

# **CAMSAR**

## **CANADIAN AERONAUTICAL AND MARITIME SEARCH AND RESCUE MANUAL**

**Combined Edition –  
Volumes I, II and III**

**(ENGLISH)**

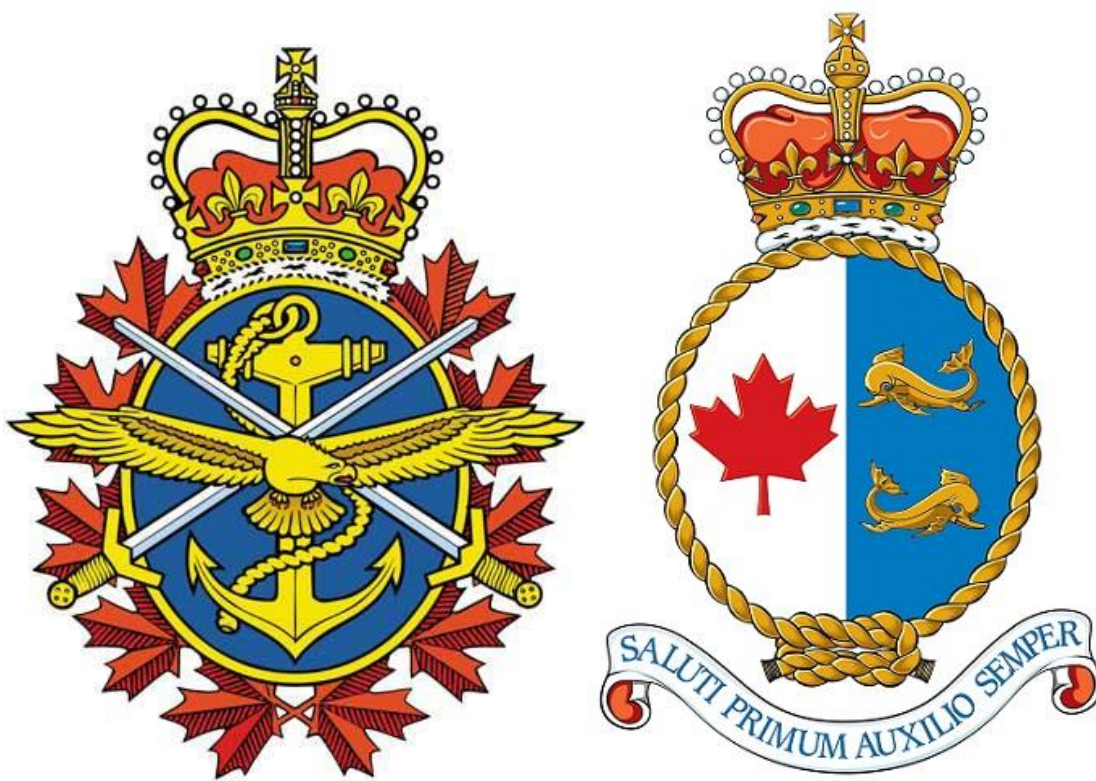
**Supplement to the  
IAMSAR Manual**

Issued on the Authority of the Chief of the Defence Staff and  
Commissioner Canadian Coast Guard

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*INTERNATIONAL AERONAUTICAL AND MARITIME SEARCH AND RESCUE MANUAL (IAMSAR)  
VOLUME IV – CANADIAN SUPPLEMENT*

*"CANADIAN AERONAUTICAL AND MARITIME SAR MANUAL"*



OPI: Canadian Joint Operations Command SAR, Canadian Armed Forces  
Director Operational Support, Canadian Coast Guard



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## Foreword

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### Purpose

The purpose of the *Canadian Aeronautical and Maritime Search and Rescue (CAMSAR) Manual* is to supplement the *International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual* by providing national guidelines and standard operating procedures (SOPs) specific to the Canadian Federal Aeronautical and Maritime Search and Rescue (SAR) System. In turn, the *CAMSAR Manual* is meant to be augmented by regional and local SOPs.

There are three volumes to the *CAMSAR Manual*:

- *Volume I – Organization and Management*, called *CAMSAR I*, for short, and is intended to be used in conjunction with the other two *CAMSAR* volumes and the *IAMSAR Manual, Volume I*;
- *Volume II – Mission Coordination*, called *CAMSAR II*, and is intended to be used in conjunction with the other two *CAMSAR* volumes and the *IAMSAR Manual, Volume II*; and
- *Volume III – Mobile Facilities*, called *CAMSAR III*, and is intended to be used in conjunction with the other two *CAMSAR* volumes and the *IAMSAR Manual, Volume III*. Vol III is for Mobile Facilities (Vessels and Aircraft)

For ease of reference, each of the *CAMSAR* volumes bears the same title as the corresponding *IAMSAR Manual* volume, and is also divided into corresponding chapters.

The three volumes of the *CAMSAR Manual* supersede all previous versions of the Canadian *National SAR Manual (NSM)* or *IAMSAR IV*, and are effective upon receipt.

The three *CAMSAR* volumes are issued under the joint authority of the Chief of Defence Staff, Department of National Defence (DND), and of the Commissioner, Canadian Coast Guard (CCG).

In addition to the *IAMSAR Manual*, all joint rescue coordination centres (JRCCs) and all maritime rescue sub-centres (MRSCs) will hold current copies of the *CAMSAR Manual*.



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## Forward

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Amendments to the CAMSAR will be issued under the joint authority of the Commander Canadian Joint Operations Command (CJOC), the Commander of the Royal Canadian Air Force, and the Commissioner Canadian Coast Guard (CCG).

Amendments are to be forwarded through the chain of command to Canadian Joint Operations Command SAR (CJOC SAR) or the Senior Director Operational Support, Canadian Coast Guard through:

+CAMSAR Modifications@CJOC HQ@Ottawa-Hull (P-OTG.CAMSARMod@intern.mil.ca)

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Ottawa, Ontario  
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Senior Director Operational Support  
Canadian Coast Guard, Centennial Towers  
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Ottawa, Ontario  
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## Abbreviations and Acronyms

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**NOTE:** The abbreviations are listed alphanumerically. When there is a French equivalent, it is shown in square brackets; **bold characters** indicate universality.

1 Cdn Air Div [1DAC] .....	1 Canadian Air Division
A .....	search area
A <sub>mc</sub> .....	midpoint compromise search area
A <sub>n</sub> .....	individual adjusted search area
A <sub>t</sub> .....	total search area
A/C [-] .....	aircraft
AC [CA] .....	Assistant Commissioner
ACC .....	area control centre
ACO .....	aircraft coordinator
ACOP .....	Air Command Operation Plan
ACSO [OSCA] .....	air combat systems officer
ADIS .....	Automated Data Interchange System
AGL .....	above ground level
AIS .....	Automatic Identification System
AM .....	amplitude modulation
AMVER .....	“Automated Mutual-Assistance Vessel Rescue”
AOC .....	air operations centre
AOR [-] .....	area of responsibility
ASCC .....	Air Standardization Coordination Committee
ASM [-] .....	assistant searchmaster
ASW .....	average surface wind
ATC .....	air traffic control
C .....	coverage factor
C <sub>mc</sub> .....	midpoint compromise coverage factor
C/S [-] .....	call sign
CAMSAR .....	Canadian Aeronautical and Maritime Search and Rescue
[CJOC] .....	Canadian Joint Operations Command
CANSARP .....	Canadian Search and Rescue Planning Program

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## Abbreviations and Acronyms

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CANUTEC .....	Canadian Transport Emergency Centre
CASARA [ACRSA] .....	Civil Air Search and Rescue Association
CCG [GCC] .....	Canadian Coast Guard
CCGA [GCAC] .....	Canadian Coast Guard Auxiliary
CCGS [NGCC] .....	Canadian Coast Guard Ship
CAF [FAC] .....	Canadian Armed Forces
CF .....	drift error confidence factor
CFACC [Cmndt CAFM] .....	Combined Forces Air Component Commander
CFICC .....	Canadian Forces Integrated Command Centre
CFIOG [GOIFC] .....	Canadian Forces Information Operations Group
CFS [SFC] .....	Canadian Forces Station
CFWS [SMFC] .....	Canadian Forces Weather Service
CMCC.....	Canadian Mission Control Centre
Comd [Cmndt].....	Commander
Comd RCAF.....	Commander Royal Canadian Air Force
COMSAR.....	Sub-Committee on Radiocommunications and Search and Rescue
COSPAS .....	"Cosmicheskaya Sistyema Poiska Avariynich Sudow" (space system for the search of vessels in distress)
CPI [IPE] .....	crash position indicator
CLA .....	creeping line ahead
CSA, 2001 [LMMC, 2001] .....	<i>Canada Shipping Act, 2001</i>
CSAD [-].....	Canadian Search Area Definition method
CSP .....	commence search point
d.....	surface drift distance
$d_a$ .....	aircraft glide
$d_e$ .....	individual drift error
$d_{max}$ .....	maximum drift distance
$d_{min}$ .....	minimum drift distance
$d_p$ .....	parachute glide drift
D.....	total drift
$D_a$ .....	aeronautical drift



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## Abbreviations and Acronyms

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$D_e$ .....	total drift error
$D_{ea}$ .....	aeronautical drift error
DART [EICC] .....	Disaster Assistance Response Team
DF .....	radio direction finding
DFO [MPO] .....	Department of Fisheries and Oceans
DGPS .....	Differential Global Positioning System
DIMTPS [DTPSGI] .....	Director, Information Management Technologies, Products and Services
DMB .....	datum marker buoy
DMS [DSM] .....	Director, Maritime Services
DND [MDN] .....	Department of National Defence
DR .....	dead reckoning
$DR_e$ .....	navigational dead reckoning error
DSC .....	digital selective calling
E .....	total probable error
ECAREG .....	Eastern Canada Traffic System
EGC .....	enhanced group call system
EIP .....	estimated incident position
ELT .....	emergency locator transmitter
EPIRB .....	emergency position-indicating radio beacon
ESCP [-] .....	expendable surface current probe
ETA .....	estimated time of arrival
ETD .....	estimated time of departure
$f_f$ .....	fatigue correction factor
$f_s$ .....	optimal search factor
$f_v$ .....	search facility velocity correction factor
$f_w$ .....	weather correction factor
F/V [n/p] .....	fishing vessel
FAA [LGFP] .....	<i>Financial Administration Act</i>
FIC .....	flight information centre
$FIX_e$ .....	navigational fix error

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## Abbreviations and Acronyms

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FLIR.....	forward-looking infrared radar
FM .....	frequency modulation
FSS .....	flight service station
GEOREF .....	geographic reference system
GMDSS [SMDSM] .....	Global Maritime Distress Safety System
GPS .....	Global Positioning System
HF .....	high frequencies (3 to 30 MHz)
HQ [AC] .....	headquarters (Canadian Coast Guard)
HQ [QG] .....	headquarters
IAMSAR.....	International Aeronautical and Maritime Search and Rescue
ICAO [OACI] .....	International Civil Aviation Organization
ICSAR [CIRS].....	Interdepartmental Committee on Search and Rescue
IFR .....	instrument flight rules
IMO [OMI] .....	International Maritime Organization
INMARSAT/IMSO .....	International Mobile Satellite Organization
INNAV.....	Integrated Information System on Marine Navigation
IRB [ESC].....	inshore rescue boat
ISM (Code) .....	International Safety Management Code
ITU [UIT].....	International Telecommunication Union
JCOC [COCI] .....	joint command operations centre
JETS .....	Joint Enroute/Terminal System
JRCC.....	Joint Rescue Coordination Centre
JTF [FOI] .....	Joint Task Force
KHz .....	kilohertz
kt .....	knot (nautical mile per hour)
l .....	search area length (actual)
l' .....	search area length (estimated)
LES.....	land earth station
LKP.....	last known position
LM SAR [MP-SAR].....	Lead Minister for Search and Rescue
LUT.....	local user terminal (COSPAS-SARSAT ground receiving station)

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## Abbreviations and Acronyms

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LW.....	leeway
m .....	metre
M/V .....	merchant vessel
MAJAID .....	major aeronautical disaster
MAJMAR.....	major marine disaster
MANOT.....	missing aircraft notice
MARB [-].....	maritime assistance request broadcast
MARLANT [FMAR (A)].....	Maritime Forces Atlantic
MARPAC [FMAR (P)].....	Maritime Forces Pacific
MCC.....	mission control centre
MCTS (SCTM).....	Marine Communications and Traffic Services
MEDEVAC.....	medical evacuation
MEDICO .....	medical advice, usually by radio
MF .....	medium frequencies (300 to 3000 kHz)
MHz .....	megahertz
MMSI.....	maritime mobile service identity
MOU [PE] .....	memorandum of understanding
MRO .....	mass rescue operation
MRSC.....	maritime rescue sub-centre
MSS [SSM] .....	Maritime Safety Systems
MSI .....	maritime safety information
n .....	number of tracks required (rounded up to the next whole number)
n' .....	number of tracks required
NATO [OTAN].....	North Atlantic Treaty Organization
NBDP [IDBE].....	narrow band direct printing (telegraphy)
NDHQ [QGDN] .....	National Defence Headquarters
NIF [FNI].....	New SAR Initiatives Fund
NM .....	nautical mile
NOCL .....	notice of crash/casualty location
NOK [-].....	next-of-kin
NORAD.....	North American Aerospace Defence Command

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## Abbreviations and Acronyms

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NORDREG.....	Arctic Canada Traffic System
NOTAM.....	notice to airmen
NOTSHIP [AVNAV].....	notice to shipping
NSS (SNRS).....	National Search and Rescue Secretariat
NVG [-] .....	night vision goggles
OBS [BSN] .....	Office of Boating Safety
OIC [-] .....	officer in charge
OPP .....	Ontario Provincial Police
OS.....	contour search
OSC .....	on-scene coordinator
PEP.....	Provincial Emergency Program (in British Columbia)
PFD [VFI] .....	personal flotation device
PIW .....	person in water
PLB.....	personal locator beacon
POB.....	persons on board
POC.....	probability of containment
POD.....	probability of detection
PS .....	parallel sweep search
R.....	search radius (desired)
$R_o$ .....	search radius (rounded up to the next whole number)
RCC.....	rescue coordination centre
RCMP [GRC] .....	Royal Canadian Mounted Police
ROC [COR] .....	regional operations centre
RS [SS].....	rescue specialist
RSMS [RRSM] .....	Regional Supervisor, Maritime SAR
S .....	track spacing
$S_a$ .....	track spacing (assignable)
$S_{mc}$ .....	track spacing (midpoint compromise)
S/V [-].....	sailing vessel
SAR Tech [Tech SAR].....	search and rescue technician
SAR.....	search and rescue

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## Abbreviations and Acronyms

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SAREX .....	search and rescue exercise
SAR-IF [FI-SAR] .....	search and rescue interagency frequency
SARNOCC .....	SAR Network Operations Control Centre
SARSAT .....	Search and Rescue Satellite-Aided Tracking
SARSUM [-] .....	search and rescue incidents summary
SART .....	search and rescue transponder
SC .....	sea current
[SERABEC] .....	“Sauvetage et recherche aériens du Québec” (refer to CASARA)
SES .....	ship earth station
SICOFAA .....	“Sistema de Cooperación entre las Fuerzas Aéreas Americanas” (System of Cooperation among the Air Forces of America)
SISAR .....	“Système d’information de recherche et sauvetage” (search and rescue information management system)
SITREP .....	situation report
SLDMB .....	self-locating datum marker buoy
SM [-] .....	searchmaster
SMC .....	search and rescue mission coordinator
SMMS .....	Search and Rescue Mission Management System
SOLAS .....	Safety of Life at Sea
SOP [PNO] .....	standard operating procedure
SPOC .....	search and rescue point of contact
SQ .....	“Sûreté du Québec” (Quebec Provincial Police)
SRR .....	search and rescue region
SRS .....	search and rescue sub-region
SRU .....	search and rescue unit
SS .....	expanding square search
SSO [OSEM] .....	Senior Staff Officer
SUBMISS .....	submarine missing
SUBSAR .....	submarine search and rescue
SUBSUNK .....	submarinesunk
SURPIC .....	surface picture

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## Abbreviations and Acronyms

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T .....	search time available (search endurance)
TC.....	tidal current
TC .....	Transport Canada
TMS [SGT].....	Traffic Management System (Seaway)
TRACS [SRTC] .....	Terminal Radar and Control System
TS .....	track line search
TSB [BST] .....	Transportation Safety Board of Canada
TSN.....	track line search, non-return
TSR .....	track line search, return
TWC .....	total water current
UHF .....	ultra high frequencies (300 to 3000 MHz)
UK .....	United Kingdom
UNRAR.....	unnecessary SAR alert
US or USA .....	United States of America
USAF .....	United States Air Force
USCG.....	United States Coast Guard
UTC.....	coordinated universal time
v.....	speed of search object
V.....	search facility ground speed
VFR .....	visual flight rules
VHF .....	very high frequencies (30 to 300 MHz)
VMS [-] .....	Vessel Monitoring System
[VMSS].....	"Voie maritime du Saint-Laurent" (St. Lawrence Seaway)
VS .....	sector search
VTS [STM].....	Vessel Traffic Services
w.....	search area width (actual)
w'.....	search area width (estimated)
W .....	sweep width
W <sub>u</sub> .....	sweep width (uncorrected)
WC .....	wind current
X.....	initial position error

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### Abbreviations and Acronyms

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XSB ..... barrier single unit search  
Y ..... search facility position error  
Z ..... search effort  
Z<sub>n</sub> ..... individual effort  
Z<sub>t</sub> ..... total effort

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**Abbreviations and Acronyms**

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## Glossary and Terminology

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<b>aeronautical drift (D<sub>a</sub>)</b>	The drift caused by bailout trajectory or aircraft gliding distance.  <i>"dérive aéronautique"</i>
<b>aeronautical search and rescue incident</b>	A search and rescue incident involving an aircraft.  <i>"incident de recherche et sauvetage aéronautique"</i>
<b>aircraft coordinator (ACO)</b>	A person or team who coordinates the involvement of multiple aircraft in search and rescue (SAR) operations in support of the SAR mission coordinator and on-scene coordinator.  <i>"coordonnateur d'aéronefs"</i>
<b>aircraft glide</b>	The maximum ground distance an aircraft could cover during unpowered descent.  <i>"vol plané d'un aéronef"</i>
<b>alert phase</b>	A situation wherein apprehension exists as to the safety of an aircraft or a vessel and of the persons on board.  <i>"phase d'alerte"</i>
<b>area control centre (ACC)</b>	An air traffic control (ATC) facility primarily responsible for providing ATC services to instrument flight rules aircraft in controlled areas under its jurisdiction.  <i>"centre de contrôle régional"</i>
<b>Automated Mutual-Assistance Vessel Rescue (AMVER)</b>	A world-wide ship reporting system for search and rescue.  <i>"Amver"</i>
<b>awareness stage</b>	A period during which the search and rescue system becomes aware of an actual or potential incident.  <i>"stade de l'avertissement"</i>
<b>Canadian Mission Control Centre (CMCC)</b>	The focal point of Canada's COSPAS-SARSAT participation, the CMCC at 8 Wing Trenton, is responsible for the receipt and dissemination of distress beacon messages from national and international sources.  <i>"Centre canadien de contrôle de mission"</i>

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## Glossary and Terminology

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<b>Canadian Transport Emergency Centre (CANUTEC)</b>	<p>A public service operated by the Transport of Dangerous Goods Branch of Transport Canada, CANUTEC provides immediate advice to those who need or request help in case of an emergency situation involving dangerous goods resulting in a spill, leak, fire or human exposure.</p> <p style="text-align: right;"><i>"Centre canadien d'urgence transport"</i></p>
<b>casualty staging area</b>	<p>An intermediate forward location where a large number of survivors can be treated prior to evacuation to appropriate medical facilities.</p> <p style="text-align: right;"><i>"aire de rassemblement des blessés"</i></p>
<b>Combined Forces Air Component Commander (CFACC)</b>	<p>As the CFACC, the Commander of 1 Canadian Air Division assigns priority of effort and rapidly relocates assets based on guidance and direction provided by the Commander of Canadian Joint Operations Command.</p> <p style="text-align: right;"><i>"commandant de la Composante aérienne de la Force multinationale"</i></p>
<b>commence search point (CSP)</b>	<p>The point normally specified by the search and rescue (SAR) mission coordinator where a SAR facility is to begin its search pattern.</p> <p style="text-align: right;"><i>"point de départ de la recherche"</i></p>
<b>conclusion stage</b>	<p>A period during a search and rescue (SAR) incident when SAR facilities return to their regular location and prepare for another mission.</p> <p style="text-align: right;"><i>"stade de l'achèvement"</i></p>
<b>coordinated universal time (UTC)</b>	<p>The international term for time at the prime meridian.</p> <p style="text-align: right;"><i>"temps universel coordonné"</i></p>
<b>COSPAS-SARSAT</b>	<p>International satellite system for search and rescue, COSPAS-SARSAT detects distress beacons signals on the 406 megahertz frequency.</p> <p style="text-align: right;"><i>"COSPAS-SARSAT"</i></p>
<b>course</b>	<p>The intended horizontal direction of travel of a craft.</p> <p style="text-align: right;"><i>"route"</i></p>

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## Glossary and Terminology

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<b>coverage factor (C)</b>	<ul style="list-style-type: none"> <li>The ratio of the search effort (Z) to the area searched (A): <math>C = Z/A</math>.</li> <li>For parallel sweep searches, it may be computed as the ratio of sweep width (W) to track spacing (S): <math>C = W/S</math>.</li> </ul> <p style="text-align: right;"><i>"indice de couverture"</i></p>
<b>craft</b>	<p>Any air or sea-surface vehicle, or submersible of any kind or size.</p> <p style="text-align: right;"><i>"véhicule"</i></p>
<b>datum</b>	<ul style="list-style-type: none"> <li>The most probable position of a search object, corrected for drift, at any specific time.</li> <li>A geographic point, line, or area used as a reference in search planning.</li> </ul> <p style="text-align: right;"><i>"datum, repère"</i></p>
<b>datum – area</b>	<p>The area in where it is estimated that the search object is most likely to be located.</p> <p style="text-align: right;"><i>"zone de repère"</i></p>
<b>datum – line</b>	<p>A line , such as the distressed craft's intended track line or a line of bearing, which defines the centre of the area where it is estimated that the search object is most likely to be located.</p> <p style="text-align: right;"><i>"ligne de repère"</i></p>
<b>datum – point</b>	<p>A point, such as a reported or estimated position, at the centre of the area where it is estimated that the search object is most likely to be located.</p> <p style="text-align: right;"><i>"point de repère"</i></p>
<b>datum marker buoy (DMB)</b>	<p>A droppable floating beacon used to determine actual total water current, or to serve as location reference.</p> <p style="text-align: right;"><i>"bouée-repère"</i></p>
<b>dead reckoning (DR)</b>	<p>The determination of the position of a craft by adding to the last fix the craft's course and speed for a given time.</p> <p style="text-align: right;"><i>"navigation à l'estime"</i></p>

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## Glossary and Terminology

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<b>digital selective calling (DSC)</b>	A technique using digital codes which enables a radio station to establish contact with, and transfer information to, another station or group of stations. <i>"appel sélectif numérique"</i>
<b>direction finding (DF)</b>	Homing on signals to pinpoint a position. <i>"radiogoniométrie"</i>
<b>direction of current</b>	<ul style="list-style-type: none"> <li>• The direction <u>toward</u> which a current is flowing.</li> <li>• Also called "<b>set</b>".</li> </ul> <i>"direction du courant"</i>
<b>direction of waves, swells, or seas</b>	The direction <u>from</u> which the waves, swells or seas are moving. <i>"direction des vagues, de la houle ou des creux"</i>
<b>direction of wind</b>	The direction <u>from</u> which the wind is blowing. <i>"direction du vent"</i>
<b>disabled</b>	A situation wherein a vessel or aircraft afloat and not in distress or potential of distress, has lost all means of propulsion, steering or control to such a degree as to be incapable of proceeding to safety without assistance. <i>"déséparé"</i>
<b>distress</b>	A search and rescue incident where there is a reasonable certainty that one or more individuals are threatened by grave and imminent danger and require immediate assistance. <i>"détresse"</i>
<b>distress beacon</b>	A generic term used to describe any emergency locator transmitter, emergency position-indicating radio beacon or personal locator beacon. <i>"radiobalise de détresse"</i>
<b>distress phase</b>	A situation wherein there is reasonable certainty that a vessel or other craft, including an aircraft or a person, is threatened by grave and imminent danger and requires immediate assistance. <i>"phase de détresse"</i>

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## Glossary and Terminology

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<b>ditching</b>	The forced landing of an aircraft on water.  <i>"amerrissage"</i>
<b>divergence distance</b>	The distance between the left and right leeway divergence datums.  <i>"distance de divergence"</i>
<b>drift</b>	The movement of a search object caused by environmental forces.  <i>"dérive"</i>
<b>duckbutt</b>	An airborne standby posture carried out by Canadian Armed Forces aircraft to provide navigation or other assistance to aircraft during a specific operation.  <i>"« duckbutt »"</i>
<b>emergency locator transmitter (ELT)</b>	An aeronautical radio distress beacon for alerting and transmitting homing signals.  <i>"émetteur localisateur d'urgence"</i>
<b>emergency phase</b>	A generic term meaning, as the case may be, uncertainty phase, alert phase or distress phase.  <i>"phase d'urgence"</i>
<b>emergency position-indicating radio beacon (EPIRB)</b>	A device usually carried aboard maritime craft that transmits a signal which alerts search and rescue authorities and enables rescue units to locate the scene of the distress.  <i>"radiobalise de localisation des sinistres"</i>
<b>false alarm</b>	A distress alert initiated for other than an appropriate test, by communications equipment intended for alerting, when no distress situation actually exists.  <i>"fausse alarme"</i>
<b>false alert</b>	A distress alert received from any source, including communications equipment intended for alerting, when no distress situation actually exists, and a notification of distress should not have resulted.  <i>"fausse alerte"</i>

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## Glossary and Terminology

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<b>fetch</b>	<p>The distance over which the wind blows in a constant direction, without obstruction.</p> <p style="text-align: right;"><i>"fetch"</i></p>
<b>first rescue coordination centre (first RCC)</b>	<ul style="list-style-type: none"> <li>• The first rescue coordination centre (RCC) that is made aware of a search and rescue (SAR) distress alert.</li> <li>• The first RCC should assume responsibility for all subsequent SAR coordination unless and until responsibility is accepted by another RCC or Provincial/Territorial agency better able to take action.</li> </ul> <p style="text-align: right;"><i>"premier centre de coordination de sauvetage"</i></p>
<b>fix</b>	<p>A geographical position determined with certainty by one or more of the following: visual references, radio navigation aids, celestial plotting, or any other navigation device.</p> <p style="text-align: right;"><i>"point observé"</i></p>
<b>forward base</b>	<p>A base, located as close as possible to an incident site, which is capable of handling large aircraft and has sufficient facilities (with augmentation, if necessary) to support a major aeronautical or marine disaster operation.</p> <p style="text-align: right;"><i>"base avancée"</i></p>
<b>forward-looking infrared (FLIR)</b>	<p>An imaging system, mounted on board vessels or aircraft, designed to detect thermal energy (heat) emitted by objects and convert it into a visual display.</p> <p style="text-align: right;"><i>"radar thermique à balayage frontal"</i></p>
<b>Global Maritime Distress and Safety System (GMDSS)</b>	<p>A global communications service based upon automated systems, both satellite-based and terrestrial, to provide distress alerting and promulgation of maritime safety information for mariners.</p> <p style="text-align: right;"><i>"Système mondial de détresse et de sécurité en mer"</i></p>
<b>Global Positioning System (GPS)</b>	<p>A specific satellite-based system used in conjunction with mobile equipment to determine the precise position of the mobile equipment.</p> <p style="text-align: right;"><i>"Système mondial de localisation"</i></p>
<b>grid</b>	<p>Any set of intersecting perpendicular lines spaced at regular intervals.</p> <p style="text-align: right;"><i>"grille"</i></p>

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## Glossary and Terminology

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<b>ground search and rescue incident</b>	Any search and rescue incident not otherwise classified as an aeronautical or maritime incident, and involving missing persons or persons in distress. <i>"incident de recherche et sauvetage au sol"</i>
<b>ground speed</b>	The speed a craft is making relative to the earth's surface. <i>"vitesse au sol"</i>
<b>heading</b>	The horizontal direction in which a craft is pointed. <i>"cap"</i>
<b>humanitarian search and rescue incident</b>	A search and rescue incident not otherwise classified as an aeronautical or maritime incident. <i>"incident de recherche et sauvetage humanitaire"</i>
<b>hypothermia</b>	Abnormal lowering of internal body temperature (heat loss) from exposure to cold air, wind, or water. <i>"hypothermie"</i>
<b>initial action stage</b>	A period during which preliminary action is taken to alert search and rescue facilities and obtain amplifying information. <i>"stade des mesures initiales"</i>
<b>initial position error (X)</b>	The estimated probable error of the initial position(s) at the beginning of a drift interval. <ul style="list-style-type: none"> <li>○ For the first drift interval, this will be the probable error of the initially reported or estimated position of the search and rescue incident.</li> <li>○ For subsequent drift intervals, it will be the total probable error of the previous datum position(s).</li> </ul> <i>"erreur initiale de position"</i>
<b>INMARSAT</b>	A system of geostationary satellites for world-wide mobile communications services and which support the Global Maritime Distress and Safety System and other emergency communications systems. <i>"Inmarsat"</i>

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## Glossary and Terminology

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**instrument flight rules (IFR)**

- Rules governing the procedures for conducting instrument flight.
- Also a term used by pilots and controllers to indicate the type of flight plan.

*"règles de vol aux instruments"*

**joint rescue coordination centre (JRCC)**

A unit, jointly operated by the Canadian Armed Forces and Canadian Coast Guard, solely responsible for promoting efficient organization of search and rescue (SAR) services and for coordinating the conduct of SAR operations within an associated search and rescue region.

*"centre conjoint de coordination de sauvetage"*

**Joint Task Force (JTF)**

A Canadian Armed Forces regional command responsible for the conduct of all routine and contingency operations in its respective area of responsibility within Canada. Canadian Joint Operations Command possesses six regional commands:

- North – JTF(N)
- Pacific – JTF(P)
- West – JTF(W)
- Central – JTF(C)
- East – JTF(E)
- Atlantic – JTF(A)

*"Force opérationnelle interarmées"*

**knot (kt)**

A unit of speed equal to one nautical mile per hour.

*"nœud"*

**last known position (LKP)**

Last witnessed, reported, or computed dead reckoning position of a distressed craft.

*"dernière position connue"*

**leeway (LW)**

The movement of a search object through water caused by winds blowing against exposed surfaces.

*"dérive éolienne"*



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## Glossary and Terminology

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### **leeway divergence angle**

The average angle between an object's direction of leeway and the downwind direction.

- Leeway may diverge to either the right or the left of the downwind direction.
- Current evidence indicates that objects with significant leeway divergence angles rarely jibe or tack downwind.

*"angle de divergence de la dérive éolienne"*

### **local user terminal (LUT)**

An earth receiving station that receives beacon signals relayed by COSPAS-SARSAT satellites, processes them to determine the location of the beacons and forwards the signals.

*"station de réception au sol"*

### **major aeronautical disaster (MAJAID)**

An aeronautical incident occurring in a remote area of Canada which, because of the number of people involved, requires augmentation of established search and rescue facilities.

*"catastrophe aérienne"*

### **major search and rescue operations**

- Aeronautical and maritime search and rescue (SAR) incidents where primary SAR units, aeronautical and/or maritime, are tasked on an incident for more than four calendar days.
- Incidents which the SRR Commander assesses as being potentially sensitive.
- Special cases, as directed by the Canadian Joint Operations Command or Canadian Coast Guard Headquarters.

*"opérations majeures de recherche et sauvetage"*

### **maritime search and rescue incident**

A search and rescue incident on any Federal waterway involving a vessel or person(s) from a vessel, including the medical evacuation of person(s) from a vessel.

*"incident de recherche et sauvetage maritime"*

### **maritime rescue sub-centre (MRSC)**

A unit operated by the Canadian Coast Guard, subordinate to a joint rescue coordination centre and established to complement the latter within a specific area.

*"centre secondaire de sauvetage maritime"*

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## Glossary and Terminology

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<b>mass rescue operation (MRO)</b>	Search and rescue (SAR) services characterized by the need for immediate response to large numbers of persons in distress, such that the capabilities normally available to SAR authorities are inadequate. <i>"opération de sauvetage de grande ampleur"</i>
<b>MAYDAY</b>	The international radiotelephony distress signal; it is repeated three times. <i>"MAYDAY"</i>
<b>Medical evacuation (MEDEVAC)</b>	Evacuation of a person for medical reasons. <i>"évacuation médicale"</i>
<b>Medical evacuation – Critical</b>	The transfer of persons under medical care where the situation is deemed to be life threatening in terms of either the patient's serious condition or isolated location. <i>"évacuation médicale critique"</i>
<b>Medical evacuation – Rescue</b>	The critical evacuation of injured or stranded persons from isolated areas, or the recovery of sick or critically injured persons from vessels at sea. <i>"évacuation médicale de sauvetage"</i>
<b>Medical evacuation – Routine</b>	The transfer of a patient from one medical facility to another where delay would not unduly compromise the patient's condition. <i>"évacuation médicale de routine"</i>
<b>MEDICO</b>	Medical advice; exchange of medical information and recommended treatment for sick or injured persons where treatment cannot be administered directly by prescribing medical personnel. <i>"MEDICO"</i>
<b>mission control centre (MCC)</b>	Part of the COSPAS-SARSAT system that accepts alert messages from the local user terminal(s) and other MCCs to distribute to the appropriate rescue coordination centres to other search and rescue points of contact. <i>"centre de contrôle de mission"</i>

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## Glossary and Terminology

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<b>narrow-band direct printing (NBDP)</b>	<p>HF-NBDP, is offered at Iqaluit MCTS for the broadcast of NavAREA and MetAREA navigational warnings and weather/ice forecasts as a supplement to the Inmarsat-C SafetyNET Service.</p> <p style="text-align: right;"><i>"impression directe à bandes étroites"</i></p>
<b>NAVTEX</b>	<p>The system for the broadcast and automatic reception of maritime safety information, navigation and meteorological warnings and urgent information to ships, by means of narrow-band direct printing telegraphy.</p> <p style="text-align: right;"><i>"NAVTEX"</i></p>
<b>Normal Standby Posture</b>	<p>One Search and Rescue aircraft of each type on RP30 SAR Readiness Posture M – F, 0800 - 1600 and RP2 SAR Readiness Posture for all other times and statutory holidays.</p> <p style="text-align: right;"><i>"Statut de disponibilité normal"</i></p>
<b>on-scene</b>	<p>The search area or the actual distress site.</p> <p style="text-align: right;"><i>"sur les lieux, sur place"</i></p>
<b>on-scene coordinator (OSC)</b>	<p>A person designated to coordinate search and rescue operations within a specified area.</p> <p style="text-align: right;"><i>"coordonnateur sur les lieux"</i></p>
<b>on-scene endurance</b>	<p>The amount of time an asset may spend at the scene, engaged in search and rescue activities.</p> <p style="text-align: right;"><i>"autonomie sur les lieux"</i></p>
<b>operations stage</b>	<p>A period during a search and rescue (SAR) incident when SAR facilities proceed to the scene, conduct search, rescue survivors, assist distressed craft, provide emergency care for survivors, and deliver survivors to a suitable facility.</p> <p style="text-align: right;"><i>"stade des opérations"</i></p>
<b>optimal search area</b>	<p>The search area which will produce the highest probability of success when searched uniformly with the search effort available.</p> <p style="text-align: right;"><i>"zone de recherche optimale"</i></p>
<b>optimal search factor (f<sub>s</sub>)</b>	<p>A value based on the amount of relative effort available, which is used to estimate the optimal area to search so the chances of finding the search object are maximized.</p> <p style="text-align: right;"><i>"coefficient de recherche optimale"</i></p>
<b>optimal search plan</b>	<p>A plan that maximizes the probability of success of finding the search object, using the available search effort.</p> <p style="text-align: right;"><i>"plan de recherche optimale"</i></p>

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## Glossary and Terminology

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<b>overdue</b>	A situation where a craft has failed to arrive at its intended destination when expected and remains missing. <i>"en retard"</i>
<b>PAN-PAN</b>	The international radiotelephony urgency signal. When repeated three times, indicates uncertainty or alert, followed by nature of urgency. <i>"PAN-PAN"</i>
<b>personal locator beacon (PLB)</b>	Personal radio distress beacon for alerting and transmitting homing signals. <i>"balise personnelle de localisation"</i>
<b>place of refuge</b>	A place where a vessel in need of assistance can take action to enable it to stabilize its condition and reduce the hazards to navigation, and to protect human life and the environment. <i>"lieu de refuge"</i>
<b>planning stage</b>	A period during a search and rescue incident when an effective plan of operations is developed. <i>"stade de la planification"</i>
<b>position</b>	A geographical location normally expressed in degrees and minutes of latitude and longitude. <i>"position"</i>
<b>probability of containment (POC)</b>	The probability that the search object is contained within the boundaries of an area or sub-area. <i>"probabilité de confinement"</i>
<b>probability of detection (POD)</b>	The probability of the search object being detected, assuming it was in the areas that were searched. <ul style="list-style-type: none"> <li>○ POD is a function of coverage factor, sensor, search conditions and the accuracy with which the search facility navigates its assigned search pattern.</li> <li>○ It measures sensor effectiveness under the prevailing search condition.</li> </ul> <i>"probabilité de détection"</i>

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## Glossary and Terminology

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<b>ramp (or strip) alert</b>	An increased standby posture maintained by Canadian Armed Forces search and rescue facilities during periods of increased Air Defence or other notable activity. <i>"alerte « aire de trafic » ou « piste d'envol »"</i>
<b>rescue</b>	An operation to retrieve persons in distress, provide for their initial medical or other needs and deliver them to a place of safety. <i>"sauvetage"</i>
<b>RP12</b>	IAW SOODO, Annex H, a CAF aircraft and crew capable of becoming airborne within 12 hours of notification of a tasking. See also CAMSAR Vol.1, Ch.2, 2.10.4.
<b>RP2</b>	A dedicated SAR aircraft and crew capable of becoming airborne within 2 hours of being tasked.
<b>RP30</b>	A dedicated SAR aircraft and crew capable of becoming airborne within 30 minutes of being tasked.
<b>rescue action plan</b>	A plan for rescue operations normally prepared by the search and rescue mission coordinator for implementation by the on-scene coordinator and facilities. <i>"plan du sauvetage"</i>
<b>rescue coordination</b>	The function of integrating the efforts of search and rescue (SAR) facilities and other resources to achieve concerted and harmonized resolution of SAR incidents in an effective and efficient manner. <i>"coordination des opérations de sauvetage"</i>
<b>rescue coordination centre (RCC)</b>	A unit responsible for promoting efficient organization of search and rescue (SAR) operations within a SAR region. <i>"centre de coordination de sauvetage"</i>
<b>SafetyNET</b>	A service of the Inmarsat enhanced group call system specifically designed for promulgation of maritime safety information as a part of the Global Maritime Distress and Safety System. <i>"SafetyNET"</i>
<b>scenario</b>	A consistent set of known facts and assumptions describing what may have happened to the survivors. <i>"scénario"</i>
<b>sea current (SC)</b>	The residual current when currents caused by tides and local winds are subtracted from local current. It is the main, large-scale flow of ocean waters. <i>"courant marin"</i>

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## Glossary and Terminology

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<b>sea state</b>	Condition of the water surface resulting from waves and swells.  <i>"état de la mer"</i>
<b>search</b>	An operation, normally coordinated by a joint rescue coordination centre or maritime rescue sub-centre, using available personnel and facilities to locate persons in distress.  <i>"recherche"</i>
<b>search action plan</b>	Message, normally developed by the search and rescue (SAR) mission coordinator, for passing instructions to SAR facilities and agencies participating in a SAR mission.  <i>"plan de la recherche"</i>
<b>search and rescue (SAR)</b>	SAR comprises the search for, and provision of aid to, persons, ships or other craft which are, or are feared to be, in distress or imminent danger.  <i>"recherche et sauvetage"</i>
<b>search and rescue case</b>	Any situation where the search and rescue system responds or would have responded had it been alerted at the time the situation was happening.  <i>"cas de recherche et sauvetage"</i>
<b>search and rescue asset</b>	Any mobile resource, including designated search and rescue (SAR) units, used to conduct SAR operations.  <i>"moyen de recherche et sauvetage"</i>
<b>search and rescue incident</b>	<ul style="list-style-type: none"> <li>• Any reported situation which has the potential to require a response from the search and rescue (SAR) system.</li> <li>• A SAR incident becomes a SAR case when the SAR system responds or would have responded had it been alerted at the time of the incident.</li> </ul> <i>"incident de recherche et sauvetage"</i>
<b>search and rescue mission coordinator (SMC)</b>	The rescue coordinator temporarily assigned to coordinate response to an actual or apparent distress situation at a JRCC.  <i>"coordonnateur de mission de recherche et sauvetage"</i>

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## Glossary and Terminology

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**search and rescue point of contact (SPOC)**

Rescue coordination centres and other established and recognized national points of contact which can accept responsibility to receive COSPAS-SARSAT alert data to enable the rescue of persons in distress.

*"point de contact de recherche et sauvetage"*

**search and rescue radar transponder (SART)**

A self contained, waterproof and manually activated radar transponder intended for emergency use at sea. The SART is used to locate a survival craft or distressed vessel: each radar pulse received by the SART causes it to transmit a response which is swept repetitively across the complete radar frequency band, creating a series of dots on the radar display of any vessel within radar range.

*"transpondeur radar de recherche et sauvetage"*

**search and rescue region (SRR)**

An area of defined dimensions, associated with a joint rescue coordination centre, within which search and rescue services are provided.

*"région de recherche et sauvetage"*

**search and rescue region commander (SRR Comd)**

The person designated by the Chief of Defence Staff and authorized by the *Canada Shipping Act, 2001* as being responsible for search and rescue (SAR) operations within a SAR region.

*"commandant d'une région de recherche et sauvetage"*

**search and rescue response**

The actions required from the search and rescue (SAR) system to resolve a situation. These may include:

- Tasking a SAR facility
- Issuing an "All Stations" broadcast (e.g., distress, urgency, missing aircraft notice, maritime assistance request, etc.)
- Monitoring, when situation dictates, for one half hour of working time
- Investigating, for one half hour working time, to determine if a SAR incident is occurring
- Investigating an official aeronautical or maritime distress alert, as defined under regulations, regardless of the amount of working time
- Performing other actions as defined in this manual

*"intervention de recherche et sauvetage"*

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## Glossary and Terminology

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### **search and rescue service**

The performance of distress monitoring, communication, coordination and search and rescue functions, including provision of medical advice, initial medical assistance, or medical evacuation, through the use of public and private resources including cooperating aircraft, vessels and other craft and installations.

*"service de recherche et sauvetage"*

### **search and rescue stage**

A typical step in the orderly progression of search and rescue missions. The stages are, normally:

- Awareness
- Initial Action
- Planning
- Operations
- Mission Conclusion

*"stade de recherche et sauvetage"*

### **search and rescue sub-region (SRS)**

A specified area associated with a maritime rescue sub-centre.

*"sous-région de recherche et sauvetage"*

### **search and rescue system**

The coordinated search and rescue (SAR) system is the combined facilities, equipment and procedures established in each SAR region to provide the response to SAR incidents.

*"système de recherche et sauvetage"*

### **search and rescue unit (SRU)**

A unit composed of trained personnel and provided with equipment suitable for the expeditious conduct of search and rescue operations.

*"unité de recherche et sauvetage"*

### **search and rescue units – primary**

- Federal search and rescue (SAR) aircraft or vessels established and equipped specifically for SAR with SAR trained crews aboard.
- Primary search and rescue units are under the direct operational control of the SAR Region Commander for SAR taskings.

*"unités primaires de recherche et sauvetage"*



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## Glossary and Terminology

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### search and rescue units – secondary

All units of the Federal government that are not primary search and rescue units but which may be tasked to aid in the resolution of a search and rescue incident.

*"unités secondaires de recherche et sauvetage"*

### search and rescue units – other

- Units, other than primary or secondary search and rescue units, which participate in search and rescue activities when required.
- This includes civilian agencies, volunteers and partially Federal Government funded facilities such as the Canadian Coast Guard Auxiliary and the Civil Air Search and Rescue Association.

*"autres unités de recherche et sauvetage"*

### search area (A)

The area determined by the search planner that is to be searched. This area may be sub-divided into search sub-areas for the purpose of assigning specific responsibilities to the available search facilities.

*"zone de recherche"*

### search effort (Z)

- A measure of the area a search facility can effectively search within the limits of search speed, endurance, and sweep width.
- Search effort is computed as the product of search speed (V) search endurance (T), and sweep width (W):  
 $Z = V \times T \times W$ .

*"effort de recherche"*

### search endurance (T)

- The amount of "productive" search time available at the scene.
- This figure is usually taken to be 85 % of the on-scene endurance, leaving a 15 % allowance for investigating sightings and navigating turns at the ends of search legs.

*"autonomie de recherche"*

### search facility position error (Y)

The probable error in a search craft's position, based on its navigational capabilities.

*"erreur de position du moyen de recherche"*

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## Glossary and Terminology

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<b>search object</b>	<p>A ship, aircraft, or other craft missing or in distress or survivors or related search objects or evidence for which a search is being conducted.</p> <p style="text-align: right;"><i>"objet d'une recherche, objet recherché"</i></p>
<b>search pattern</b>	<p>A track line or procedure assigned to a search facility for searching a specified area.</p> <p style="text-align: right;"><i>"circuit de recherche"</i></p>
<b>search speed (V)</b>	<p>The speed (or velocity) with which a search facility moves over the ground when searching.</p> <p style="text-align: right;"><i>"vitesse de recherche"</i></p>
<b>search sub-area</b>	<p>A designated area to be searched by a specific assigned search facility or possibly two facilities working together in close coordination.</p> <p style="text-align: right;"><i>"sous-zone de recherche"</i></p>
<b>searchmaster (SM)</b>	<p>An individual who has been appointed by a search and rescue region commander to coordinate and direct a specific search and rescue operation.</p> <p style="text-align: right;"><i>"chef des opérations de recherche"</i></p>
<b>self-locating datum marker buoy (SLDMB)</b>	<p>A datum marker buoy that determines its own position and includes the position information in the transmission of the beacon signal. These beacons usually transmit through satellite services.</p> <p style="text-align: right;"><i>"bouée-repère auto-localisée"</i></p>
<b>sensors</b>	<p>Human senses (sight, hearing, touch, etc.), those of specially trained animals (such as dogs), or electronic devices used to detect the object of a search.</p> <p style="text-align: right;"><i>"capteurs"</i></p>
<b>set</b>	<p>Refer to "direction of <u>current</u>".</p>
<b>surface picture (SURPIC)</b>	<p>A list or graphic display from a ship reporting system of information about vessels in the vicinity of a distress situation that may be called upon to render assistance.</p> <p style="text-align: right;"><i>"tableau de la situation en surface"</i></p>

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<b>sweep width (W)</b>	A measure of the effectiveness with which a particular sensor can detect a particular object under specific environmental conditions. <i>"largeur de la bande de ratissage"</i>
<b>swell</b>	Condition of the water surface caused by a distant wind system. The individual swell appears to be regular and smooth with considerable distance between rounded crests. <i>"houle"</i>
<b>tidal current (TC)</b>	Near-shore currents caused by the rise and fall of the tides. <i>"courant de marée"</i>
<b>total probable error (E)</b>	<ul style="list-style-type: none"> <li>• The estimated error in the datum position.</li> <li>• E is equal to the square root of the sum of the squares of the total drift error (<math>D_e</math>), initial position error (X), and search facility position error (Y).</li> </ul> <i>"erreur probable totale"</i>
<b>total surface drift (TD)</b>	Vector sum of total water current and leeway. <i>"dérive totale à la surface"</i>
<b>total water current (TWC)</b>	The vector sum of currents affecting search objects. <i>"courant total de l'eau"</i>
<b>track spacing (S)</b>	The distance between adjacent parallel search tracks. <i>"écart entre les parcours, espacement des parcours"</i>
<b>uncertainty phase</b>	A situation wherein doubt exists as to the safety of an aircraft or a vessel, and of the persons on board. <i>"phase d'incertitude"</i>
<b>unknown search and rescue incident</b>	A search and rescue incident of unknown origin, its source remaining untraced at the conclusion of the incident. <i>"incident de recherche et sauvetage de source inconnue"</i>
<b>Unmanned Air Vehicle (UAV)</b>	A power driven aircraft other than a model aircraft that is designed to fly without a human operator on board.

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<b>Unmanned Surface Vehicle (USV)</b>	Vehicles that operate on the surface of the water (watercraft) without a crew. Also known as autonomous surface vehicles (ASV).
<b>unnecessary search and rescue alert (UNRAR)</b>	A message sent by a joint rescue coordination centre to the appropriate authorities as a follow-up when the search and rescue system is unnecessarily activated by a false alert. <i>"alerte de recherche et sauvetage inutile"</i>
<b>unreported</b>	A situation where a craft has failed to report its location or status or did not arrive at its destination when expected and remains missing. <i>"silence ou retard insolite"</i>
<b>vector</b>	A graphic representation of a physical quantity or measurement, such as wind velocity, having both magnitude and direction. <i>"vecteur"</i>
<b>vessel</b>	Any displacement or non-displacement vehicle that uses water as a means of navigation; a maritime craft. <i>"bateau"</i>
<b>visual flight rules (VFR)</b>	<ul style="list-style-type: none"> <li>• Rules governing the procedures for conducting flight under visual meteorological conditions.</li> <li>• Also a term used by pilots and controllers to indicate the type of flight plan.</li> </ul> <i>"règles de vol à vue"</i>
<b>wave (or chop)</b>	The condition of the water surface caused by local wind and characterized by irregularity, short distance between crests, whitecaps, and breaking motion. <i>"vague (ou clapotis)"</i>
<b>when ice is present</b>	Situation where a vessel is located in the immediate vicinity of ice of any type, thicker than 10 centimetres (nilas, brash, pancake ice formation). <i>"en présence de glace"</i>
<b>wind current (WC)</b>	The water current generated by wind acting upon the surface of water over a period of time. <i>"courant dû au vent"</i>