATIONS

Able to operate globally, airlift can be either strategic or tactical, or both, depending on the nature of the mission.³ Within the category context, strategic and tactical refer primarily to the geographic environment within which the platforms operate, and not to the effects which they may achieve.

- a. **Strategic.** Strategic airlift (also known as inter-theatre airlift) operations have the primary objective of carrying and delivering personnel and materiel, usually between a main operating base and a deployed operating base, but can also provide airlift between two areas of operations⁴ or two theatres of operations. Strategic airlift is associated with fixed-wing aircraft only.
- b. **Tactical.** Tactical airlift (also known as intra-theatre airlift or theatre airlift) operations have the primary aim of carrying and delivering personnel and materiel within a specific theatre of operations or area of operations. Tactical airlift is associated with both fixed- and rotary-wing aircraft.

Note: The context of using these terms is important, as they may not be interchangeable. For example, an airlift mission flown between 8 Wing Trenton and Canadian Forces Station Alert is generally characterized as a strategic airlift mission, but in this case it would also be an intra-theatre airlift mission.

³ The use of strategic and tactical in the context above must not be confused with strategic and tactical effects of military operations, which relate to missions targeting the adversary's centre of gravity (COG) and the decisive points along the path to the COG. Not usually considered as a military operation with strategic effect, the use of airlift alone during the 1949 Berlin Airlift was a Move function which did in fact achieve strategic results.

⁴ Canada is considered a single theatre of operations which may contain multiple areas of operations. B-GJ-005-300/FP-001 *Canadian Forces Joint Publication* (CFJP-3.0), *Operations*, para 0207. An airlift mission may be flown within a single theatre but still be considered to be strategic in nature due to the geographic expanse of the theatre.

There are secondary usage considerations for choosing either “strategic” or “tactical.” From the perspective of the front-end aircrew flying the mission, the categorical distinction of strategic versus tactical⁵ relates to the specific mission profile, aircrew skill set(s), and aircraft configuration required.⁶ From the perspective of the military users requiring airlift support, however, the categorical distinction is completely different. The users of airlift see the missions as specific task-oriented groupings. For example, scheduled flights, special flights, and strategic aeromedical evacuation are normally identified as strategic airlift missions, whilst airborne operations, airmobile operations, special air operations, and forward/tactical aeromedical evacuation are normally identified as tactical airlift missions. Air logistic support operations could be both tactical and strategic. Tasked airlift missions correspond to the categorization of missions from the perspective of the user, for example, aircraft mission management codes.⁷ Optimized integration of both strategic and tactical airlift operations is critical to effective and efficient support to the warfighter.

The spectrum of airlift platforms includes large fixed-wing aircraft, which are normally considered strategic in nature,⁸ and rotary-wing aircraft, which are viewed as strictly tactical. Both of these platform types are considered in Move doctrine.

AIRLIFT MISSIONS

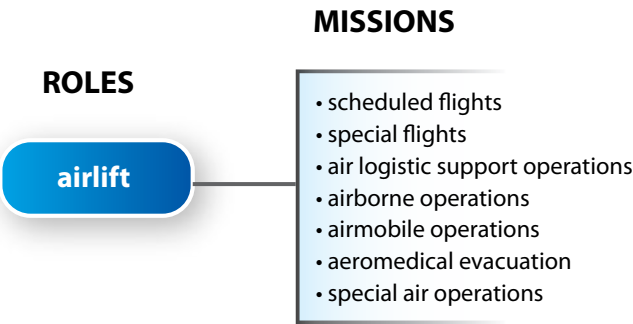


FIGURE 2-2. AIRLIFT MISSIONS

Airlift resources have the capability to rapidly cover great distances unhindered by natural barriers such as mountain ranges or large bodies of water, and by the lack of road and rail infrastructure; this makes them

5 The same logic applies for sub-classifying tactical airlift as being either “basic” or “advanced.”
6 The distinction of “who” tasks the mission could indicate that the command and control relationship (i.e., who has “operational control”) is also a discriminating factor, but this is really a coincidence as opposed to a cause and effect relationship. In other words, “who tasks the mission” does not determine mission categorization, although this is a convenient discriminator that works most of the time.
7 See 1 Canadian Air Division Order, Volume 1, 1-617, “Mission Management Codes,” <http://winnipeg.mil.ca/HQSec/1cadordr/cadvol1/1-617.doc> (accessed July 4, 2011).
8 Although the CC177 is capable of both strategic and tactical airlift, the strategic airlift role predominates.

ideal for conducting Move. Additionally, their flexibility in configuration enhances their overall capabilities, as a single aircraft can deploy troops on one flight and then be reconfigured to move litter patients out on the return flight. Airlift can also be used to support government policy objectives and deliver strategic effect through disaster relief or other humanitarian activities, to deliver tactical effects in non-permissive environments, or by achieving influence within local populations by supporting local projects and evacuating civilian casualties to medical facilities. From the perspective of the user requesting airlift effects, the main airlift missions conducted by the CF are as follows: scheduled flights, special flights (forecast and non-forecast), air logistic support operations; airborne operations, airmobile operations, aeromedical evacuation, and special air operations.⁹ Each of these missions is described below.

Scheduled Flights. A scheduled flight is a flight that operates on a regular schedule to provide airlift for routine military requirements. On routes where there is a recurring need to provide airlift on an ongoing basis, the airlift support may be provided by a published, fixed-flight schedule, with bookings made through a central agency. The frequency of these flights will be determined by the movement demands along that specific route. The requirements for these flights can be forecast well in advance and the appropriate aircraft and wing/squadron can be assigned to conduct the mission. An example of a scheduled flight is Canadian Forces Station Alert resupply.

Scheduled flights are controlled at the operational level¹⁰ due to reasons of efficiency, despite the fact that they may be strategic (i.e., inter-theatre) in nature. As scheduled flights are *supply driven*, it is nearly impossible to predict which particular units or formations will be “customers” on any given occasion. Potential customers of this airlift span the entire military, and all subordinate commanders have relatively equal access to it. The users determine who (passengers) and what (cargo) is carried on scheduled service flights. Although there are limitations, such as carriage of dangerous cargo, the objective of scheduled flights is to provide a strategic airlift capability that tactical and operational commanders alike can access.

Special Flights. A special flight is a flight that operates on a special itinerary to provide airlift in order to satisfy a desired effect. Whereas scheduled flights are *supply driven*, special flights are *demand driven*.

⁹ The complete listing of airlift mission types is contained in 1 Cdn Air Div Order “Mission Management Codes.” Additional references that provide background perspective are CFAO 20-19, “Service Airlift-General Codes,” http://admfincs.mil.ca/admfincs/subjects/cfao/020-19_e.asp (accessed July 4, 2011), and B-GJ-005-404/FP-040, Movement Support Air, <http://cfd.mil.ca/sites/page-eng.asp?page=3531> (accessed July 4, 2011).

¹⁰ The applicable force employers in this case would be either Canada Command and/or Canadian Expeditionary Force Command.

Commanders present a request to move personnel and/or materiel to a Move service provider through headquarters staff, along with applicable details including urgency, priority, and nature of payload. The service provider, 1 Canadian Air Division (1 Cdn Air Div), then determines the platform and flight itinerary. Special flights are neither typical nor subject to normal scheduling, and may require input from other sources in order to be planned and executed properly. Special flights fall into one of two categories: forecast and non-forecast.

- a. **Forecast Airlift.** Forecast airlift is a special flight tasked to meet a predicted or forecast desired effect. Typical missions include very important person (VIP) airlift,¹¹ National Defence Headquarters and Command annual staff visits, and transport of cadets to training camps and reservists to exercises. While the military does rely upon commercial air carriers for much of its personnel movements—such as temporary duty—there are occasions when air force airlift assets are used. When this occurs, the flights are programmed into the annual total air resource management plan and subsequently, the monthly air operations directive.
- b. **Non-Forecast Airlift (NFA).** Non-forecast airlift is a special flight tasked to meet an unpredicted desired effect. The responsive nature of air mobility units make them ideally suited for short-notice airlift requirements. Non-forecast airlift needs can be met by creating a new tasking, with additional crews and aircraft, or by the re-tasking of an existing flight depending on mission priorities, aircraft configuration requirements, and geographical locations involved. As NFA special flights may respond to domestic or international crises and other matters of national interest, they are normally initiated at the strategic level but can also be generated at the operational level if the need arises. Generally, flights not planned in direct or continuous support of an operation are more likely to be considered special flights. They tend to be single purpose, and therefore, very specific in scope. Typical large-scale NFA special flights include the following:
 - (1) **Humanitarian-Relief Operation (HUMRO).** A HUMRO is an operation to alleviate human suffering where responsible civil actors in an area are unable or unwilling to adequately support a population.¹² Airlift provides the most effective response to humanitarian-relief operations. The speed, range,

¹¹ The CF provides safe, reliable and responsive airlift for heads of state, Royal Family members, and other senior government ministers and dignitaries. While any CF aircraft may be required to conduct VIP operations, the primary Air Mobility VIP aircraft are centrally based in Ottawa and 8 Wing Trenton.

¹² DTB record 43603.

and payload capacity provide the means to deliver emergency aid to wherever it is needed. Depending on the situation, the initial airlift aircraft may be able to deliver the aid directly to where it is required. Or, if the infrastructure in the immediate disaster area has been destroyed,¹³ the airlift aircraft may have to operate through a suitable aerodrome close to the disaster area such that its cargo of personnel and materiel can be off-loaded onto smaller assets (trucks, rail) or rotary-wing aircraft for direct delivery. Ideally, stores of key emergency aid items,¹⁴ such as shelters, blankets, medical supplies, food, and water should be co-located with the airlift assets that will be responding to the humanitarian-relief request.



CF Photo: Cpl Colin Aitken

¹³ Certain airlift platforms are more or less suitable for unprepared or austere runway operations (e.g., CC130 Hercules).

¹⁴ As located with the DART stores in Trenton.

OPERATION PLATEAU

On 8 October 2005, a major earthquake (7.6 on the Richter scale) struck north-eastern Pakistan resulting in large-scale destruction. Three days later the Canadian government received a request from Pakistani authorities for assistance in support of relief and recovery operations, and sent representatives from Foreign Affairs, the Canadian International Development Agency and the CF to assess the situation and to identify what assets were required. On 14 October, Prime Minister Paul Martin announced that the CF Disaster Assistance Response Team (DART), based at 8 Wing Trenton, Ontario, would be deployed to Pakistan in support of Operation PLATEAU.

Airlift for members of the DART was conducted by CF military CC150 aircraft from 8 Wing Trenton. To move the quantities of equipment (including four reverse-osmosis water purification units) and supplies needed to provide relief to a disaster of this magnitude, non-CF transport aircraft were also chartered by the Canadian government. One AN225 and four AN124 cargo flights were utilized, with the first aircraft departing Trenton on 15 October. The mix of CC150, AN225 and AN124 flights deployed the DART and its equipment into theatre between 15-23 October. The DART was declared operationally ready on 23 October.

During Operation PLATEAU, the DART distributed 500 tonnes of humanitarian aid supplies, purified and distributed 3,811,535 litres of drinking water, and provided medical treatment to 11,782 people.



CF Photo: MCpl Pierre Thériault

OPERATION HESTIA

HESTIA was the CF response to the catastrophic (7.3 on the Richter scale) earthquake that struck Port-au-Prince, Haiti, on 12 January 2010. Over 3 million people (one-third of Haiti's population) were affected by the quake. Joint Task Force (JTF) Haiti was a HUMRO task force comprised of elements from the maritime, land, and air environments. For the airlift portion of the operation, CC130s, CC150s, CC177s, CC144s and contracted IL76s provided an air bridge for this operation. The bulk of the airhead was established at 8 Wing Trenton. CH146 Griffons provided intra-theatre airlift for the JTF.

In the first few days after the earthquake, it was not uncommon for aircraft to go into a holding pattern for several hours until available ramp space opened up. Airlift aircraft operated directly into Port-au-Prince airport; however, due to the congestion and restricted slot times, a de-coupled air bridge was also established in Kingston, Jamaica, and then on to Jacmel, Haiti, thus taking some pressure off the Port-au-Prince airport. The Canadian detachment at Jacmel became the coordinating agency for the airport and the surrounding airspace. Canadian CC130s were the first foreign-aid aircraft to land in Jacmel, and they became the main users of the airport. The DART began arriving 13 January, and DART operations ceased 15 March.

After the United States, Canada led the international response by bringing in over 25 per cent of all other aid flown into Haiti. The Haiti Flight Operations Center showed Canada responsible for 2,832 short tons, and 4,876 passenger movements. Prime Minister Stephen Harper was the first foreign head of state to tour the country, and it should be noted that he flew in on a regular CC177 cargo run. The absolutely outstanding response from Canadian aid agencies could not have been made possible without the rapid response and agility of the Air Mobility assets employed.



- (2) **Non-combatant Evacuation Operation (NEO).** A NEO is an “operation conducted to relocate designated non-combatants threatened in a foreign country to a place of safety.”¹⁵ Non-combatant evacuation operations may involve the movement of Canadian entitled persons (CEPs)¹⁶ located in both permissive and non-permissive environments in a foreign country, who may be in danger or otherwise threatened by hostile actions,¹⁷ natural disasters,¹⁸ or any other situation where their lives may be endangered by remaining within the affected area. The Canadian lead agency for NEO is the Department of Foreign Affairs and International Trade (DFAIT), with the CF a supporting agency. Therefore, the CF will respond to requests for assistance through the provision of logistics, security, and other support as required. Airlift is a critical component of the CF’s response, as it can rapidly move the required command and headquarters (HQ) staff, security and evacuee processing elements into theatre, and then transport the affected personnel to designated safe-haven locations. Depending on the size of the evacuation operation, airlift may be the sole mode of transport, or it may be used in conjunction with other means of transport, such as sealift.

OPERATION LION

The Second Lebanese War, waged between Hezbollah and Israeli forces during the summer of 2006, saw widespread destruction and put many civilian lives at risk. In response to a request from DFAIT for support in evacuating Canadian citizens from Lebanon in July 2006, CF air mobility resources were quickly identified and used to airlift a headquarters element, telecommunications specialists, medical personnel, naval liaison officers, and security and movement control personnel to Cyprus and Lebanon. Once the reception point had been established, and the processing of Canadian citizens commenced, the aircraft which had transported the support element into theatre was subsequently used to move a number of the evacuees back home to Canada.

¹⁵ DTB record 22803.

¹⁶ DTB record pending, see glossary.

¹⁷ The difference between a non-combatant evacuation operation and a personnel recovery operation is based on the lead department, the context of the operation, and the personnel being evacuated or recovered. A NEO is often a large-scale event based on a deteriorating situation within a nation—normally instability or collapse of the government; the lead department is the Department of Foreign Affairs and the personnel involved are Canadian entitled persons. A personnel recovery operation is usually based on a single isolation event; the lead department is the Department of National Defence, and the personnel involved are military personnel or individuals designated as persons of interest in an area of hostilities.

¹⁸ Forest fire evacuations are not considered to be a category of a NEO, even though it is a routine operation during forest fire season.

Air Logistic Support Operation. An air logistic support operation, also known as theatre-support airlift, is “an air operation, excluding an airborne operation, conducted within a theatre of operations to distribute and/or recover personnel, equipment and supplies.”¹⁹ Similar to special flights, air logistic support missions are *demand driven*. As air logistic support missions are planned in direct or continuous support of an operation and respond to the requirements of tactical-level commanders, they are normally authorized at the tactical level and are thus tactical in nature. Notwithstanding, the requirements to deploy, sustain, and redeploy forces may also necessitate air logistic support operations to be planned and conducted at the operational level. The inherent capability to move personnel and materiel over long distances allows timely sustainment of deployed forces, without having to forward deploy immense quantities of equipment and supplies. These items can be held at main bases and brought forward as required. Missions associated with air logistic support operations can return equipment from deployed operations back to servicing facilities in Canada for repair and overhaul, again reducing the infrastructure requirements at deployed operating bases. An example of an air logistic support operation is theatre-rotation airlift.

Airborne Operation. “An airborne operation is an operation involving the movement of combat forces and their logistic support into an objective area by air.”²⁰ Airborne operations consist of paratroop operations and airmobile operations; however, most references to airborne operations usually consist of only the paratroop operations component. Airlift plays a critical role in rapidly positioning combat forces to meet the commander’s objectives. Unencumbered by lack of roads or by the presence of natural barriers, such as rivers and mountain ranges, airlift can quickly concentrate personnel and materiel where and when required. Delivery methods for the insertion of troops and their supplies may be either by airland or airdrop delivery, as discussed later. Airborne operations may utilize both fixed-wing and rotary-wing assets, and are under the operational control of the air component commander.

Airmobile Operation.²¹ An airmobile operation is an airborne operation in which “military forces and their equipment are transported about the battlefield and landed by aircraft in support of tactical objectives on the ground.”²² Airmobile operations primarily utilize helicopters, and are normally under the operational control of the land component commander

¹⁹ DTB record 3345.

²⁰ DTB record 3388.

²¹ An airmobile operation in which combat forces land within direct fire range of the objective and conduct an assault is known as an air assault operation. Although an air assault operation is considered to be a subset of an airmobile operation, due to the concept of integrated firepower it is included under Shape.

²² DTB record pending.

in the context of a JTF or TF. The nature of a helicopter allows it to be supported and positioned throughout the battlespace with applicable land force units to enable it to react quickly over the entire breadth of the area of operations. To facilitate achieving the initiative over the enemy and gaining freedom of action, the land force needs to have these assets under their operational control rather than requesting support (which requires time) from another commander. Most fixed-wing aircraft cannot be integrated with land force units in this manner, as the characteristic of support dependency and reliance on aerodromes limits the number of locations from which they can operate.

OPERATION SALON

Oka, Quebec, 11 July – 26 September 1990

A long-simmering land dispute between the Mohawk people and the town of Oka, Quebec, erupted into violence on 11 July 1990, resulting in the death of a Sûreté du Québec (SQ) officer. On 8 August, Premier Robert Bourassa invoked Section 275 of the *National Defence Act* requesting federal assistance and military support in “aid to the civil power.” Some 2500 troops from 34 and 35 Canadian Brigade Groups, as well as 5 Canadian Mechanized Brigade Group, were deployed. These forces were supported by tactical aviation elements, primarily from Valcartier, Quebec, and Petawawa, Ontario.

Part of the duties of the deployed troops included conducting searches and seizing illegal weapons. On 18 September, the largest raid of Operation SALON was conducted on Tekakwitha Island, which is connected by a bridge to the Kahnawake area. Acting on reliable intelligence that there was a weapons cache on the island, the local military headquarters decided that there were only three possible approaches to the island: through the town (inadvisable), by water (insufficient resources), or by air. Therefore, an airmobile operation was planned.

One platoon would be inserted by CH147 Chinook helicopter to secure the bridge while, simultaneously, a second platoon would be landed at the western end of the island where there were reported to be defensive positions. Once these locations had been secured, an additional two platoons, along with SQ support, would be airlifted to the island to conduct the actual search.

Although the airmobile insertions went primarily as planned, the military and police forces found themselves confronting a large, angry crowd. Violence ensued and several individuals on both sides were injured. Eventually, peace was restored through the efforts of local commanders and Mohawk leaders, permitting the evacuation by helicopter of the deployed forces commencing at 2100 hrs. Eight Chinook and CH135 Twin-Huey flights were required to remove the soldiers and police, while CH136 Kiowas provided overhead security.

Aeromedical Evacuation (AE). Aeromedical evacuation involves “the movement of patients to and between medical treatment facilities by air transport.”²³ These can either be dedicated flights or flights serving a dual purpose, with the AE mission being given the priority over flight profiles.²⁴ AE missions may consist of three possible components:

- a. **Forward AE.** “That phase of evacuation which provides airlift for patients between points within the battlefield, from the battlefield to the initial point of treatment, and to subsequent points of treatment within the combat zone.”²⁵ Rotary-wing aircraft are the primary assets used for forward AE;
- b. **Tactical AE.** “That phase of evacuation which provides airlift for patients from the combat zone to points outside the combat zone, and between points within the communications zone;”²⁶ and
- c. **Strategic AE.** “That phase of evacuation which provides airlift for patients from overseas areas or from theatres of active operations, to the home base, to other North Atlantic Treaty Organization (NATO) countries or to a temporary safe area.”²⁷ Fixed-wing aircraft are the primary assets used for tactical and strategic AE.

Special Air Operation. A special air operation is an “air operation, conducted across the spectrum of conflict, in support of unconventional warfare and clandestine, covert, and psychological activities.”²⁸ A rapid deployment capability is critical to the effectiveness of special operations forces (SOF). Air planners prefer not to task any crew and aircraft to integrate with SOF, but instead rely upon dedicated aircraft and crews specializing in such missions. The flight crews need to be dedicated to train regularly with the SOF and be conversant with their tactics and procedures. Furthermore, the aircraft, both rotary and fixed-wing, need to be dedicated to the mission and must become special in some way in order to achieve the desired effects. For example, SOF may be required to conduct covert night insertions into high-threat areas in the absence of air superiority. Special air operations play a supporting part in the role of hostage rescue.

23 DTB record 3308.

24 The need for maintaining a near sea-level cabin pressure may dictate that the aircraft be flown at a lower than optimum cruise level, thus resulting in a higher fuel burn for the flight but less stress on the patient being moved, and therefore a greater chance of survival.

25 DTB record 4324.

26 DTB record 5486.

27 DTB record 2597.

28 DTB record 5389.

AERIAL DELIVERY METHODS

During airlift operations two methods are available for delivering the load at the destination. These methods are airland and airdrop delivery,²⁹ described as follows:

- a. **Airland Delivery.** Airland delivery, also known as air-landed delivery, is the movement of personnel and materiel into or within a theatre of operations by landing³⁰ and offloading the aircraft. This delivery method can be used to establish a force for subsequent action, sustain forces after a successful assault, or for withdrawal and redeployment of the force.
- b. **Airdrop Delivery.**³¹ Airdrop delivery is the unloading of personnel, supplies, and equipment from aircraft in flight.³² This may be the only option when suitable landing zones are not available, or when hostile action threatens the aircraft during landing and off-loading.

In low-threat environments, personnel and materiel delivered by the airland delivery method “are exposed to less risk of damage because the aircraft lands before off-loading. This method has the advantage of positioning large capabilities discretely within time and space, and can keep the tactical integrity of the delivered force. Airland delivery also has the advantage of creating payload *back-hauling*³³ opportunities, thereby increasing [airlift] efficiency. [Airland] is... the most common method of payload delivery. The *general* rule of [airlift] is: ‘If the operational situation allows for it, *land* and then unload the aircraft.’”³⁴

Airdrop delivery is more specialized than airland delivery as there is a greater requirement for specialized equipment and training. For example, well-developed low-level flying skills and techniques are necessary to deliver a payload through a low-altitude parachute extraction system; this manoeuvre can be dangerous if executed by an inexperienced crew. Airdrop payloads, once delivered, require less ground handling than airland payloads,³⁵ and have no need for landing facilities at the delivery location. “Payloads can be delivered directly to the end user, an advantage when delivering to users scattered throughout the battlespace. Airdrop delivery can save valuable time and effort during critical stages of a battle. Compared to airland, airdrop presents less risk to the aircraft and crew in

29 These delivery methods used to be reserved for tactical airlift missions only, but it is now widely accepted that delivery methods are independent of whether the mission is considered strategic or tactical in nature.

30 Or hovering, if rotary-wing aviation assets are used.

31 Preferred term, alternately known as “aerial delivery.”

32 DTB record 3416.

33 Once an incoming aircraft’s cargo is unloaded, the now-vacant cargo space can be filled with outgoing cargo. The return trip creates additional airlift capability.

34 AFOD, Move Module 5, 31-32.

35 This is from the perspective of an air force; however, this could be a distinct disadvantage for a land force which must secure a drop zone and collect the dropped payloads.

high-threat areas as the aircraft spends less time in harm's way,"³⁶ which is a viable reason for selecting airdrop over airland if the situation dictates. "The airdrop method can rapidly disperse resources to austere locations that have limited infrastructure to support [the airland delivery method.]"³⁷ Notwithstanding, it may seem counterintuitive to some that although airdrop delivery seems more flexible and entails less overall risk, it is logistically more complex, requires more planning and preparation time, and moves much less materiel than airland delivery. From a cost-benefit perspective, therefore, airdrop delivery tends to be less favourable than airland delivery.

Unsecured airdrop—where the load is not tethered to the aircraft during its delivery—consists of free fall, parachute-assisted airdrop, and low altitude parachute extraction. "How payloads are dropped depends on a variety of factors, including the cargo's characteristics and the mission objectives. Different parachute systems allow different rates of descent; more fragile payloads use low-velocity systems to reduce the risk of damage or injury. Conversely, more robust payloads can be dropped using high-velocity parachute systems, which can increase drop accuracy and also minimize the payload's time airborne. Airborne time—or exposure time—is a function of descent rate and the altitude above ground from which the drop is made. Descent exposure time is a consideration due to the possibility of detection and reaction by opposing forces."³⁸

Secured airdrop—"where the load remains tethered to the aircraft during its delivery"³⁹—consists of rappelling, hoisting, and slung loads. Each method of secured airdrop is used in specific applications and requires the airborne platform to remain relatively stationary at low level, directly over the surface of the earth where the load is delivered. Helicopters are the only platforms able to deliver secured airdrop, "but only specific airframes are suitable in terms of equipment and carrying capacity to meet [airlift] requirements. In addition, if a threat exists in the operation area, the vulnerability of the aerial platform and payload must be considered."⁴⁰

36 AFOD Move Module 5, 33.

37 Ibid.

38 Ibid., 22.

39 Ibid., 25.

40 Ibid., 29.

DISTRIBUTION SYSTEMS

Operational-level air distribution systems are critical to the successful conduct of airlift. While these concepts primarily apply to airlift, they are universal in nature and there is value to emphasize how they relate to airlift. There are two basic distribution systems employed when moving resources from origin to destination: hub-and-spoke delivery and direct delivery.

Hub-and-Spoke Delivery. The hub-and-spoke delivery method sustains outlying locations, formations, and units from a central and secure position. The hub-and-spoke system requires fewer routes into a theatre of operations, and provides a more efficient use of transportation assets by maximizing the use of an aircraft's carrying capacity. Hub-and-spoke has centralized resource handling and resource management. Spoke locations can move payloads to any other spoke location in the network through the hub. New spoke locations can be accommodated easily into the network. At least one centralized hub in a relatively safe area having the necessary infrastructure is required. The hub provides some advantages: large air transports, including commercial carriers, can be used; and the benefits of the airland delivery method can be realized. It is primarily for these reasons why the hub-and-spoke system is used for strategic airlift and the transition from strategic to tactical airlift, when large volumes of resources must be moved into an operating area as efficiently and effectively as possible. The hub-and-spoke delivery method has many advantages, but disadvantages include increased delivery time and the fact that problems at the hub resonate through the entire network.

Direct Delivery. "Direct delivery, because it does not have to pass through a central hub, is a faster delivery system. It exploits the advantages of shorter point-to-point routes. The delivery means for the direct delivery system depends on a variety of factors, such as payload, infrastructure, and threat. Both [airland] and airdrop delivery methods can be used, depending on the given situational factors."⁴¹ Direct delivery is used both in strategic and tactical airlift operations.

⁴¹ AFOD, Move Module 5, 53

CHARTERED AIRLIFT SUPPORT

There are occasions when organic CF airlift capability is not sufficient to meet all movement demands. In some cases, the factors of threat, urgency, cost, and others, may indicate that chartered airlift is a preferred option. Contingency and sustainment operations may therefore require that CF airlift assets be augmented by chartered civilian aircraft to meet the needs of a specific airlift operation, as well as to effectively move oversized⁴² and outsized⁴³ cargo in the deployment, sustainment, and re-deployment of CF units. Both fixed- and rotary-wing assets may be chartered as required.



PA Photo

⁴² See glossary.

⁴³ See glossary.

AIR-TO-AIR REFUELLING

Air refuelling (AR) is the capability to refuel aircraft in flight, which includes both AAR and helicopter in-flight refuelling (HIFR). Air refuelling contributes to Move through AAR, the refuelling of an aircraft in flight by an airborne tanker aircraft, thereby facilitating the rapid movement of fixed-wing assets responding to contingencies when and where required. HIFR, the timely refuelling of rotary-wing assets from surface platforms, such as ships, to extend their missions, is not a tasked mission in the doctrinal sense and is therefore not part of an RCAF function. Air-to-air refueling allows air power to increase levels of versatility, surprise, flexibility, and mobility, and can concentrate more air assets for operations.

An AAR capability is essential for performing Canadian sovereignty missions, as well as for conducting global air expeditionary operations. Due to Canada’s vast domestic region, AAR provides the means for fighter aircraft to reach distant points without the need to plan routes based on aerodrome availability, weather, support arrangements, and the desired final operating location. In-flight refuelling mitigates these factors, while also reducing the time to arrive on scene to commence operations.

For operations within the Canadian domestic theatre, AAR allows for centralized basing of fighter assets, whilst enabling their effective employment when tasked for sovereignty-enforcement operations. For international operations, including strategic operations, it facilitates the rapid deployment and redeployment of fighter assets to reach their intended theatre of operations as quickly as possible without the need for en route fuel stops.

AIR-TO-AIR REFUELLING MISSIONS



FIGURE 2-3. AIR-TO-AIR REFUELLING MISSIONS

Air-to-air refuelling can take the form of either strategic⁴⁴ tanking or tactical⁴⁵ tanking when used for force employment.⁴⁶ When used for force generation, the term used is administrative tanking. Notwithstanding, tasked AAR missions do not distinguish between these categories. Strategic AAR enables the receiver aircraft to either extend its range, to allow it to reach distant locations without the need for en route refuelling stops, or to remain on station for longer periods. This is known as a force enabler⁴⁷ effect. Additionally, by eliminating en route stops, AAR ensures maximum availability of air assets through reducing the potential for maintenance and servicing problems associated with shutting down and restarting engines, and cycling of landing gear; however, this is offset by an increased crew duty day. Finally, AAR also contributes as a force enabler in that shorter runways may be used if AAR is available. In scenarios such as deployed operations where suitable aerodromes may be at a premium and/or where runway length may limit an aircraft's take-off weight, the aircraft can take-off at its maximum permissible weight (given the combination of payload and fuel) and then refuel once airborne. Therefore, AAR may enable aircraft to use aerodromes that otherwise would not support the combined payload and fuel requirements of a mission.

In the context of strategic and tactical AAR missions, to show where a tanker platform is used in a capacity which is the opposite of what one would expect, consider two examples: CC137 tactical tanking of CF18s and the USN F-14 during Gulf War I, and two CC130s used to provide strategic tanking for CF18s crossing the Atlantic to participate in Operation ECHO (Kosovo air campaign). This illustrates that it is the mission that defines whether the operation is considered strategic/tactical, and not the tanker platform.

⁴⁴ Also known as inter-theatre, en route, or trail.

⁴⁵ Also known as intra-theatre, anchor, or towline.

⁴⁶ A primarily strategic AAR platform (e.g., CC150T) or a primarily tactical AAR platform (e.g., CC130T) can complete either type of mission with varying degrees of effectiveness, meaning that strategic and tactical AAR missions are not platform-specific.

⁴⁷ DTB record 37304.

Within a theatre of operations, tactical AAR enhances the fighter aircraft's capabilities by allowing it to take off with a maximum weapons payload and then top up its fuel tanks prior to commencing the mission in order to extend its total mission time. This is known as a force multiplier⁴⁸ effect. Furthermore, upon completion of its initial mission, a returning aircraft can be refuelled in flight and thus continue with a second mission, weapons load permitting. A single aircraft, or flight of aircraft, therefore, can conduct multiple missions without having to return to base for fuel. However, an increase in on-station time, resulting from increased endurance due to taking on extra fuel, can be considered as both a force enabler and a force multiplier depending on the scenario.⁴⁹ Whether strategic or tactical in context, AAR operations therefore contribute to Move by providing the necessary fuel to enable the receiver aircraft to get to where they are required.

There are three consistent themes to AAR:

- a. it will always be a limiting factor in real-world air operations;
- b. the carriage of fuel will always be the limiting factor in strategic AAR; and
- c. the number of contact points will always be the limiting factor in tactical AAR.



CF Photo: Cpl Marc-André Gaudreault

⁴⁸ DTB record 37306.

⁴⁹ If the effect of increased endurance is to stay on station longer to complete multiple missions that would otherwise have required additional aircraft or sorties to complete, then AAR is both a force enabler and force multiplier in this context.

OPERATION FRICTION

During the first Gulf War, in addition to other forces, Canada deployed a contingent of CF18 fighters to the Persian Gulf. A single Boeing 707 tanker from 437 “Husky” Squadron deployed to Doha on 8 January 1991 as part of a scheduled CF18 rotation. A topical quote illustrates: “CAP [Combat Air Patrol] operation began in earnest on 10 January 91. On the first day, we fuelled CF18s, USMC F/A-18s and an EA-6B (inadvertently). As this was the first opportunity for CF tankers to air refuel non-CF resources, it was stimulating. EMCON (Emissions Control) [no radio] procedures were the rule for refuelling in the Persian Gulf, and if fighters do not follow the red light and plug anyway, it is too late to do anything other than cut off their fuel. ... This date also saw 437 Squadron resources in the Persian Gulf being transferred to CATGME [Canadian Air Task Group Middle East] indefinitely. As a result of this transfer, a third crew and nine more technicians were requested to ensure a 24/7 capability. ... The first thirteen days of the war saw the Huskies working like dogs. In this short time span, we flew over 200 hours and passed over 2,000,000 pounds of gas—quite an awesome accomplishment for one aircraft, especially one over 20 years old, to achieve.” [Unattributed]

AIR-TO-AIR REFUELLING DELIVERY SYSTEMS

There are two AAR delivery systems in which fuel is transferred from a tanker to a receiver: “boom”⁵⁰ and “probe-and-drogue.” Receiving aircraft are equipped to receive fuel from only one of the two systems. Historically, most tankers were fitted to deliver fuel by one system only, but a boom drogue adapter (BDA) was developed that made the boom system compatible with probe-equipped receivers. However, with a BDA attached, boom refuelling is not possible. Either system can only be used to perform AAR on an aircraft that is fitted with the same system. The end result is that it is the receiver’s equipment that determines how tankers are deployed, and planning considerations must take into account the type of system which the receiver aircraft requires. Due to the additional planning complexity of interfacing the right type of tanker to the right type of receiver, most new tankers that are being produced have both systems installed (i.e., a centre-line boom and wingtip pods for probe-and-drogue).

⁵⁰ Also called “boom and receptacle.”

SUMMARY

The air mobility component of RCAF Move fulfils a vital service for the CF, OGDs, and NGOs. Whether airlifting troops and their equipment in response to a tactical directive, providing sustainment flights for expeditionary operations, or tanking fighters in transit or within an operational theatre, an air mobility capability is essential to all modern military forces.



CF Photo: Sgt Dwayne Janes

Air mobility operations are not standalone operations. Specialized units and support activities are required for their overall effectiveness. The CF has seen a significant increase in its airlift capacity; however, there will still be occasions when military forces will have to be augmented through the charter of civilian aircraft to move large cargo loads.

The airlift missions in support of air mobility operations include scheduled flights, special flights, air logistic support operations, airborne operations,

airmobile operations, aeromedical evacuation, and special air operations. The various airlift missions may also be categorized as either strategic or tactical airlift operations, depending upon the geographic environment; however, the categorical distinction may also relate to flight profile, aircrew skill-set, and/or aircraft configuration. Delivery methods for airlift operations include airland delivery and airdrop delivery. Airlift distribution systems include hub-and-spoke delivery and direct delivery.

Air refuelling encompasses both AAR and helicopter in-flight refuelling, but only AAR relates to Move. It contributes to RCAF Move by extending the range of receiver aircraft, allowing them to reach their area of operations as quickly as possible. Additionally, AAR enables aircraft to carry a greater payload on departure, and to conduct multiple missions as long as their weapons load permits. Therefore, AAR is a force enabler, a force multiplier, or both, depending on the mission being conducted. Delivery systems for AAR operations include the boom system and the probe-and-drogue system, which are not interchangeable.



CHAPTER 3



PERSONNEL RECOVERY

INTRODUCTION

Personnel recovery doctrine forms the basis for achieving certain effects for different reasons. In this case, the desired effect is to employ Move assets to retrieve personnel from an undesirable place and to get them to where they need to be. To recover isolated personnel and persons in distress from any type of threat environment, the CF requires a system to prepare, recover, and reintegrate DND/CF personnel and members of OGDs and NGOs that may need to be recovered.

INSIGHT: BATTLE OF BRITAIN

"In July 1940, during the Battle of Britain, the Royal Air Force (RAF) lost more than 220 airmen at sea. This loss was **unsustainable**, so the RAF developed search and rescue procedures for downed pilots. These measures were effective; they reduced pilot losses and allowed many pilots to quickly return to the 'fight.' Such historical examples established personnel recovery as a critical component of **preserving** an operational capability, hence its inclusion within doctrine. Although this particular Battle of Britain example of the RAF's actions in 1940 highlights a search and rescue component during wartime, personnel recovery has applications across the spectrum of conflict—from peacetime, to times of increased tension, to war."¹

The RCAF has an operational and moral obligation to protect and recover military and civilian personnel alike, from any type of hazardous or hostile environment. In the RCAF, personnel recovery is considered a capability associated with Move. Personnel recovery doctrine emphasizes an integrated approach in which the CF provides assistance to OGDs and NGOs as required. Historically, personnel recovery doctrine has focused on the recovery of downed aircrews in a non-permissive environment; however, updated allied experience suggests that personnel recovery forces are responsible for the recovery of any isolated personnel and/or persons in distress.

THE PERSONNEL RECOVERY SPECTRUM

Personnel recovery is an umbrella capability that addresses "the sum of military, diplomatic, and civil efforts to recover and reintegrate isolated personnel and/or recover persons in distress."² It represents a broad span of different types of *activities and operations*³ covering a disparate group of missions and tasks, but consolidated into a coherent spectrum covering a

¹ AFOD, Sustain Module 4, 53-54.

² DTB record 31303.

³ These distinctions are consistent with *CFJP 3.0, Operations*, which discuss the differences between classical military operations and whole-of-government approach (or comprehensive approach) activities. Despite the fact that personnel recovery operations may routinely be conducted as integrated operations, they are categorized as operations vice activities because the personnel being recovered may be isolated (vice being in distress), and/or the threat level may be elevated.

number of parameters, the principal ones being the threat⁴ level and the status of the personnel being recovered. A personnel recovery activity is an integrated activity in deliberate response to an event involving persons in distress. A personnel recovery operation is an integrated operation in deliberate response to an event involving isolated personnel. This spectrum only addresses the doctrinal components; Canada does not possess the capability to accomplish all the effects in the spectrum independently. The personnel recovery spectrum is outlined at Figure 3-1.

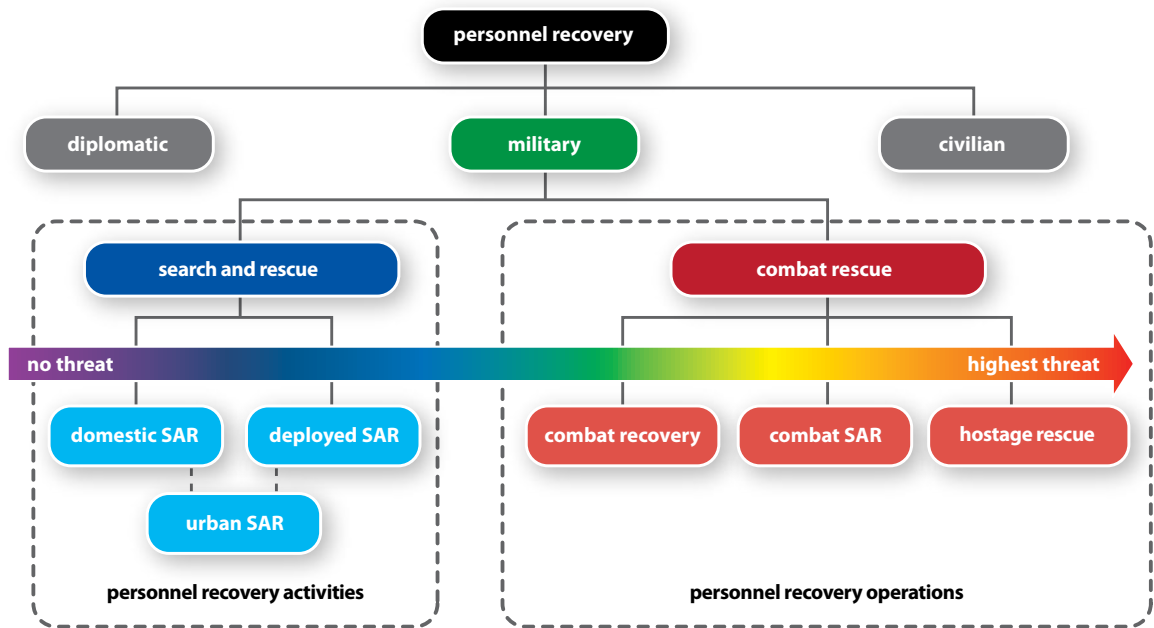


FIGURE 3-1. THE PERSONNEL RECOVERY SPECTRUM^{5, 6}

A nation may exercise diplomatic, military, or civil options, or a combination thereof, to recover isolated personnel and/or persons in distress. Personnel recovery activities include the role of SAR, whether it is domestic or deployed, and urban SAR. Personnel recovery operations (PRO) are associated with the umbrella term combat rescue, and include the roles of CR, CSAR, and HR. The essential elements⁷ of PRO include command and control, recovery forces, and isolated personnel. The three essential

4 In doctrine the usage of “threat” refers to an adversary: “A nation, organization, group, or individual, domestic or foreign, with intentions and capabilities that suggest it could become an enemy or a challenge to a given state, or undermine its national security.” (DTB record 27433). Although the dictionary usage of “threat” could imply the context of distress or peril, it would be non-standard to mix the intended use of this term. Domestic SAR activities entail various levels of risk, but not threats.

5 Deployed SAR is illustrated as a separate box to differentiate between SAR in a domestic theatre of operations and SAR in an international theatre of operations; it is not considered as a separate specialty role.

6 Adapted from United Kingdom (UK), Joint Warfare Publication 3-66, *Joint Personnel Recovery*, and, ADDP [Australian Defence Doctrine Publication] 3.6, *Joint Personnel Recovery*, 2007.

7 In total, the elements of personnel recovery operations include command and control, recovery forces, preparation, reintegration teams, isolated personnel, and their next of kin. Note that not all of these are required in a given situation.

elements must work together through an effective communication/surveillance system and intelligence architecture. In addition, each of the essential elements must be thoroughly trained, organized, and equipped to perform its own unique actions, seamlessly interface with the other elements to accomplish the five PRO execution tasks (report, locate, support, recover, and reintegrate), and gain and maintain situational awareness.

In many allied nations, air force resources applied within the personnel recovery capability are specialized for combat rescue operations, since those nations possess adequate civil capabilities to meet domestic SAR requirements. In such countries, PRO have become synonymous with combat rescue operations, and the terminology associated with key organizations and processes reflects this. Although this approach is not necessarily incorrect, it misrepresents the holistic nature of the personnel recovery spectrum in which personnel recovery activities are also considered. In Canada, due to the vastness of the geography and the harsh environment, the RCAF has been charged with conducting domestic SAR, and personnel recovery resources are almost entirely devoted to this specific role. There is a tendency to forget that SAR is but one role in the personnel recovery spectrum. From the Canadian perspective, personnel recovery operations have become synonymous with combat rescue operations, including the key terminology. In short, Canada recognizes a distinction between personnel recovery *activities* and *operations*, based on the status of the personnel being recovered (i.e., whether they are isolated or in distress) and/or the level of threat.

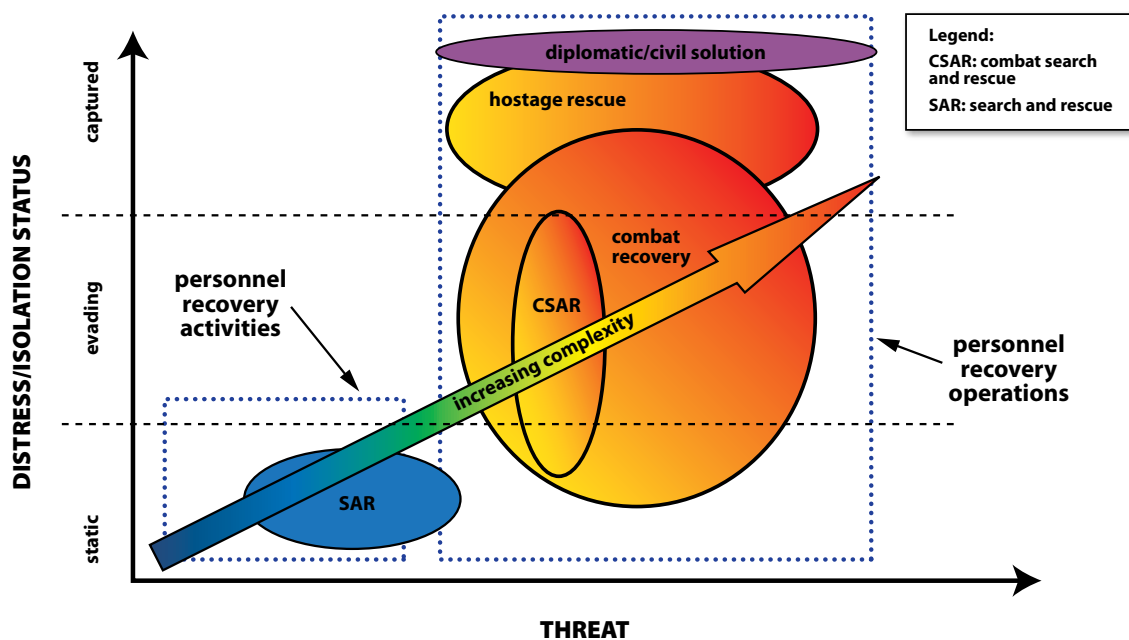
A distinguishing feature between search and rescue activities and combat rescue operations is the threat level. Some of the types of roles listed may not be as widely known as the more common domestic SAR role where there are no threats to the rescuers. As the threat-level scale illustrates, personnel recovery in very high-threat situations involving adversaries could require special forces operations into hostile territory. The isolation, capture, and/or exploitation of military personnel during operations in high-threat environments could have a significant negative impact on operational security, morale of assigned forces, and public support. It is not only the threat level that distinguishes one personnel recovery role from another; *who* is being rescued creates another distinction. For example, domestic SAR mostly responds to civilians in distress who typically have little, if any, survival training. As the type of personnel recovery activity or operation changes with increased threat levels, the expected level of survival training of the personnel being recovered increases. Logically, special forces personnel are at the greatest risk of finding themselves in

a personnel recovery situation in enemy territory. Therefore, special forces devote great attention and training aimed at readying themselves for recovery from a hostile environment.

RISK CONSIDERATIONS

The personnel recovery spectrum as depicted in Figure 3-1 may give the impression that diplomatic, civil, and military options to recover personnel, as well as the methods used, are clearly delineated; however, this is not true. Figure 3-2 shows that the different types of missions may overlap. The colour shading from blue via yellow to red indicates that there is a gradual shift from relatively straightforward to increasingly complex execution of the particular type of personnel recovery operation. Whereas SAR typically focuses on personnel that are in distress but not evading, CR may range from small to relatively large numbers of personnel that may be isolated or evading. Combat search and rescue (CSAR) is typically applicable for small numbers of personnel that may be isolated or evading. Hostage rescue may be applicable to both small and relatively large numbers of personnel. A non-combatant evacuation operation in a non-permissive environment, consisting of small to large groups of isolated personnel, could be considered to be an HR rather than a NEO; it is the threat level and type of threat that become the distinguishing factors. Recovery TTPs for the extraction of non-combatants may be similar, if not the same, as for CR.⁸ Hostage rescue is the recovery by SOF of isolated personnel who have been taken hostage by hostile adversaries. Recovery situations may need the assistance of SOF when conventional means are not suitable. The rescue of captured personnel occurs in an integrated approach framework.

⁸ Evacuations are diplomatic initiatives, with military forces participating in a supporting role. The military supporting operation is a NEO.

FIGURE 3-2. PERSONNEL RECOVERY RISK CONSIDERATIONS⁹

CF Photo: Cpl Brandon O'Connell

⁹ Figure 3-2 is intended to show broad relationships between the essential roles and missions; it is not meant to be definitive. The SAR ellipse touches on the PRO box to account for that aspect of deployed SAR that may encounter a degree of threat in a marginally stable country with opposing factions. Adapted from NATO AJP-3.3.9.

PERSONNEL RECOVERY ROLES

In the NATO context, any service or component may conduct personnel recovery, and it is therefore considered joint;¹⁰ however, in Canada, personnel recovery is an integrated, whole-of-government activity coordinated by DND/CF and other government departments, organizations and agencies. The specific roles associated with personnel recovery are illustrated in Figure 3-3, and will be further discussed in the following two sections of this chapter.

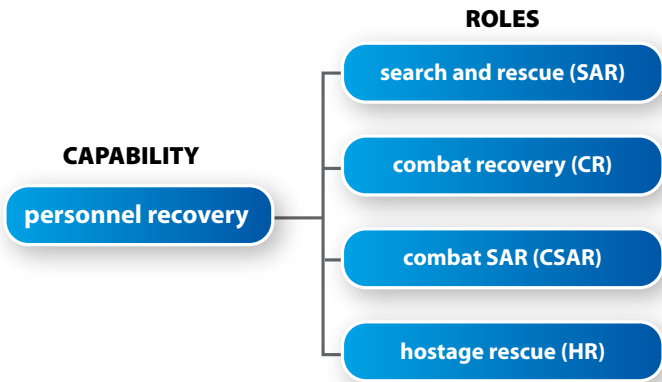


FIGURE 3-3. PERSONNEL RECOVERY ROLES

SEARCH AND RESCUE ACTIVITIES

In Canada, SAR is inherently an integrated¹¹ activity because it involves coordination between the CF, Coast Guard, and police. The Canadian SAR system is a modern, fully integrated network, providing responsive services within each search and rescue region (SRR) in Canada to ensure SAR is successfully conducted (see Figure 3-4). The system consists of three joint rescue coordination centres (JRCC), two marine rescue sub-centres (MRSC), and a Canadian mission control centre (CMCC), to coordinate and control SAR missions.

10 In Canada, all RCAF assets, including helicopters chopped to the Canadian Army and Royal Canadian Navy, are commanded by the RCAF. As a result, there is no “jointness” in Canadian air operations.
11 DTB record 41415.



FIGURE 3-4. CANADIAN SEARCH AND RESCUE REGIONS

The basic organization of national SAR forces in peacetime is in accordance with NATO, International Civil Aviation Organization (ICAO), and International Maritime Organization (IMO) requirements. In time of war, the existing SAR organization will be continued wherever possible; however, greater need will be paid to military requirements.

The basic principles for determining the composition and control of SAR forces apply equally to peace and war situations. However, a favourable air situation must exist before SAR forces can operate effectively in a hostile environment. SAR resources not needed during hostilities may be used for airlift operations.

The basic function of SAR in war and peace is the preservation of life. In NATO, SAR is a national responsibility and therefore Canadian expeditionary tactical air operations rely on the SAR resources, doctrine and procedures of the host nation.¹² For non-NATO nations, the provision of SAR resources by the host nation may be problematic, and is determined on a case-by-case basis.

¹² Agreed upon SAR procedures are covered in the NATO ATP [Allied Tactical Publication]-10, *Search and Rescue*, 10 January 1995.

SAR CASE STUDY

Often the first signal of an emergency situation for SAR crews is the sound of their pagers going off. The crews then scramble to get airborne as quickly as possible with the hope of offering assistance to others. These missions send crews from their respective bases to all corners of the nation in various environments ranging from arctic conditions to foggy seas to dangerous mountainous terrain. The sorties can last several hours or even a number of days as personnel work to resolve the situation in their 24/7 role of providing vital SAR services. Generally, the crews never see the families of the personnel affected by tragic events.

That's why 10 December 2010 was a special day for 442 Transport and Rescue Squadron at 19 Wing Comox, when the father of two boys whose airplane had gone missing the previous August came to visit. Mario Tello's two sons, and two other passengers, took off from Penticton, B.C., in a PA-24 Comanche and were never heard from again. The Victoria Joint Rescue Coordination Centre was notified of an overdue aircraft after it failed to reach its destination of Victoria International Airport, and quickly tasked SAR assets to begin the search.

After a week of long days spent searching in hazardous mountain terrain, involving many military and civilian aircraft, a CC115 Buffalo found the wreckage and its occupants. Sadly, there were no survivors, but the efforts of the search crews helped bring closure to three families who had waited to hear of the fate of their sons. Mr. Tello, inspired by the professional and dedicated efforts of the squadron, created a work of art depicting a CC115 Buffalo and CH149 Cormorant aircraft searching the rugged terrain of British Columbia. He presented it during an emotional speech to the squadron. "I have to show my appreciation for everything they have done on my behalf, for my family and for all the other boys' families," he said. "We are really grateful to the SAR community." [Source: Captain Julian White, "Squadron receives special gift," *The Maple Leaf*, 14, no. 3 (19 January 2011): <http://www.forces.gc.ca/site/commun/ml-fe/article-eng.asp?id=6687>.]

DEFINITIONS

Search and Rescue (SAR)¹³ "is the use of aircraft, surface craft, submarines, specialized rescue teams and equipment to search for and rescue personnel in distress on land or at sea,"¹⁴ in an environment where there is no risk of hostile interference. Canadian military SAR efforts are directed toward the rescue of both military and civilian personnel. Additionally, some nations have parallel civil SAR assets, which can also respond to military SAR

¹³ Military personnel employed in the domestic SAR role are **not** conducting a core military role; rather, they are fulfilling a federal government mandate. This results in the SAR community being a somewhat unique entity within the CF. Notwithstanding, SAR, whether conducted nationally or internationally (i.e., domestic or deployed), is considered as a single role.

¹⁴ DTB record 1290.

incidents. NATO nations' SAR services remain a national responsibility operated to meet ICAO, IMO,¹⁵ and NATO requirements.

Deployed SAR is the recovery of persons in distress, located in an international theatre of operations, where there is no risk of hostile interference. For deployed operations or exercises in a permissive environment (e.g., disaster relief, humanitarian relief, or training exercises), Canada's capability to search for and recover personnel may need to be provided by deployed assets. This term relates to non-hostile situations when deployed overseas, and does not include deployment within the domestic theatre to respond to a disaster or recover persons in distress.¹⁶ This role may be either provided by dedicated SAR or other in-theatre assets.



CF Photo: Sgt Norm Mclean

¹⁵ The *International Aeronautical and Maritime Search and Rescue (IAMSAR)* Manual is a joint pub of ICAO and IMO, whose primary purpose is to assist states in meeting their own SAR needs, as well as the obligations they accepted under the Convention on International Civil Aviation, the International Convention on Maritime SAR, and the International Convention for the Safety of Life at Sea (SOLAS).

¹⁶ Technically, the positioning of SAR forces in the domestic theatre to engage in a major SAR activity could be thought of as "deployed SAR," but since the command and control still comes under a joint rescue coordination centre it is not considered to be doctrinally distinct.

INSIGHT: OPERATION HESTIA

Joint Task Force Haiti (JTFH) included land, maritime, and air components active in Port-au-Prince, Léogâne and Jacmel. The air component of JTFH had six CH146 Griffon helicopters, of which four were configured for tactical support to land operations and two were configured for SAR and aeromedical evacuation missions. Flying operations were conducted from Toussaint Louverture International Airport in Port-au-Prince. This is an example of a deployed SAR mission in an international theatre.

Urban search and rescue (USAR) is the capacity to rescue victims from major structural collapse or other entrapments. In the RCAF, USAR is a group of specialized rescue skills supplemented by search, medical, and structural assessment resources combined in a mobile, highly cohesive team. It is considered an integrated activity, with RCAF firefighters being the primary military component. USAR is applicable in both domestic and deployed SAR activities. The USAR classification system is a continuum of technical rescue capabilities from light USAR, small teams that carry out tasks with few technical resources, to heavy USAR, multi-disciplinary teams that integrate large amounts of technical equipment and diverse professional skills in demanding rescue scenarios.¹⁷



¹⁷ See <http://www.publicsafety.gc.ca/prg/em/usar/usar-guide-eng.aspx#a06> (accessed July 4, 2011).

INSIGHT: OPERATION HESTIA

Air Force firefighters deployed to Haiti as part of the initial response to the disastrous earthquake. On 14 January, the first group of ten firefighters was deployed to Port-au-Prince, as part of the DART. By 19 January, another group of six firefighters, including five with specialized USAR training from 19 Wing Comox, were deployed to augment the initial capability. A seventeenth firefighter was deployed as part of 8 Mission Support Squadron to provide fire protection planning and capability at the airport and camp in Jacmel. The group operated in three teams: the first conducted USAR in Port-au-Prince; the second team, located in the DART camp at Jacmel, provided USAR and humanitarian assistance; and the third team provided aircraft rescue and firefighting services as well as camp fire protection for the CF camp at Jacmel airport.

SAR MISSIONS

SAR missions in both peace and war can be grouped into two categories of tasked missions: pre-planned precautionary SAR missions and emergency SAR missions.

Precautionary SAR Missions. During operations involving military aircraft in isolated areas and during transoceanic operations of short-range aircraft, SAR aircraft may be positioned to be immediately available, should a distress situation develop, or to provide navigational assistance. Positioning may be at an airport close to the area of operations, or it may involve orbiting at pre-arranged positions or flying predetermined routes.¹⁸ Similar precautionary measures may be taken whenever flights carrying members of the Royal Family fly in airspace for which Canadian SAR forces are responsible.

Emergency SAR Missions. By far, the greatest demand placed on SAR forces by way of required skill and effort expended is in the performance of emergency SAR missions. The scope of these missions ranges from simple intercept and escort of distressed aircraft, to large-scale searches of thousands of square miles for missing aircraft, surface vehicles, or surface/sub-surface vessels. Extended SAR missions in all areas require direction and execution by highly experienced SAR personnel. All available incident data must be collected and evaluated to determine the type and extent of SAR activity required. Forward bases may be necessary because of the distance to the search area and search patterns must be selected for most effective search depending on weather and terrain. In many cases, SAR

¹⁸ Term used is “duckbutt,” see glossary.

forces operate in high-risk and challenging conditions, especially involving extreme weather and/or hazardous terrain. SAR crews must be briefed and communications must be established to control search participants. Rescue and recovery of survivors may also be a formidable task, particularly if the incident occurs in a remote area and large numbers of survivors are involved.

CANADIAN SAR AREA OF RESPONSIBILITY

Peacetime. The Canadian area of responsibility (AOR) for air search and rescue is as defined under ICAO agreements, and for marine search and rescue as defined under IMO agreements. Within NATO, Canada also has a host country responsibility to provide SAR services to NATO forces while in Canada.

Wartime. Canadian dedicated SAR forces may be employed worldwide in support of Canadian military operations at the discretion of the Commander Royal Canadian Air Force (Comd RCAF). This might include the employment of complete SAR formations or specific personnel or sub-units for the duration of a mission or operation.

SAR AGREEMENTS

It is highly desirable that Canadian SAR procedures be as closely aligned as possible to those used by nations participating in ICAO, NATO, SOLAS (Safety of Life at Sea) and maritime SAR conventions. This requires a high degree of liaison and the acceptance of mutual agreements and standards. It is essential, therefore, that close cooperation be maintained between Canadian SAR authorities and those of other nations.

CHARACTERISTICS OF SAR FORCES

Incidents which generate SAR activities may occur day or night in varied climatic or topographic conditions. SAR forces need the following characteristics if they are to respond effectively to such diverse incidents:

- a. mobility and flexibility;
- b. the capability to provide rapid response;
- c. the capability to conduct extended SAR activities;
- d. the capability to render on-scene assistance; and
- e. the capability to retrieve distressed personnel.

Mobility and Flexibility. Primary SAR forces should be prepared for the rapid deployment of all SAR resources, or elements thereof, tailored as necessary to the scope of the scenario. SAR units should therefore be

organized and equipped to deploy rapidly and operate wherever suitable minimal facilities exist. Minimal facilities include fuel, communications, housing, and food services. The urgency of SAR incidents may require the immediate dispatch of aircraft, aircrews, critical spares, and minimum support personnel. If the scope of the activity warrants, the entire unit should be prepared to deploy to forward bases using additional airlifts. Extended operations may require further special airlift support to replenish supplies and essential spares.

Rapid Response. Since the probability of survival of incident victims decreases rapidly with the passing of time, particularly if injuries or severe climatic conditions exist, the most essential characteristic of SAR forces is the ability to provide a rapid response. SAR forces should therefore be organized and equipped to locate distressed aircraft or ships in minimum time and to render immediate rescue service (if possible) once the object of the search has been located. Should the initial search response be unsuccessful, primary SAR forces should be capable of mounting increasingly comprehensive search activities as soon as possible thereafter. To provide this rapid response, trained crews and aircraft equipped to perform essential SAR tasks should be maintained on alert status.

Extended Activities. Coupled with rapid response, the capability of SAR forces to conduct extended activities and thus rapidly search large areas is essential. Particularly when the distressed object is an aircraft, the search area may be vast. Ideally, primary SAR forces should be capable of extending the mission to provide complete and effective coverage of the search area in a minimum period of time without the use of secondary forces.

On-Scene Assistance. Having located the personnel in distress, SAR forces should be capable of providing immediate assistance when the situation so warrants. If the on-scene forces are rotary-wing equipped, this task is simplified in that the aircraft may alight or hover to permit crew members to assist survivors. With fixed-wing aircraft, survival gear may be dispatched or, if survivors are disabled, SAR technicians may be parachuted to the scene to provide emergency medical care and survival assistance until evacuation can be achieved.

Retrieval. The capability should exist to retrieve the personnel in distress. Rotary-wing aircraft are usually most suited for the retrieval of personnel; however, fixed-wing aircraft, surface vessels, or land vehicles may prove more effective in some situations.

COMBAT RESCUE OPERATIONS

Unlike SAR activities, combat rescue operations imply that a viable threat exists, posing unique recovery considerations and challenges. Personnel requiring recovery must reveal their location to friendly forces without giving away their position to the enemy; this can complicate the search effort. Another complication is protecting isolated personnel from capture and hostile fire until they can be extracted. Close air support and escorting aircraft may be necessary for rescue aircraft as they may be vulnerable to attack. The rescue platform itself may be required to be outfitted with sophisticated defensive electronic countermeasures to avoid destruction by enemy fire.

INSIGHT: BATTLE OF BRITAIN

Again, the Battle of Britain provides another example of how combat rescue operations evolved. This time, the example is from the German perspective. The Luftwaffe dedicated assets to the recovery of their pilots downed in the English Channel. Large red crosses were painted on the wings of white Heinkel-59 rescue aircraft to deter British attacks while rescue operations were under way. The British ignored the red crosses, attacking Luftwaffe rescue operations, as their objective was to prevent rescued German pilots from returning to combat. As a result, Germany learned their rescue operations were actually *combat rescue* operations, and subsequently repainted their Heinkel-59 rescue aircraft in camouflage colours. Messerschmitt Bf 109 fighters were also allocated for escort and top-cover during rescue missions from that point onwards.

DEFINITIONS

Combat recovery (CR) is the recovery of isolated personnel from a situation where the risk of hostile interference is expected to be medium to high. “In combat recovery, either the recovery force, or the isolated personnel, or both, have not been trained in CSAR tactics, techniques, and procedures (TTPs).”¹⁹

Combat search and rescue (CSAR) is “the application of specific TTPs by dedicated forces to recover isolated personnel, who themselves are trained and appropriately equipped to receive this support, from a situation where hostile interference may be expected.”²⁰

Hostage rescue (HR) is the recovery by SOF of isolated personnel who have been taken hostage by hostile adversaries. Recovery situations may need the assistance of SOF when conventional means are not suitable.

¹⁹ DTB record 36629.

²⁰ DTB record 18744.

COMBAT RESCUE OPERATIONS

Combat rescue operations (CRO) are resource-intensive activities. In many instances, all three fighting environments have supported such missions with suppression of enemy air defences (SEAD), ground and naval fire support, ground deception forces, ground and air reconnaissance, special forces patrols, airborne warning and control system (AWACS), AAR, and various alternate and escort platforms designated in the event of an attack upon the lead platform. Behind the scenes are the legions of planning staff, forward air controllers, and those in the chain of command. All are invested in the primary task of getting the “isolated personnel” out of harm’s way.

The capability of conducting CRO enables the joint force commander to push harder and farther in combat situations. In this context then, the associated roles of CR, CSAR and HR can be considered as force enablers. Few nations have complete combat rescue capabilities. Canada doctrinally recognizes the effects and capabilities associated with these operations, but does not possess the capability to accomplish their full scope. The complexity and resources required for these missions sometimes make them a multinational effort. The CF provides selected individuals with survival, evasion, resistance and escape (SERE) training to prepare them in case they become isolated personnel during operations.

Combat rescue operations, now synonymous with PRO, are deliberately instituted national crisis responses to an isolation event. Abroad, DFAIT assumes this responsibility. In the event of an incident or crisis that threatens the safety of Canadians in a specific foreign country or region, Canadian diplomatic missions have included in their areas of responsibility the recovery of CEPs, or personnel designated special status by the CF.

- a. Where the risk and threat to conventional forces is low, conventional forces should perform the CRO;
- b. Where the risk demands task-tailored forces, whether they are CR, CSAR or hostage-rescue capable, CRO forces are available to conduct full-spectrum operations. This may include the use of integral CF forces within the existing joint task force (JTF) and/or trusted international partners (TIPs);
- c. Regardless of situation (low/high risk, permissive/non-permissive environment) where distinct national interests exist, a task-tailored personnel recovery task force (PRTF) will be deployed, able to operate autonomously or in-conjunction with TIPs;

- d. DFAIT or the diplomatic head-of-mission may request assistance from the CF to contribute forces and assets to support the personnel recovery operation and the reintegration process; and
- e. The CF often operates in a comprehensive approach²¹ with various other government departments, agencies, and contractors for which the CF may be called upon to assist. The CF therefore requires a system to prepare, recover, and reintegrate both military and civilian personnel that have become isolated. During this critical time post-captivity, dealing with personnel who were subjected to the stresses of confinement, proper handling and treatment is essential or the efforts of the detained person to cope and recover could be marginalized. The CF coordinates, on behalf of DFAIT, for the overall reintegration process.

SUMMARY

In Canada, personnel recovery is considered a capability associated with RCAF Move. Personnel recovery refers to the sum of military, diplomatic, and civil efforts to recover and reintegrate isolated personnel and/or recover persons in distress. Personnel recovery exists in an integrated approach framework that recognizes a distinction between activities and operations. The status of the personnel being recovered (i.e., whether they are isolated or in distress) and/or the level of threat make each unique in execution. The personnel recovery spectrum comprises two broad categories: personnel recovery activities and personnel recovery operations. Personnel recovery activities include the role of SAR, whether it is domestic or deployed, and urban SAR. Personnel recovery operations are associated with the umbrella term “combat rescue,” and include the roles of CR, CSAR, and HR. Urban SAR is an integrated activity that spans both domestic and deployed SAR.

Personnel recovery activities, equated with search and rescue activities, are federally mandated to the RCAF in partnership with the Canadian Coast Guard and the provinces and territories (as effected by provincial and local police services). The basic function of SAR in both peacetime and wartime is the preservation of life. In NATO, SAR is a national responsibility and therefore Canadian expeditionary air operations rely on the SAR resources, doctrine, and procedures of the host nation. SAR missions are grouped into precautionary and emergency. SAR forces should have the capability of being mobile and flexible, providing rapid response, conducting extended SAR activities, rendering on-scene assistance, and retrieving personnel in distress.

²¹ DTB record 34522.

For personnel recovery operations, now considered synonymous with combat rescue operations, the three essential elements of PRO—command and control, recovery forces, and isolated personnel—should be thoroughly trained, properly organized, and effectively equipped to seamlessly interface with the other elements. This would accomplish the five PRO execution tasks of report, locate, support, recover, and reintegrate. A proactive posture for personnel recovery plans, activities, and operations ensures a timely response and decisive action to react to any incident across the personnel recovery spectrum. Combat rescue operations are highly specialized and require dedicated platforms and specially trained personnel. Few countries possess the capability to conduct the full spectrum of combat rescue operations.



CHAPTER 4

COMMAND AND CONTROL



INTRODUCTION

To optimize operations associated with Move, air mobility and personnel recovery assets should be under a centralized control system.¹ Competing demands for Move assets, which in most cases have global capability, require that clear and well-defined command and control procedures are established and understood by those agencies requesting support and by those providing these services. Without an effective command and control structure, Move resources could easily be misemployed by conducting missions which do not directly contribute to the commander's objectives.

Modern communication systems allow for the control of air mobility and personnel recovery assets anywhere on the globe, but establishing communication links to home-based and deployed assets does not in itself provide effective control. The single, greatest issue with such assets is determining who controls what asset at what time, and the limits to which that asset may be employed. Within each force employer² and CANOSCOM, the respective J3 Air/J4 staff or movement staff provide a means of establishing command and control links to the air mobility and personnel recovery assets involved in the various operations.³ The joint force air component commander⁴ (JFACC) controls CF aerospace forces as assigned by the force employer / supported commander. The respective J3 Air/J4 staff provides the combined aerospace operations centre⁵ (CAOC) with the movement effect required and together the best use of assets is determined. Operational control of CF Move assets normally rests with the JFACC.

The organization for command and control of Move resources varies depending on the scale and category of the air mobility and personnel recovery operation or exercise. Force generation and force employment of Move assets are managed and coordinated through 1 Cdn Air Div, which is responsible for the support of air mobility and personnel recovery operations. This can be accomplished via the existing command structure or through the formation of unique, temporary organizations as the situation dictates. This chapter will define the command and control arrangements necessary to provide the centralized control required for operations associated with Move. Additional information on the RCAF

¹ This applies to all air assets, hence the direct linkage with the associated tenet of aerospace power.

² The force employment commands are Canada COM, CEFCON, and CANSOFCOM.

³ The means to link to 1 Cdn Air Div are through the respective J3 Air / J4 staff and the compilation of the annual request for effects. It is CANOSCOM which usually is involved in the planning of strategic airlift, with the affected force employment headquarters, for major international and domestic operations.

⁴ The Commander 1 Cdn Air Div, as a result of assigned NORAD responsibilities, is also the "combined force air component commander (CFACC)" in that context only.

⁵ The generic term "combined air operations centre" is superseded in the Canadian context by a specific organization known as the "combined aerospace operations centre," with the same abbreviation.

Command function may be found in B-GA-401-000/FP-001, *Canadian Forces Aerospace Command Doctrine*.

AIR COMPONENT COORDINATION ELEMENT⁶

An air component coordination element⁷ (ACCE) is an operational-level liaison team assigned by the JFACC/ACC to support a force employment commander or JTF⁸ commander at the JHQ. An ACCE is led by an ACCE director, whose role is to facilitate integration of aerospace power by representing the JFACC/ACC throughout the planning and execution of joint operations. In order to effectively support the force employment commander or JTF commander, the ACCE director is delegated authority to recommend courses of action, and ensure that the air tasking order (ATO) meets the needs of the operation. An ACCE is under full command of the JFACC.

The ACCE receives, consolidates, and prioritizes all requests for effects (airlift) for submission to the CAOC. The approval for airlift is based on the priorities for airlift, which are set by the Total Air Resource Management (TARM) Committee, and the availability of aircraft and aircrew as managed by 1 Cdn Air Div.

COMBINED AEROSPACE OPERATIONS CENTRE

In aerospace operations, at the operational level, centralized control is achieved by means of an aerospace operations centre⁹ (AOC), a dedicated organization with the command and control systems necessary to control the execution of aerospace operations in detail (as per the associated tenet of aerospace power). The AOC is able to focus sorties where required, both by planned tasking and by diverting aircraft in flight, in a way that other environments cannot so easily do. The ACC, through the AOC staff, issues centralized tasking and coordination for all aerospace forces in the theatre, in the form of a single ATO for the theatre.

In aerospace operations the execution of a tasking is usually left with the tactical commanders, hence decentralization of execution, which allows tactical commanders to make adjustments to their tasking without having to request approval from the ACC (within delineated boundaries) in light of new intelligence/information. At 1 Cdn Air Div, the AOC is designated as the CAOC as a result of the NORAD relationship. The prioritization of all Move-related missions is carried out by the CAOC on a daily basis, with

6 1 Cdn Air Div Orders, Vol. 3, 3-308.

7 The former term "regional air control element (RACE)" has been replaced by the more generic term "air component coordination element (ACCE)."

8 In this context a JTF includes a regional joint task force (RJTF).

9 The generic term "air operations centre" is superseded in the Canadian context by a specific organization known as the "aerospace operations centre," with the same abbreviation.

an eye to ensuring that the customer priorities set by yearly and monthly plans are met as much as possible. However, customer priorities have to be synchronized with the demands of current operations, as well as the priorities previously identified through the TARM process. Overall, the CAOC process is challenged on a daily basis to continually re-prioritize mission requirements with air assets. Understanding mission requirements with attention to detail is the key to ensuring that this balance is achieved.

DOMESTIC OPERATIONS¹⁰

A number of CF organizations and units are involved in coordinating and providing air mobility and personnel recovery forces to support domestic Move-related operations. The command and control of air mobility and personnel recovery assets for force employment during domestic operations is described below.

DOMESTIC COMMAND AND CONTROL FRAMEWORK¹¹

The Commander RCAF exercises command and control of the RCAF, as well as assigned and allocated forces in accordance with various orders and directives. The Commander 1 Cdn Air Div is accountable to Comd RCAF for all force-generation¹² activities, other residual RCAF command responsibilities, and acting as the Operational Airworthiness Authority for all CF air assets. The Commander 1 Cdn Air Div is both the JFACC for the CF and the Commander Canadian NORAD Region (CANR). The JFACC is accountable to the designated supported commander for force employment of air assets, and provides each RJTF with an ACCE staff.

Within the parameters established by Comd RCAF, the JFACC may transfer allocated forces to a supported commander for force employment. In the Canadian area of responsibility (AOR), the supported commander is the Commander Canada COM. Except for NORAD missions and where reserved by the CDS, Commander Canada COM exercises operational command over all air operations (force employment) in the Canadian AOR. Normally, Commander Canada COM delegates operational control of CF aerospace forces to the JFACC. In the event that a separate air component command and associated air component commander (ACC) are necessary due to the scale, location, or complexity of the air operation in the AOR,

¹⁰ *CFJP-3.0, Operations*, defines three major operating environments: domestic, continental, and international. For the purposes of this publication, command and control considerations for continental operations are equivalent to domestic operations.

¹¹ CDS Interim Directive on CF Command and Control and Delegation of Authority for Force Employment, Annex C, para 4.

¹² Except force generation relating to doctrine and training activities, which are the responsibility of Commander 2 Canadian Air Division/Air Force Doctrine and Training (2 Cdn Air Div/AFDT).

then the JFACC may appoint an ACC, as required, and delegate the most appropriate level of command.¹³

Additionally, as the Commander CANR, the Commander 1 Cdn Air Div is accountable to Commander NORAD to exercise operational control over all forces allocated or made available for air defence in the region.

AIRLIFT SUPPORT (DOMESTIC)

CANOSCOM is the conduit through which strategic- and operational-level Move requirements by the Strategic Joint Staff (SJS) and force employment headquarters are identified and support needs coordinated. Based on the commander's intent and operational plan, CANOSCOM, with the designated force employment headquarters, will decide on the best mode of force and materiel deployment—including airlift—throughout all phases of the operation.

INTERNATIONAL OPERATIONS

Although air force expeditionary operations may be conducted within Canadian domestic territory,¹⁴ the focus of expeditionary operations within this section will be on international operations. Similar to domestic operations, international Move-related operations are coordinated, supported and provided by a number of CF organizations and units, and the command responsibilities are as follows.

INTERNATIONAL COMMAND AND CONTROL FRAMEWORK

Within the parameters established by Comd RCAF, the JFACC may transfer allocated forces to a supported commander for force employment. In the International AOR, the supported commander is either the Commander CEFCOM or Commander CANSOFCOM. Except where reserved by the CDS, Commanders CEFCOM and CANSOFCOM exercise operational command over all air operations (force employment) in their respective AOR. As with the domestic command and control framework, in the event that a separate ACC and commander are necessary due to the scale, location, or complexity of the air operation, then the JFACC may appoint an ACC, as required, and delegate the most appropriate level of command.

¹³ The JFACC performs the function of ACC for the supported commander; however, the JFACC may, in unique circumstances, appoint an ACC for specific operations.

¹⁴ Air Force Expeditionary Capability CONOPS, 28 Jul 09.

AIRLIFT SUPPORT (INTERNATIONAL)

CANOSCOM supports the deployment/redeployment and sustainment of expeditionary forces. In support of NEO, intermediate staging bases, decompression sites, theatre activation/deactivation, and rotation staff assistance teams, CANOSCOM will focus on establishing and supporting the strategic lines of communication and performing any support task required to facilitate execution. Similarly, CANOSCOM will support the deployment/redeployment of the DART, as well as responding to day-to-day deployed operational support requirements.

STRATEGIC AIRLIFT OPERATIONS

Strategic airlift requests are identified by the force employer HQ J3, processed through CANOSCOM HQ J3 Mov staff and passed to 1 Cdn Air Div / CAOC for deconfliction, resourcing, and tasking. As with all requests, approval is based upon the priorities set by the TARM, and availability of aircraft and aircrew is managed by 1 Cdn Air Div.¹⁵ The nature or size of the exercise or operation may warrant the establishment of a unique, dedicated organization to plan and coordinate the airflow.

Centralized Control. The JFACC exercises centralized (operational) control of strategic airlift assets. This is accomplished by performing all aspects of planning, coordination, and assigning of missions and tasks. The JFACC is supported by a CAOC. Depending on the scale of a given operation, the JFACC will recommend to the force employer that operational control of strategic airlift assets either remains with the JFACC or is delegated to an independent ACC¹⁶ under command of a JTF commander. The ACC is supported by an AOC or relies on reachback to the CAOC. The JFACC/ACC may deploy an ACCE to represent the JFACC at the JTF HQ.

Decentralized Execution. The wing commander (WComd) or air expeditionary wing (AEW) commander is subordinate to the JFACC or delegated ACC, and is assigned forces to enable the execution of assigned missions and tasks. The WComd / AEW commander is responsible for coordination between assigned forces and the CAOC, adjusting missions and tasks in coordination with the CAOC, and tasking assigned forces to support missions as required. The WComd / AEW commander is supported by a wing operations centre (WOC).

Where solely charter aircraft are used, the HQ J4 Mov will coordinate with the JFACC who will appoint an independent ACC (if required), and

¹⁵ Strategic airlift can occur in Canada based on the operation. Movement planning for CEFCOM and Canada COM is conducted by CANOSCOM.

¹⁶ In this context the ACC was formerly called the "airlift commander."

CANOSCOM will ensure that there is liaison at the aerodrome/airport; this task is normally accomplished by 4 CFMCU.

TACTICAL AIRLIFT OPERATIONS

Tactical airlift directly supports Move requirements within, and in the immediate vicinity of, an assigned area of operations. Normally, airlift forces will be tailored to meet specific requirements and it is appropriate to describe the forces assigned to a specific operational mission as a TF. In a joint environment, the TF becomes a JTF.¹⁷

The TF organization that will generally be used is that which groups elements of the land force, tactical aviation, maritime helicopters, and/or the fixed-wing airlift units into a JTF. There are occasions when a maritime component will have bases ashore that require airlift support, in which case the principles in this publication are to be adapted accordingly.

INSIGHT: AFGHANISTAN

On 19 March 2010, all elements of Task Force Silver Dart, the Joint Task Force Afghanistan (JTF-Afg) Air Wing, came together to launch a successful airmobile operation. A CH147 Chinook from Task Force Freedom deployed a platoon of American soldiers on to a landing zone in the Panjwaii District, Kandahar Province, during the hours of darkness. It was escorted by two CH146 Griffon helicopters providing an armed presence. Overhead, a CC130 Hercules from Task Force Canuck provided constant illumination, while at the same time a CU170 Heron unmanned aerial vehicle from Task Force Erebus conducted an intelligence and surveillance overwatch. This was the first time during the Op ATHENA conflict that all of the various elements of the expeditionary air wing were brought together on a single operation.



CF Photo: Cpl James Nightingale

¹⁷ A task force can be of any size and composition and can be employed across the continuum of operations at either the operational or tactical level of conflict. See *CFJP 3.0, Operations*, para 0401.

Canada COM or CEFCON, as the appropriate force employment command, is the agency responsible for establishing TFs comprising units from the force generators. It defines the geographic AOR, specifies the mission, determines the force's structures, assigns resources, and designates the TF Comd.

If a JTF includes both rotary-wing tactical aviation and fixed-wing airlift units, the creation of an AEW as a component formation is normally required. This AEW will also include the administration, maintenance, and tactical air control facilities to support the air units. The commander of this deployed formation would be described as an AEW commander who will normally exercise tactical command of all assigned air assets on behalf of the designated operational JFACC. The JFACC coordinates tactical airlift operations through the CAOC in consultation with the ACCE or air support operations centre (ASOC). Once prioritized by the supported commander, in this case the JTF commander, the airlift requirements are then met through a coordinated ATO from the JFACC to the AEW commander. The AEW commander is responsible to execute the missions assigned in the ATO.

PERSONNEL RECOVERY OPERATIONS

Personnel recovery operations¹⁸ are ultimately the responsibility of the joint force commander (JFC) of the applicable area of operations. The JFC exercises operational control over assigned personnel recovery forces; however, certain national personnel recovery forces may be made available under tactical control only, due to national caveats. The JFC normally exercises command authority for personnel recovery either through a designated component commander, whose personnel recovery coordination cell (PRCC) has been designated by the JFC to function also as the joint personnel recovery centre (JPRC), or through a designated JPRC embedded in the joint operations centre. Other national forces may be allocated for specific personnel recovery operations through the JPRC. The JPRC/PRCC should be staffed by specialists from contributing nations and the component commands to facilitate coordination of personnel recovery plans and operations. Staffs at all levels should make personnel recovery an integral part of planning, and identify and coordinate personnel recovery support requirements in advance.

¹⁸ Outside of Canada, the term "personnel recovery operations" is more widely used than "combat rescue operations," and the command and control arrangement put in place reflects this because Canada normally executes these operations in a multinational context.

SEARCH AND RESCUE ACTIVITIES

The Department of National Defence and the Canadian Coast Guard support the National Search and Rescue Program through two types of tasks related to the aeronautical and maritime SAR services: SAR activities, aimed at detection, response and rescue; and SAR prevention, aimed at reducing the number and severity of SAR incidents through education and the enforcement of relevant regulations.

SAR COMMAND AND CONTROL FRAMEWORK¹⁹

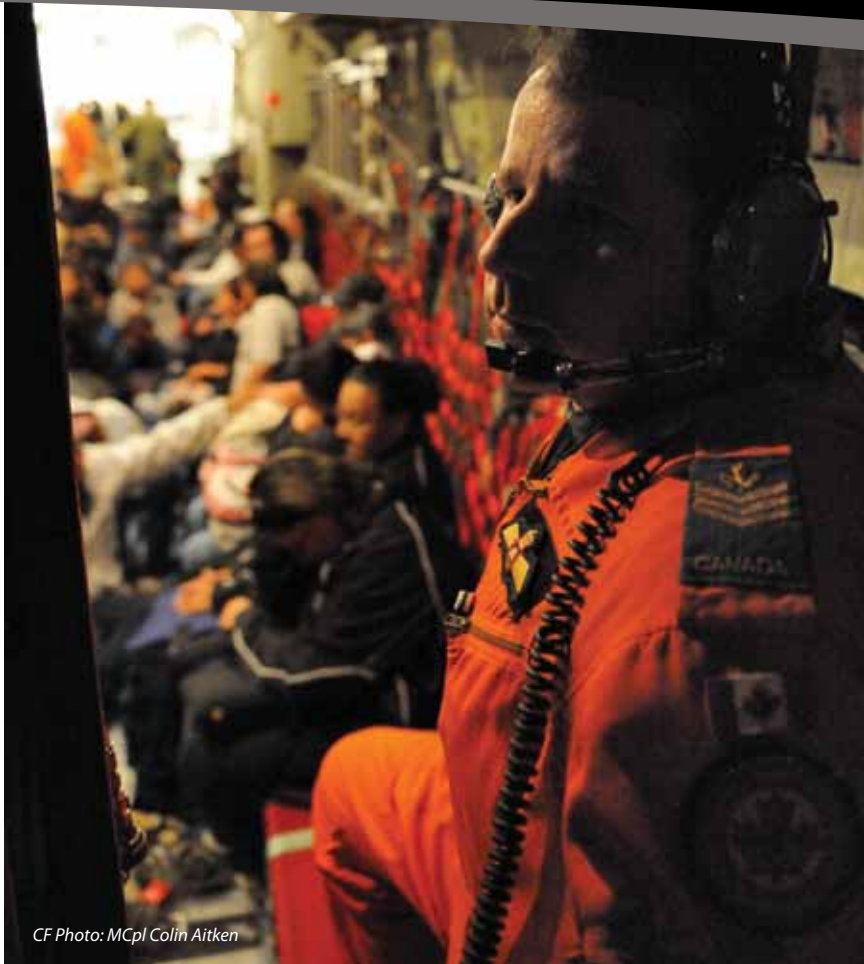
Commander Canada COM exercises operational command of all SAR activities in the Canadian SAR Region. Primary SAR resources are under the direct operational control of the SAR region commander for SAR taskings. Commanders Joint Task Force Atlantic, Joint Task Force Pacific and JFACC are designated as search and rescue region (SRR) commanders for the Halifax, Victoria and Trenton SRR respectively. These commanders are accountable to Commander Canada COM for the coordination, control and conduct of SAR activities within their respective SRR. On behalf of Commander Canada COM, JFACC coordinates SAR air activities and missions through the network of three joint rescue coordination centres (JRCC), two marine rescue sub-centres (MRSC), and a Canadian Mission Control Centre (CMCC).²⁰

OPERATION CANTON

On 13 December 2010, severe winter weather conditions in Southern Ontario led to a state of emergency being declared in Lambton County when hundreds of motorists became stranded along a 20 km stretch of Highway 402 between Wrightman's Corners and Sarnia. On 14 December, the province requested aid from the CF for provision of emergency support in locating and extracting stranded motorists. The CF response on 15 December became a Canada COM joint operation. As soon as conditions allowed, under the control of Joint Rescue Coordination Centre Trenton, SAR assets were in the air providing humanitarian evacuation and aerial reconnaissance to assist the provincial police in this time-sensitive rescue operation. Joint Task Force Central subsequently assumed command of air and land components to provide the provincial police all necessary support. Aircraft and crews from the CF rescued a total of 71 people. Land force personnel, conducting ground searches over an area of 600 square kilometres, assisted in the rescue of the balance of the stranded motorists.

¹⁹ CDS Interim Directive on CF Command and Control, annex C, Para 10.

²⁰ The JRCCs and MRSCs are co-manned by RCAF and Coast Guard personnel, whereas the CMCC is manned by military personnel only.



CF Photo: MCpl Colin Aitken

SUMMARY

Move assets may be employed to support domestic and international exercises and operations under various commands, such as Canada COM, CEFCOM and CANSOFCOM. Additionally, air mobility and personnel recovery resources may be employed in a supporting capacity to other government departments, conducting activities such as disaster relief and non-combatant evacuation operations. To facilitate command and control of these Move assets, the Comd 1 Cdn Air Div / JFACC has been delegated operational command of these forces for force generation and force employment activities, except for those instances where operational command has been transferred to another commander for force employment (i.e., Canada COM, CEFCOM or CANSOFCOM). The command and control of individual units may be further delegated to other commanders for domestic and international operations, as necessary. The commanders of the respective SAR regions have operational control of primary SAR assets for mission taskings.

GLOSSARY

The definitions contained in this glossary are derived from a number of sources. Where this publication is the source of a definition, no source is indicated. Definitions taken from other sources are indicated in parentheses at the end of each term, utilizing the following abbreviations:

- a. COD – Concise Oxford English Dictionary, 11th Edition.
- b. DTB – *Defence Terminology Bank*, <http://terminology.mil.ca/term-eng.asp>;
- c. JP 1-02 – United States Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*.

aeromedical evacuation (AE)

The movement of patients to and between medical treatment facilities by air transportation. (DTB record 3308) See also forward aeromedical evacuation.

Aerospace Doctrine Authority (ADA)

The designated Air Force staff position with authority over all aspects of the development, production and dissemination of CF aerospace doctrine.

Note: 1. The Aerospace Doctrine Authority is the chairman of the Aerospace Doctrine Committee, and coordinating authority for Canadian Forces joint and combined doctrine that encompasses aerospace functions.

2. The Commander of 2 Cdn Air Div is the designated Aerospace Doctrine Authority. (DTB record 34072)

airborne operation

An operation involving the movement of combat forces and their logistic support into an objective area by air. (DTB record 3388)

airdrop

The delivery of personnel or materiel from aircraft in flight. (DTB record 3416)

airland

The delivery of personnel or materiel after the aircraft has landed or while hovering. Note: Also referred to as air landed. (DTB record 37295)

airlift

The transport and delivery by air of personnel and materiel in support of strategic, operational, or tactical objectives. (DTB record 34083)

air logistic support operation

An air operation, excluding an airborne operation, conducted within a theatre of operations to distribute and/or recover personnel, equipment and supplies. (DTB record 3345)

airmobile operation

An operation in which military forces and their equipment are transported about the battlefield and landed by aircraft, in support of tactical objectives on the ground. (DTB record pending)

air mobility

The capability of conducting airlift and air-to-air refuelling roles. (DTB record 37284)

air movements

The preparation, loading, and unloading of personnel and materiel for airlift. (DTB record 41382)

air refuelling (AR)

The refuelling of an aircraft in flight.

Note: Air refuelling includes both air-to-air refuelling and helicopter in-flight refuelling. (DTB record 34082)

air-to-air refuelling (AAR)

The refuelling of an aircraft in flight by an airborne tanker aircraft.

Note: Air-to-air refuelling is a subset of air refuelling. (DTB record 37283)

air superiority

That degree of dominance in the air battle of one force over another which permits the conduct of operations by the former and its related land, sea and air forces at a given time and place without prohibitive interference by the opposing force. (DTB record 3364)

Canadian entitled person (CEP)

A Canadian citizen (civilian but also military personnel classified as non-combatant and non-essential), a person holding legal status in Canada (ranging from landed immigrants to various visa holders) as specified by the Canadian government, and/or a designated third-country national and host nation person as specified by the Canadian government, deemed to be an eligible applicant for evacuation. Note: The exact definition of CEP is confirmed for each specific NEO. (DTB record pending)

centre of gravity (COG)

Characteristics, capabilities or localities from which a nation, an alliance, a military force or other grouping derives its freedom of action, physical strength or will to fight. (DTB record 324)

combat recovery (CR)

The recovery by conventional forces of isolated personnel from a situation where hostile interference may be expected.

Note: In combat recovery, either the recovery force, or the isolated personnel, or both, have not been trained in combat search and rescue tactics, techniques, and procedures. (DTB record 36629)

combat search and rescue (CSAR)

The application of specific tactics, techniques, and procedures by dedicated forces to recover isolated personnel, who themselves are trained and appropriately equipped to receive this support, from a situation where hostile interference may be expected. (DTB record 18744)

combined operation

An operation conducted by forces of two or more nations acting together. (DTB record 3826)

comprehensive approach

A philosophy according to which military and non-military actors collaborate to enhance the likelihood of favourable and enduring outcomes within a particular situation.

Note: The actors may include joint or multinational military forces, Canadian government departments and agencies (whole of government), other governments (e.g., foreign, provincial and municipal), international organizations (e.g., NATO and UN), non-governmental organizations (e.g., CARE, OXFAM), private sector entities or individuals). (DTB record 34522)

contingency operation

A deliberate operation planned in advance of a known event or an event that could reasonably be expected. (DTB record 22309)

decisive point

A point from which a hostile or friendly centre of gravity can be threatened. This point may exist in time, space or the information environment. (DTB record 18747)

deployed search and rescue

The recovery of persons in distress, located in an international theatre of operations, where there is no risk of hostile interference.

duckbutt

An airborne escort, carried out by military aircraft, postured to provide emergency assistance to other aircraft.

Note: A duckbutt is normally performed over water. (DTB record pending)

forecast airlift

A special flight tasked to meet a predicted or forecast desired effect.

force employment (FE)

1. At the strategic level, the application of military means in support of strategic objectives. 2. At the operational level, the command, control and sustainment of allocated forces. (DTB record 32173)

force enabler

A capability provided to a force that is essential to mission accomplishment. (DTB record 37304)

force generation (FG)

The process of organizing, training and equipping forces for force employment. (DTB record 32171)

force multiplier

A capability provided to a force that enhances the probability of success in mission accomplishment. (DTB record 37306)

forward aeromedical evacuation

That phase of evacuation which provides airlift for patients between points within the battlefield, from the battlefield to the initial point of treatment, and to subsequent points of treatment within the combat zone. (DTB record 4324)

full spectrum operations (FSO)

Operations in which forces could be involved in combat, stabilization and humanitarian assistance within the same geographical area.

Note: also referred to as the “three-block war”. (DTB record pending)

helicopter in-flight refuelling (HIFR)

The refuelling of a hovering helicopter from a surface platform.

Note: Helicopter in-flight refuelling is a subset of air refuelling. (DTB record 6380)

hostage rescue (HR)

A personnel recovery method used to recover isolated personnel who are specifically designated as hostages. (JP1-02)

hostile environment

An environment in which an adversary has the capability and intent to oppose or disrupt operations of friendly forces. (DTB record 43605)

hub-and-spoke method

A method of sustaining outlying locations, formations, and units from a central and secure position. (DTB record 43593)

humanitarian-relief operation (HUMRO)

An operation to alleviate human suffering where responsible civil actors in an area are unable or unwilling to adequately support a population.

Note: A humanitarian operation may precede, parallel, or complement the activity of specialized civil humanitarian organizations. (DTB record 43603)

intermediate staging base (ISB)

A base located along the strategic lines of communications that temporarily provides support to forces in transit. (DTB record 2049)

integrated

Said of activities, operations and organizations in which military and non-military elements combine to achieve a common goal through coordinated and complementary efforts. (DTB record 41415)

integrated operation

An operation involving the coordinated and complementary efforts of military and non-military organizations to achieve a common goal. (DTB record 37297)

isolated personnel

Military or civilian personnel who are separated from their unit or organization in a situation that may require them to survive, evade, resist, and/or escape while awaiting recovery.

Note: Applicable civilians are as designated by national authorities responsible for deploying individuals/personnel. (DTB record 37299)

joint operation

An operation, executed by a temporary grouping of elements from two or more environments, in which the application of capabilities is coordinated to achieve a common objective. (DTB record 35629)

materiel

Military materials and equipment. (COD)

Move

The function that exploits global reach and speed of aerospace power to rapidly deploy and position personnel and materiel to achieve desired effects. (DTB record 37252)

non-combatant evacuation operation (NEO)

An operation conducted to relocate designated non-combatants threatened in a foreign country to a place of safety. (DTB record 22803)

non-forecast airlift (NFA)

A special flight tasked to meet an unpredicted desired effect.

non-permissive environment

An environment in which friendly forces anticipate obstructions to, or interference with, operations. (DTB record 43595)

outsized aircraft load

A load is a load that exceeds the cargo carrying capability of a CC177 aircraft.

oversized aircraft load

A load that exceeds the cargo carrying capability of a CC130 aircraft but does not exceed that of a CC177 aircraft.

permissive environment

An environment in which friendly forces anticipate no obstructions to, or interference with, operations.

Note: This does not necessarily imply absence of threat. (DTB record 43594)

personnel recovery (PR)

The sum of military, civil and diplomatic efforts to recover and reintegrate isolated personnel and/or recover persons in distress. (DTB record 31303)

personnel recovery activity

An integrated activity in deliberate response to an event involving persons in distress.

personnel recovery operation

An integrated operation in deliberate response to an event involving isolated personnel.

rapid-response operation

An operation conducted in response to an unforeseen event or emergency that requires urgent involvement to save lives, reduce human suffering or mitigate property damage. (DTB record 35680)

reintegration

The process by which personnel transition to former or new roles and functions either from restricted duty due to medical reasons or from a deployment. (DTB record 34918)

routine operation

A force employment activity that is normally recurring in nature, can usually be planned for and can be programmed on an annual basis. (DTB record 35679)

scheduled flight

A flight that operates on a regular schedule to provide airlift for routine military requirements.

search and rescue (SAR)

The use of aircraft, surface craft, submarines, specialized rescue teams and equipment to search for and rescue personnel in distress on land or at sea. (DTB record 1290)

special air operation

An air operation, conducted at any level of conflict, in support of unconventional warfare and clandestine, covert and psychological activities. (DTB record 5389)

special flight

A flight that operates on a special itinerary to provide airlift in order to satisfy a desired effect.

strategic aeromedical evacuation

That phase of evacuation which provides airlift for patients from overseas areas or from theatres of active operations, to the home base, to other NATO countries or to a temporary safe area. (DTB record 2597)

tactical aeromedical evacuation

That phase of evacuation which provides airlift for patients from the combat zone to points outside the combat zone, and between points within the communications zone. (DTB record 5486)

theatre of operations (TO)

A geographical region in which one or more military campaigns are conducted. (DTB record 1470)

LIST OF ABBREVIATIONS

1 Cdn Air Div	1 Canadian Air Division
2 Cdn Air Div	2 Canadian Air Division
2 Air Mov Sqn	2 Air Movements Squadron
4 CFMCU	4 Canadian Forces Movement Control Unit
AR	air refuelling
AAR	air-to-air refuelling
ACC	air component commander
ACCE	air component coordination element
ADA	Aerospace Doctrine Authority
AE	aeromedical evacuation
AEW	air expeditionary wing
AFDD	Air Force Doctrine Document
AFDT	Air Force Doctrine and Training
AFOD	Air Force Officer Development
AJP	Allied Joint Publication
AOC	aerospace operations centre
AOR	area of responsibility
ASOC	air support operations centre
ATO	air tasking order
ATP	Allied Tactical Publication
BDA	boom drogue adapter
Canada COM	Canada Command
CANOSCOM	Canadian Operational Support Command
CANR	Canadian NORAD Region
CANSOFCOM	Canadian Special Operations Forces Command
CAOC	combined aerospace operations centre
CEFCOM	Canadian Expeditionary Force Command
CEP	Canadian entitled person

CF	Canadian Forces
CFAWC	Canadian Forces Aerospace Warfare Centre
CFJP	Canadian Forces Joint Publication
CFJSG	Canadian Forces Joint Support Group
Comd RCAF	Commander Royal Canadian Air Force
CR	combat recovery
CRO	combat rescue operation
CSAR	combat search and rescue
DART	Disaster Assistance Response Team
DFAIT	Department of Foreign Affairs and International Trade
DSO	Distinguished Service Order
DTB	Defence Terminology Bank
HIFR	helicopter in-flight refuelling
HQ	headquarters
HR	hostage rescue
HUMRO	humanitarian-relief operation
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
JFACC	joint force air component commander
JFC	joint force commander
JPRC	joint personnel recovery centre
JRCC	joint rescue coordination centre
JTF	joint task force
JTFH	Joint Task Force Haiti
MC	Military Cross
MOB	main operating base
MRSC	marine rescue sub-centre

NATO	North Atlantic Treaty Organization
NDHQ	National Defence Headquarters
NEO	non-combatant evacuation operation
NFA	non-forecast airlift
NGO	non-governmental organization
NORAD	North American Aerospace Defence Command
OGD	other government department
PR	personnel recovery
PRCC	personnel recovery coordination cell
PRO	personnel recovery operation
RAF	Royal Air Force
RCAF	Royal Canadian Air Force
RJTF	regional joint task force
SAR	search and rescue
SOF	special operations forces
SQ	Sûreté du Québec
SRR	search and rescue region
TARM	total air resource management
TF	task force
TIP	trusted international partner
TTP	tactics, techniques and procedures
USAR	urban search and rescue
VC	Victoria Cross
VIP	very important person
WComd	wing commander
WOC	wing operations centre

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