Canada Command SAR CONOPs

References:

1944 Convention on International Civil Aviation
1946 Cabinet Defence Committee Review and Recommendation on air rescue service
1947 Cabinet Directive for RCAF establishment of air rescue service
1951 Cabinet Directive Circular No. 22
1958 Convention on the High Seas
1960 Amendment to Canada Shipping Act: "Rescue Coordinators"
1960 Cabinet Directive for establishment of Canadian Coast Guard
1963 Canadian Coast Guard Terms of Reference for Rescue Officers
1976 Cabinet Decisions 243-76RD(2)/321-76RD(2)
1976 Prime Ministerial appointment of Lead Minister for SAR (MND)
B-GA-209-001-F-001: National SAR Manual
ICAO/IMO SAR Manual Volume IV (Canadian SAR Manual) (pending)

INTRODUCTION

The **overall effective operation of the federal coordinated maritime and aeronautical search and rescue system and the provision of air resources in response to aeronautical and maritime SAR incidents** is Canada Command's most enduring mission and the only one that brings the CF into *constant* contact with Canadians and provides services *directly* to them on a 24/7 basis. There is no intermediary in the process and no requirement for a request for assistance to be made; the CF is the lead agency and "first responder" in this case.

BACKGROUND

In the immediate post-WWII period, Canada had actively participated in the establishment of both the International Maritime Organization (IMO) and International Civil Aviation Organization (ICAO), United Nations bodies seeking to provide structure to the maritime and burgeoning civil aviation environments worldwide. An aspect of concern in both environments was the provision of SAR services, particularly on and over international waters. CF involvement in SAR began in 1947 with the RCAF being tasked by Cabinet to provide **aeronautical SAR services** throughout Canada. There had been consideration of assigning the role to the RCMP, but they lacked aircraft, aircrew personnel and operating bases, all of which the post-WWII RCAF possessed.

Initial RCAF organization for SAR was based on existing post-War regional Air Commands (Eastern, Western, etc), each one assigning the task to "rescue flights" of utility squadrons using a variety of existing aircraft types (C47 Dakotas, Norduuyn Norseman, Expeditors, and even Lancaster Bombers), and Rescue Coordination Centres (RCCs) initially established at Vancouver, Winnipeg, Trenton and Halifax, with RCC Vancouver later changing location to Victoria and RCC Winnipeg moving to Edmonton.

In 1951, Cabinet added to the role of the RCCs, the **responsibility to coordinate marine SAR as well**, whereas surface response was drawn from any available federal government vessels. In so doing, Canada established one of the first "joint" rescue coordination systems in the world, a direction in which other nations are only recently moving.

With the establishment of the Canadian Coast Guard (CCG) in 1960, marine coordinators were assigned to work alongside their air force counterparts in the **RCCs which remained under the overall command of the RCAF**, federal government fleets were consolidated somewhat, and a number of dedicated CCG primary SAR vessels were identified. The following year an amendment to the Canada Shipping Act empowered the Minister of Transport (at the time, the department responsible for CCG) to designate "marine rescue coordinators" IAW the definition as contained in IMO agreements to which Canada was signatory, to organize search and rescue activity off the coasts. These appointments were not the working level personnel found in the RCCs; they were the named senior *military* officials assuming overall responsibility for the provision of marine SAR in a given area and the appointments were made via Minister of Transport message format.

Under these same IMO and ICAO agreements signed by Canada in the post-War period, an area over which Canada undertook to provide SAR services, both marine and aeronautical, was defined and has not substantively changed since. This rather large (15,000,000 sq/km) area was sub-divided initially into four Search and Rescue Regions (SRRs), named by international convention according to the location of the RCC which coordinates SAR in the Region: Victoria SRR, Edmonton SRR, Trenton SRR, and Halifax SRR. To complement the handling of marine cases in the St. Lawrence and Newfoundland areas, two Marine Rescue Sub-Centres (MRSCs), one at Quebec City and the other at St. John's, NF were established and staffed by CCG personnel only. The MRSCs functioned as subordinate centres to the respective RCC in the area and provided day-to-day coordination of marine cases in their sub-region, but the "parent" RCC could at any time, take over handling of a case. Aeronautical cases remained the sole purview of the RCCs.

In the mid-1990s, due to its limited annual number of cases (approximately 800 versus the coastal RCCs' more than 2,000), RCC Edmonton was closed and the Edmonton SRR was subsumed into the Trenton SRR, making it the largest SRR and effectively equalizing the annual caseload among the three RCCs. With Canadian Forces reorganization in 1968, the aforementioned Minister of Transport appointments as "marine rescue coordinators", were conferred under the continuing authority of the Canada Shipping Act, (*by position rather than by name as in the past-obviating the need for recurrent appointment messages*) , upon the Commander, Maritime Forces Atlantic for the Halifax SRR, the Commander, Maritime Forces Pacific for the Victoria SRR, and the Commander, Air Transport Group for the Trenton SRR. With the addition of their overall responsibility for the coordination of aeronautical search and rescue in the SRR, these appointments became "Search and Rescue Region Commanders (SRR Comd)". Upon the dissolution of the Groups within the air force structure in 1997, the appointment

of Trenton SRR Comd was reassigned to the Commander, 1 Canadian Air Division. In keeping with ICAO/IMO initiatives to harmonize aeronautical and marine SAR coordination, the RCCs were recently re-designated as "Joint RCCs" (JRCCs).

The important impact of these appointments and the basis for the selection of these specific positions was a simple matter of matching authority and capability with accountability. SAR cases in the two coastal SRRs were predominantly marine cases. Aside from CCG vessels and dedicated CF primary SAR aircraft assigned to the Region, the Maritime Force Commanders could augment their SAR resources with naval ships and additional CF aircraft, since they also had operational command of their respective naval fleets and ready access to operational control of maritime air assets (eg: Sea King helicopters/Auroras) in their Region. Likewise, the Commander, Air Transport Group (and later, Commander, 1 Canadian Air Division) had operational command of all CF transport and SAR aircraft within the Trenton SAR Region, aircraft being the most likely needed additional resource in an SRR that stretched from the US border to the North Pole. These authorities were *directly exercisable*, without requirement to apply to higher authority; thus, the impetus was placed directly on these appointments to employ any and all resources at their disposal to respond to a distress, avoiding any requirement to "negotiate" with an otherwise disengaged authority for additional resources when needed.

The efficacy of this arrangement has been proven countless times, and in fact, in the maritime environment, embarked helicopters aboard naval ships and the ships themselves have been employed on some of the most challenging rescues. In the aeronautical realm, the exercise of such authority by the Commander of the Trenton SRR has seen various CF aircraft, (including on at least one occasion, a transport flight carrying the Prime Minister), and even CF-18 fighters, tasked to conduct electronic homing of distress beacons or to provide direction to rescuers on the ground or afloat.

Although the CF organizational structure has changed recently under CF Transformation, these synergies continue with the Commander, Canada Command replacing the DCDS as the overall operational SAR authority, the Commanders of JTF(A) and JTF(P) as the coastal SRR Commanders and the Combined Force Air Component Commander (CFACC) as the Trenton SRR Commander.

COMPONENTS OF THE FEDERAL SAR SYSTEM

(Refer to the organizational diagram "SAR Command and Control under Canada Command" in the *Supplementary Pages*):

JRCCs

The **CF retains overall responsibility for the effective operation of the coordinated aeronautical and maritime SAR system, and therefore the JRCCs remain Canadian Forces units**, reporting within their applicable SRR Commander's chain to Commander, Canada Command. The officer-in-charge (OIC) is a CF SAR-experienced pilot or navigator major answering to the SRR Commander normally through a Senior Military Officer for SAR (SMO) appointed within the J3 chain of the

SRR Commander's headquarters. Operating 24/7, each JRCC has a staff of CF SAR experienced aircrew officers at the captain rank serving as air coordinators and a smaller number of air traffic control assistants and usually at least one search and rescue technician assigned as assistant coordinators. The assistant coordinators are normally scheduled for shifts during the day and discharge a number of record-keeping and operational administrative functions, including the preparation and release of the daily SAR Summary (SARSUM). At night the minimum staffing of a JRCC during a shift is one air and one marine coordinator.

The CCG component of the JRCCs mirrors the CF in that there is a Regional Superintendent for Marine SAR (RSMS) as the senior CCG officer and a staff of CCG marine coordinators. The CCG sometimes augments the number of marine coordinators in a JRCC with ship's officers from the fleet, particularly during busy SAR seasons and to facilitate summer holidays. Like their CF air coordinator counterparts, CCG marine coordinators have direct tasking authority over CCG primary SAR vessels and can offer SAR taskings to Canadian Coast Guard Auxiliary vessels as well.

The use of non-primary SAR CCG assets for SAR must be requested (by the CCG marine coordinator or RSMS) and authorized through the CCG Regional Headquarters in the applicable *CCG Region*. These Regions are *not* analogous to the SAR Regions and are administrative divisions within the Coast Guard. There are five CCG Regions: Pacific, Central and Arctic, Quebec, Maritimes, and Newfoundland and Labrador. Each is overseen by an Assistant-Commissioner of the CCG, (formerly known as a Regional Director), responsible for all CCG activities in the Region. Each Regional also has a Regional Manager for Search and Rescue (RMSAR) whose primary function is oversight of the provision of vessels, crews and personnel in support of primary SAR activity in that Region.

Annually, the three JRCCs respond to a total of approximately 8,000 incidents per year, saving the lives of 1,200 persons directly in jeopardy and providing assistance to some 20,000 persons. There are on average about 1,100 taskings of CF resources annually, mainly aircraft, but also including naval ships. These levels of activity have been remarkably stable over the past couple of decades, and as mentioned earlier, the distribution in number of cases/JRCC is almost even, although the mix of aeronautical versus marine versus humanitarian cases varies between them.

Federal SAR Area of Operations
(Refer to map "Canadian SAR Regions/Primary/Secondary SAR Resources" in the *Supplementary Pages*):

The federal *aeronautical* SAR mandate applies within the entire, internationally agreed Canadian SAR area of responsibility, which extends from the US border in the south to the north pole, eastward over the Atlantic Ocean to 30 degrees west longitude (approximately half way to the UK) and westward over the Pacific approximately 600 nautical miles west of Vancouver Island. The federal *maritime* SAR mandate is limited to the oceanic waters within the Canadian SAR area of responsibility, the St Lawrence

River/Seaway system, and the Great Lakes. Ground searches if necessary, for persons that are subjects (ie: passengers or crew) of an aeronautical or federal responsibility maritime incident are included within those mandates.

Provincial/Territorial SAR Areas of Operations

SAR on other bodies of water within Canada such as: Lake Simcoe, Great Slave Lake, Lakes Winnipeg and Manitoba and Lake of the Woods, as well as larger rivers such as the Ottawa, Mackenzie, Red, Athabasca, and Saguenay, are provincial or territorial government responsibilities, normally discharged by police forces such as the OPP, SQ or RCMP (under provincial *contract policing*). *Ground* SAR cases, such as searches for missing hunters, hikers and children, are provincial or territorial responsibilities as well. Federal assistance may be *requested* in such cases by an appropriate authority, normally either a provincial/territorial Emergency Measures Organization (EMO), or a senior police authority within the headquarters for that jurisdiction.

SAR Command and Control and Authorities

Each JRCC has, under its **tactical control**, assigned, dedicated, *primary* CF SAR aircraft and crews as described in the section on SAR Air Resources, and assigned, dedicated CCG *primary* marine resources as described in the section on SAR Marine Resources. "Primary" in these contexts means that these resources were established, crewed and trained for SAR as their *primary* operational mission. The duty air and marine coordinators at the JRCC have direct tasking authority over these resources for aeronautical and (federal) maritime SAR operations. Should there be a need for additional primary SAR aircraft or *secondary* SAR aircraft—those not established, crewed and trained for SAR as their *primary* operational mission, these must be requested by the JRCC (duty air coordinator) through the Regional Air Coordination Element (RACE) and thence to AOC Winnipeg. The use of secondary SAR aircraft or additional primary SAR aircraft is a common occurrence, particularly during the busy SAR season (late spring through early fall), and is often a result of multiple taskings, the expiration of a primary SAR standby crew's allowable duty day without a replacement crew immediately available, or a decision to elevate a case to "major" SAR status as described under that heading in a subsequent section.

Use of primary SAR resources for humanitarian or civil assistance missions normally requires JRCC Officer-in-Charge approval prior to tasking. In the case of assistance to other jurisdictions, such as civilian medical evacuation flights or assistance to searches for lost children or hunters, etc, which are provincial/territorial government responsibilities, such assistance must be **formally requested** (in writing, by fax, or by telephone) by the appropriate authority (ie: a provincial EMO, senior police authority—from a headquarters level, not at local or detachment level), or health ministry—for aeromedical evacuations, through the applicable JTF HQ.

This is because, as with virtually all other missions of Canada Command except defence of Canada operations and the previously described *federal mandate SAR operations*, the CF is *in support* of civilian government agencies, and has *no legal authority* to unilaterally assist or intervene without such agency making a **formal request.** Such requests are also subject to either partial or full cost recovery by DND from the requesting jurisdiction or agency, and in all cases, costs (ie: aircraft hours, TD costs, etc) are captured and recorded; however, in practice, DND rarely seeks to recover such costs, except for cases where provided support was not in the vein of humanitarian or life-saving capabilities. Non-humanitarian use of primary SAR resources (ie: for law enforcement support or general transport tasks) is only approved in exceptional circumstances and requests for such use must be directed via the applicable JTF HQ to Canada Command HQ J3 Ops Task.

Notwithstanding the aforementioned requirement for a **formal request**, the Officer-in-Charge of a JRCC may, on the basis of an initial direct contact by a responsible authority (ie: local police detachment or other agency ***expressing the intent to formally request assistance***), authorize the immediate tasking of appropriate resources in the interest of timely intervention to save lives and relieve suffering IAW B-GA-209-001 (National SAR Manual) paras 5.1, 5.97, 5.98, 5.99 and B-GS-055-000 (Provision of Services Manual) paras 38, and ANNEXES C, D, and F.

SAR MISSION MANAGEMENT SYSTEM (SMMS)

An automated and networked mission management system was developed jointly by the CCG and CF during the late 1990s and is now in operation throughout the three JRCCs and two MRSCs. The SAR Mission Management System (SMMS), incorporates SAR databases such as aircraft and vessel registration information, a mapping capability and electronic case log and file management. The networking of the system permits total redundancy, as any JRCC can manage the cases of another JRCC should that facility be damaged or destroyed. In addition, all JRCCs have pre-identified and equipped (wired) alternate locations should their facility be unusable. SMMS is supported 24/7 by the SAR Network Operations Centre (SARNOC) located at JRCC Trenton. The SMMS, commercially marketed by the Canadian branch of EMS Technologies, Inc., was also purchased by the USAF and adapted for use in the US Air Force Rescue Coordination Centre (AFRCC) at Langley, Virginia and has more recently been purchased as well by Argentina, Brazil and Vietnam for use in their RCCs.

A “read-only” version of SMMS is intended to be fielded in the future for installation in the JCC and the Op Centres of all JTFs, providing real-time situational awareness of SAR events in the Canada Command AOR. The “read only” status of such terminals is owing to the fact that the system is used for real-time operational C2 of SAR case prosecution, and represents a *legal repository* of case file and response records. Inadvertent deletion of information or tampering with a case in progress at any level could be prejudicial to outcomes (ie: survival of persons in distress) and the CF/CCG legal status in any subsequent investigations such as Coroner’s Inquests, a not uncommon

occurrence after SAR incidents with loss of life. In the meantime, SMMS-generated "crystal reports", are available to all JTFs and the JCC through the Internet and permit access to real-time updates on cases at the various JRCCs. They are accessed via a stand-alone Internet terminal using an address and password assigned to each Ops Centre. The "crystal reports" are not continuously updated in real time, but update each time they are opened, and give a snapshot narrative of the cases being dealt with at a given JRCC and time. JCC COP Managers have been instructed on the access to and use of the crystal reports.

When fielded, the read-only SMMS version will permit real-time monitoring of case management from the JRCCs and the ability to read all log and data entries and view SAR planning map displays, etc.

COSPAS/SARSAT –CANADIAN MISSION CONTROL CENTRE (CMCC)

Along with Russia, the USA and France, Canada was one of the four founding nations in development of a satellite-based alerting and detection system for emergency beacons: aircraft-based (known as emergency locator transmitters (ELTs)), marine based (known as emergency position-indicating radio beacons (EPIRBs)), or personal use (personal locator beacons (PLBs)). Using packages carried by Russian (COSPAS) and American (SARSAT) satellites, the system relays through a ground station (local user terminal or "LUT"), position information and other data, which is then resolved by the Canadian Mission Control Centre (CMCC) operator into usable information upon which to base the tasking of a SAR resource. CMCC operators provide signal analysis to assist the JRCC coordinators in assessing the impact of COSPAS/SARSAT data on SAR operations.

The CMCC operators also receive, analyze and pass satellite-based signal data to adjoining RCCs worldwide for cases located in their area or to provincial/territorial EMOs and police agencies for non-federal mandate beacon activations within their jurisdictions. Such passage takes place via e-mail or fax and is usually backed-up via telephone contact to ensure reception. The first operational satellite-alerted rescue in Canada occurred in 1982 for an aircraft crash in British Columbia. The CMCC is staffed 24/7 by military aircrew or communications officers and is located at the JRCC in Trenton.

SAR AIR RESOURCES

Primary SAR Air Resources

There are five CF squadrons and three aircraft types assigned primary SAR standby responsibility as follows:

442 (Transport and Rescue) Squadron/19 Wing Comox, BC:
CH149 Cormorant helicopters and CH115 Buffalo fixed-wing aircraft

435 (Transport and Rescue) Squadron/17 Wing Winnipeg, MB:
CC130 Hercules fixed-wing aircraft

424 (Transport and Rescue) Squadron/8 Wing Trenton, ON:
CH149 Cormorant helicopters and CC130 Hercules fixed-wing aircraft
*Note: at present, owing to low serviceability rates with the Cormorant fleet, 424 Sqn is temporarily operating CH146 Griffon helicopters.

413 (Transport and Rescue) Squadron/14 Wing Greenwood, NS:
CH149 Cormorant helicopters and CC130 Hercules fixed-wing aircraft

103 (Rescue) Squadron/9 Wing Gander, NF:
CH149 Cormorant helicopters.

CF National Aeronautical and Maritime SAR Standby Posture

The National SAR Manual mandated standby posture for CF primary SAR aircraft requires **one of each type of aircraft per unit** to be airborne within 30 minutes during weekdays from 0800L-1600L (for a total of 40 hours per week of 30 minute posture) and within 2 hours at other times (in practice, during the 2 hour posture, airborne times average a little over 1 hour for any aircraft type). Once an aircraft is tasked, there is no automatic requirement for the squadron to generate a second or additional aircraft; however, if another urgent SAR case arises, the CO of the SAR squadron is to make every effort to do so when requested by the JRCC through AOC. Remaining aircraft at SAR squadrons are *force generation* resources and must be requested from and tasked by CFACC through AOC Winnipeg if needed.

The aforementioned standby posture is **specific to type, number and location of SAR aircraft,** and has resulted from analysis of incident types, rates and locations. Whereas individual SRR Commanders may, on their own authority, re-align the weekly 40 hours of 30 minute standby posture to better respond to high levels of SAR activity, any change proposed to the type and number of CF aircraft holding SAR standby or a prolonged period of unavailability for SAR standby of an aircraft type at a given location due to serviceability or crew availability, **must** be communicated by the SRR Comd to Comd Canada Command for his concurrence/direction as the overall CF operational SAR authority.

Each primary aircraft or helicopter on standby is fully crewed including two CF search and rescue technicians or “SAR Techs”. These are highly trained personnel capable of deploying by parachute or hoist to an incident site and performing emergency trauma care procedures under austere conditions to save lives and stabilize victims for medical evacuation. Because of the distances often involved between incident sites and comprehensive medical care (hospitalization), SAR Techs’ medical training is above that of a civilian level 2 EMT (Emergency Medical Technician or “paramedic” as found aboard most ambulances). Indeed, they are trained (and equipped) to perform some procedures normally limited to physicians or nurses, such as intubation, administration of

narcotics such as morphine (carried in SAR Tech medical kits), use of anti-shock "trousers" and minor life-saving surgeries such as tracheotomy. They are also capable of accessing and assisting victims of a SAR incident by diving, mountain climbing and supporting survival under all climatic conditions. There are approximately 145 SAR Techs currently in the CF.

SAR CC130 aircraft carry a vast array of equipment, including air droppable sustenance kits, survival and shelter equipment for ten persons and air-deployable pumps and life raft kits. Each SAR CC130 also carries a quantity of 3 million candlepower parachute flares sufficient for nearly four hours of continuous illumination of an incident site.

Secondary SAR Air Resources

In addition to these primary SAR aircraft there are three combat support squadrons at 4 Wing Cold Lake, AB, 3 Wing Bagotville, QC and 5 Wing Goose Bay, NF, operating SAR-equipped and SAR Tech manned CH146 Griffon helicopters which are considered secondary SAR resources in addition to their primary task of supporting fighter operations. Except during weekday working hours when they are normally on duty to support fighter operations, these Squadrons are not staffed to maintain a standby posture and are on as "as available" basis. As well, and although neither is normally on a SAR standby posture, the CP140 Aurora can be used as an over-water search platform with a limited capacity to deploy a life raft kit for marine distress cases, and the CH124 Sea King helicopter is hoist-capable for rescues at sea.

Volunteer SAR Air Resources

The CF also sponsors and funds through a Contribution Agreement, the Civil Air Search and Rescue Association (CASARA), a volunteer organization that augments the CF capacity to respond in aeronautical incidents by making available private aircraft and trained volunteer crews for search missions. CASARA aircraft and personnel have no capacity to provide material aid to survivors, such as food, clothing or medical supplies; CASARA aircraft and crews are *search/communications resources* only.

As volunteers, CASARA units cannot be *tasked* on a SAR mission but are *requested* to undertake a tasking. This is an important legal distinction which preserves an "arm's length" relationship between CASARA and the CF rather than an "employer/employee" relationship, which would bring with it legal liabilities and obligations. Within its Contribution Agreement with the CF, CASARA is provided funding for liability and personal injury insurance for its members injured or killed during authorized training or SAR operations. In this regard it should be noted that *eleven* CASARA members have been killed in support of CF SAR operations since the organization's inception in 1985.

SAR MARINE RESOURCES

The CCG has 48 primary SAR vessels deployed on the coasts and Great Lakes as well as 57 other multi-tasked vessels available for SAR as a secondary task. CCG primary SAR vessels may be tasked directly by the marine coordinators in the JRCC. Secondary SAR vessels are also tasked by the marine coordinators, but with the concurrence of the CCG Regional Operations Centre. CCG primary SAR vessels are on an immediate launch posture 24/7 and are normally able to get underway within 15-30 minutes, depending on vessel type. Although not maintained on SAR standby posture, the navy Ready Duty Ships (RDS) as well as any other navy or federal vessel or aircraft may be called upon to assist within the bounds of its capability, in a SAR case. The RDS is available through the SRR Comd, in his capacity as the JTF Comd. Other naval ships are available through the Commanders of the naval fleets, Atlantic and Pacific (Comd MARLANT/Comd MARPAC) as applicable.

Like the CF, the CCG also sponsors a volunteer organization, the Canadian Coast Guard Auxiliary (CCGA), providing vessels and crews to augment primary SAR marine resources. Unlike CASARA, CCGA vessels and crews are fully capable of marine rescue within the sea state capabilities of the specific resource. As such, in the Halifax SRR, CCGA crews and vessels annually handle up to 40 % of marine SAR response taskings. Like their CASARA counterparts, CCGA members are reimbursed for their vessel costs on SAR operations or training and are provided with liability and personal injury insurance through a Contribution Agreement.

MAJOR SAR OPERATIONS

While most SAR operations involve a single CF air resource or perhaps a pairing of a fixed-wing aircraft for rapid search and initial response, with a helicopter for rescue and recovery, there are a couple of exceptions to this norm when multiple primary SAR resources from within or outside the SRR, as well as volunteer (CASARA) resources and secondary SAR resources may be required.

MAJOR AIR SEARCHES

Despite the advent and broad (mandated) use of Electronic Locator Transmitters (ELTs) by the general aviation community, occasionally (approximately five times/year) a missing aircraft will not be located by initial search efforts, electronic or visual, within the first 24 hours. Often this is due to the fact that the ELT has been damaged or destroyed in the mishap or perhaps the aircraft is not so equipped.

Initiation. In such situations, and at the discretion of the OIC, the responsible JRCC will recommend to the SRR Comd the initiation of a Major Air Search operation, and request the applicable primary SAR Squadron in the SRR to nominate a specially-trained and experienced aircrew officer as “Searchmaster” to coordinate a deployed search operation from a location close to or along the missing aircraft’s intended track. To be appointed as a “Searchmaster”, the officer must be an experienced SAR aircrew officer (pilot or

navigator), must hold the minimum rank of captain, must have successfully completed the CF "Searchmaster" Course, and must have satisfactorily served as an "Assistant Searchmaster" on a previous search or major SAR exercise and earned a recommendation for upgrade by the Searchmaster of that operation/exercise.

The nominee appointed by the SRR Commander as a "Searchmaster" (SM) for the duration of a Major Air Search operation, is considered to be a "SAR Mission Coordinator" or "SMC" IAW ICAO/IMO SAR agreements. IAW CFAO 102-1, a SM is delegated Commanding Officer powers over all CF personnel assigned to the operation (regardless of rank). The SM reports to the SRR Comd through the OIC of the JRCC.

The reasons for this rather quick elevation of an operation to Major Air Search status are twofold. First, based on statistical (historical) data, the likelihood of finding survivor(s) from an aircraft crash decreases rapidly after the first 48-72 hours. With time, distance and harsh climatic conditions always a challenge in Canada, and frequently sparse information leading to the definition of large search areas to cover, it is essential to apply a maximum search effort as early as possible in order to increase the likelihood of success (finding *survivor(s)*). The same is even truer in the maritime SAR environment, where survival times for persons immersed in oceanic waters is measured in hours *not* days.

Secondly, the effort required in coordinating a Major Air Search with numerous resources and considerable investigative tasks, would quickly overwhelm the normal duty staff at a JRCC, where other SAR cases will continue to demand attention. Thus the *deployment* of a SAR mission headquarters near the intended track of a missing aircraft provides for closer command and control of the resources via in-person briefing and debriefing of crews and the ability of the deployed mission commander to focus his or her entire attention on the single case, facilitating the investigation of sighting reports and liaison with next-of-kin.

Deployment. A search headquarters (SHQ) will be established at the designated location and, along with the primary SAR aircraft from the Region, additional aircraft and crews from the applicable SAR Squadron(s) will be tasked by CFACC, together with local CASARA volunteer crews and their aircraft. Not uncommonly, a deployed air search operation may involve up to 10-15 aircraft and 100-150 personnel, including maintenance, admin and ops staff. Once set-up in an SHQ and ready to undertake responsibility for the case, the SM becomes a de facto deployed JRCC air coordinator, albeit with many more assigned resources. This permits the JRCC to continue dealing with other SAR cases.

Media interest in major SAR operations is predictably high, and normally a Public Affairs officer (from the Region or from the SM's parent Wing), will also be deployed. It is not uncommon for a SM to be required to do daily live media interviews on TV and radio during a major search operation.

Cessation of the Search. There is no specified duration for a major air search when the object of the search remains unfound, as much depends on size of the defined search area,

number of assets assigned to search and weather conditions; however, the mandate of the SAR system is to search for survivors, not the recovery of wreckage/remains. The operation will continue therefore, until, **in the expert opinion of the SM, there remains no reasonable possibility of locating a survivor (ie: weather, length of time, degree of search coverage—multiple times, and the absence of a cooperative target—(survivor(s) making efforts to be found), leads the SM to conclude that the occupants of the aircraft are deceased.** As that point in the operation approaches, (usually 24 hours in advance) the SM will recommend "reduction" of the search operation (cessation of active searching, normally upon completion of some specified remaining tasks or areas to be covered), to the SRR Comd through the JRCC/OIC.

A reduction request will normally also explain why, in the opinion of the SM, the search object has not been located, often making reference to factors such as density of foliage preventing passive visual location or, as is frequently the case during winter searches, coverage of wreckage by snow. If the SRR Comd concurs and the duration of the search (including the JRCC initial actions) has been four days or less, the reduction will be granted. If more than four days of search activity have taken place or in the event that the operation is considered to have high likelihood of political or media sensitivity, the reduction request will be forwarded to Comd Canada Command for approval. Note that by the time Comd Canada Command receives such a request, both the OIC of the JRCC and the SRR Comd will have reviewed the supporting details of the request and concurred. As well, SMs are encouraged during their training to routinely seek the advice and assistance of other experienced SMs and senior SAR staff at 1 Cdn Air Div HQ, Canada Command, the Air Staff and/or SJS, to confirm that their strategy and approach is sound and has addressed all possibilities.

A "reduction" means that, unless new information comes to light that indicates a continuing likelihood of finding *survivors*, there will be nor further active search activity by the CF/CASARA, and the case will be turned over to the police force of jurisdiction as a missing persons case. In the absence of wreckage to examine, the task of the Transportation Safety Board (TSB) in investigating the cause of a crash is made significantly more difficult; however, the CF is not directly involved in causal determination. Records of the SAR operation (as is the case for all SAR operations where serious injury or loss of life is involved) become potential evidence before a Coroner's Inquest or other legal proceedings. The direct testimony of either the OIC of the responsible JRCC and/or the Searchmaster may also be required at such inquiries in order to satisfy legal burdens of proof for presumed death and that due diligence has been discharged in the operation

A search reduction is rarely comforting to next-of-kin of the missing person(s), and often will result in attempts by the family to have search efforts continue, despite the unlikelihood of finding survivors. Such attempts include not infrequently, intervention via Members of Parliament contacting the MND to seek a continuation, usually based on arguments that "leaves have fallen", (meaning that the wreckage should now be visible—without thought of *where* the leaves came to rest—likely on the wreckage!) or "the snow has melted" (without consideration that the search is for *survivors*—not bodies). These

are most often dealt with by responding to a Minquiry with full explanation of the search effort and the rationale for reduction (ie: no reasonable probability of finding survivor(s)), and emphasizing that search operations are high-risk operations that are *only carried out for the purpose of saving lives*.

Notwithstanding the approval of a search reduction by the SRR Comd or Comd, Canada Command, the appointed Searchmaster may reopen a search operation should information subsequently come to light indicating a renewed likelihood of finding *survivors*. Notification of such a reopening and the rationale will be furnished to the reduction authority via the chain of command as soon as practicable.

MAJOR MARINE SEARCHES

Initiation. Marine searches where the location of a vessel in distress is unknown or a search operation is conducted for survivors of a vessel sinking or person(s) who have fallen overboard and the operation involves multiple vessels and aircraft over a protracted period (longer than 24 hours nominally), constitute Major Marine Searches. In these instances, a specific SAR Mission Coordinator (SMC) (usually the marine coordinator that initially dealt with the case), will be appointed by the Officer-in –Charge of the JRCC on the recommendation of the CCG RSMS, and he/she will retain overall situational awareness and responsibility for the incident response.

On-Scene-Coordinator. Unlike Major Air Searches, where local contact and investigation militates for a *deployed* Search Headquarters, Major Marine Searches are normally conducted from the JRCC or MRSC, however, a CCG vessel on scene may be appointed as the On-Scene-Coordinator to manage the employment of assigned search assets. As with Major Air Searches, there is no stipulated duration of a marine search, except that survival times in water immersion situations (ie: when it is known or likely that survivors are *not* aboard a lifeboat or liferaft), are considerably shorter, sometimes measured in hours rather than days, depending on water temperatures/time of year. There are research-based tables used to assess likely survival times.

Cessation of the Search. As with air searches, when it is determined by the SMC that there no longer exists a likelihood of locating survivors, the case is recommended to the SRR Comd for reduction. It is rare indeed that a reduced marine SAR case would be subsequently re-opened owing to renewed likelihood of finding survivors, with the possible exception that the location of a liferaft or lifeboat from the incident is located ashore and there are indications that survivors have left the scene on foot. As in aeronautical SAR cases, the survivors of a federal mandate marine incident remain a federal responsibility even if they are missing *on land.*

MAJOR AIR DISASTER (MAJAID)

A specific task included in the original assignment of aeronautical SAR responsibilities to the RCAF was response to the crash of an airliner in remote or northern parts of Canada. The plan to do so has undergone considerable evolution over

the years and is currently under review by an officer assigned by CFACC; however, the essence of the response will not likely change. The applicable JRCC will launch its primary SAR resources and request a Squadron recall at its assigned SAR Squadron(s). The primary SAR aircraft of the other two SRRs will also be requested and tasked to proceed to the incident location. Once notified of the probability of a MAJAID, the SRR Comd will request declaration of a MAJAID and activation of the MAJAID plan(s) by Comd Canada Command, who will activate his Battle Staff and issue implementation messages. CFACC will be appointed as the "MAJAID Task Force Commander" and supporting commanders will be identified from among the SRR Comds, JTF Comds and tasked to implement their respective portions of the plan(s).

Essentially, the plan(s) entail a four-phased operation: a deployment phase (initial care and survival support at the crash site); a rescue phase (airlift from the site—likely by helicopter, to a Forward Base, (a fixed-wing capable airport where medical stabilization will prepare casualties for air evacuation); and a medical evacuation phase, with casualties flown aboard fixed-wing aircraft to major centres in the south where they will enter the civilian medical care system. The fourth phase, redeployment, is considered complete when all SAR resources have returned to their home bases and the national SAR standby posture has been reconstituted. The entire MAJAID operation is expected to be accomplished within 72 hours of initial notification, subject to the effects of weather and incident site accessibility.

MAJOR MARINE DISASTER (MAJMAR)

The CCG currently has Regional Major Marine Disaster (MAJMAR) Plans applicable to each of the SRRs. Whereas the rescue of large numbers of passengers from a sinking vessel or lifeboats/liferafts may be challenging in itself owing to location, response times and weather/sea conditions on scene, dealing with survivors aboard rescue vessels and ashore may be much less challenging than for a MAJAID incident, owing to more ready access to shelter and medical treatment.

An exception would be a MAJMAR incident occurring in remote (northern) waters, where, owing to limited SAR resources it may not be possible to transport all survivors directly to established facilities ashore and, as in the case of a MAJAID, there may result a large number of injured/minimally sheltered survivors landed ashore in a remote location to await transport to civilization. In such a case, portions of the CF MAJAID Plan would be implemented to provide shelter, initial medical aid and sustenance pending the arrival of evacuation resources (which might substantively involve SAR air resources).