

National Search and Rescue Secretariat

SAR KMS DATA FIELDS DEVELOPMENT

*SEARCH AND RESCUE
KNOWLEDGE MANAGEMENT
SYSTEM*



*SYSTÈME DE GESTION
DES CONNAISSANCES EN
RECHERCHE ET SAUVETAGE*

Maj (Ret'd) M.G. Newbold, PhD
December 16, 2014

Revision History

This section serves to control the development and distribution of revisions to the document. This will keep an accurate history of the original document that was first created.

| Version # | Revision Date | Revision Reason | Author(s) |
|-----------|------------------|----------------------|----------------|
| 1.0 | 24 November 2014 | Creation of Document | Ben Godby |
| 1.1 | 16 December 2014 | Final revisions | Graham Newbold |
| | | | |
| | | | |
| | | | |
| | | | |

Table of Contents

| | | |
|------|--|----|
| 1. | Introduction | 3 |
| 2. | Background | 3 |
| 3. | SAR KMS Program Objectives | 3 |
| 4. | Intent | 3 |
| 5. | ISRID Standards..... | 3 |
| 6. | Suggested Fields for Stakeholders..... | 4 |
| 6.1. | Incident | 4 |
| 6.2. | Alerts..... | 11 |
| 6.3. | Response Resources | 12 |
| 6.4. | Response Resource Sortie | 14 |
| 6.5. | Subject | 14 |
| 6.6. | Operational Challenge | 18 |

1. Introduction

The National Search and Rescue Secretariat (NSS) functions as the central coordinator for the National Search and Rescue Program (NSP) to promote collaboration and common understanding among partner federal departments to ensure the best use of collective resources at all levels.

2. Background

The mission of the Search and Rescue Knowledge Management System (SAR KMS) is to promote effective and efficient national Search and Rescue programs by the continuous improvement in the quality and integrity of shared Search and Rescue (SAR) information across Canada. Operationalizing this mission translates into working in partnership with SAR stakeholders to consolidate, aggregate, and analyse data in order to build useful tools to assist stakeholders in identifying opportunities to improve their capabilities. The SAR KMS represents a major initiative by the National Search and Rescue Secretariat (NSS) to provide such data analysis capabilities.

3. SAR KMS Program Objectives

SAR KMS aims to achieve three key objectives:

1. Support authoritative evidence-based policy and program decisions;
2. Promote more effective and efficient planning, response, risk and resource management; and
3. Maintain a coordinated, effective, world class search and rescue capability.

Achieving the three key objectives hinges on the availability and richness of SAR data. Specifically, the SAR KMS will:

- Capture incident data from as many SAR stakeholder systems as possible;
- Augment incident data with public internet data sources; and
- Correlate incident data and enable mapping to provide geo-analysis and a common operating picture.

4. Intent

The intent of data field development is to define a common understanding and support the movement of data from source systems into a common SQL database in the SAR KMS.

5. ISRID Standards

The use of the International Search and Rescue Information Database (ISRID) assists in the development of a common terminology that will support SAR incident data analysis, discussion and understanding.

6. Suggested Fields for Stakeholders

The following tables outline some of the information that is currently being consumed by the SAR KMS. This document should not be taken as a strict schema definition, but rather as a summary of the fields that the SAR KMS consumes. In order for the field to be properly consumed there needs to be a clear mapping between the stakeholder field and the SAR KMS field. Instructions to perform this mapping should be provided by the stakeholder. The sample values provided are offered simply as an example, and do not necessarily represent an exhaustive list.

The fields denoted by a red asterix will require mandatory data entry in SAR KMS 2.0 (*)

The new fields that will be available with release 2.0 are indicated in green.

6.1. Incident

| Field | Description | Type |
|----------------------------------|---|------------------|
| Stakeholder Incident ID * | The unique identifier used by the stakeholder's system to identify unique incidents. | Number or String |
| Incident Number | An alternate number assigned by the stakeholder. Often used to hold a more readable value that users can reference in conversation. | Number or String |
| SAR Domain | The designated SAR Domain of the incident. Possible values: <ul style="list-style-type: none"> Humanitarian (for federal stakeholders this describes Ground SAR incident or medical evacuations. Requires further discussion with GSARCC) Air Marine Other | Single Selection |
| SAR Severity* | The designed severity level for the incident. Possible values: <ul style="list-style-type: none"> Category 1 Category 2 Category 3 Category 4 Category 5 <p>The RCAF/CCG CAMSAR Manual uses the term classification which includes the domain of the incident (e.g. H1 indicates a Category 1 Humanitarian incident)</p> | Single Selection |
| Activity | The activity that was taking place when the incident occurred. Possible values: <ul style="list-style-type: none"> BA - Flying (non-powered) A - Flying (powered) A - Parachuting/Para-jumping A - Paragliding/Parasailing L - ATV riding | Single Selection |

| | | |
|-------------------------|---|------------------|
| | <ul style="list-style-type: none"> • L - Base jumping • L - Camping • L - Caving • L - Climbing (alpine) • L - Climbing (ice) • L - Cycling/Mountain biking • L - Driving (Car/truck) • L - Gathering/picking (fruit/plants) • L - Geocaching • L - Hiking • L - Horseback riding • L - Hunting • L - Skiing (alpine) • L - Skiing (cross-country) • L - Snowboarding • L - Snow machine riding • L - Snowshoeing • L - Surveying/Observing • L - Walking/Wandering • M - Boating (canoe/kayak) • M - Boating (inboard motor) • M - Boating (outboard motor) • M - Boating (personal watercraft) • M - Boating (sailboat) • M - Fishing (from boat) • M - Fishing (from shore/structure) • M - Fishing (through ice) • M - Swimming • X - Not applicable • Y - Other • Z - Unknown | |
| Reported By* | The person who filled out the incident report. | String |
| Incident Date | The date and time the incident occurred. | Date / Time |
| Incident End | The date and time the incident was resolved. | Date / Time |
| Day / Night | The time of day the incident occurred. Possible values: <ul style="list-style-type: none"> • Daylight • Darkness | Single Selection |
| Location* | A short description of the location of the incident. | String |
| Latitude * | The latitude of the incident location. Should indicate the last known position of the subject(s). | Decimal Degrees |
| Longitude * | The longitude of the incident location. Should indicate the last known position of the subject(s). | Decimal Degrees |
| Location Details | A more detailed description of the incident location. | String |
| UTM | The UTM coordinates of the incident location. Should indicate the last known position of the subject(s). | String |

| | | |
|------------------------|--|-------------------------|
| <p>Province</p> | <p>The province or territory where the incident occurred. Possible values:</p> <ul style="list-style-type: none"> • British Columbia • Alberta • Saskatchewan • Manitoba • Ontario • Quebec • New Brunswick • Nova Scotia • Prince Edward Island • Newfoundland & Labrador • Yukon • North West Territories • Nunavut | <p>Single Selection</p> |
| <p>Region</p> | <p>The designated SAR region where the incident occurred. Designated SAR regions may be different for federal and provincial / territorial stakeholders. Possible values:</p> <ul style="list-style-type: none"> • Federal SRRs • CCG Sub-regions • Provincial / Territorial SAR team sub-regions | <p>Single Selection</p> |
| | <p>The primary cause of the incident. Possible values:</p> <ul style="list-style-type: none"> • Avalanche • Onset of darkness • Lost/disoriented • Broke through ice • Severe weather • Natural disaster • Other environmental • Slip or fall • Drowned • Capsized • Ran aground • Swamped • Exceeded ability • Other activity related • Violence • Poor communication • Impaired (Alcohol/Drugs) • Medical • Allergic reaction/poisoning • Heart attack or stroke • Despondent/depressed • Injury | <p>Single Selection</p> |

| | | |
|-------------------------------|--|-------------------------|
| | <ul style="list-style-type: none"> • Separation • False alarm (intentional) • False alarm (unintentional) • Fatigue/exhaustion • Exposure/hypothermia • Suicide or attempt • Wildlife conflict • Mechanical breakdown • Ran out of fuel • Stuck • Stranded • Current/high waves/tides • Earthquake • Flood/high water • Forest fire • Land or rock slide • Alzheimer's/Dementia • Autism Spectrum Disorder • Interference/foul play • Navigation error • Equipment failure • Loss of control/crash • Other (Specify) • Unknown | |
| <p>Secondary Cause</p> | <p>The secondary cause of the incident. Possible values:</p> <ul style="list-style-type: none"> • Avalanche • Onset of darkness • Lost/disoriented • Broke through ice • Severe weather • Natural disaster • Other environmental • Slip or fall • Drowned • Capsized • Ran aground • Swamped • Exceeded ability • Other activity related • Violence • Poor communication • Impaired (Alcohol/Drugs) • Medical • Allergic reaction/poisoning | <p>Single Selection</p> |

| | | |
|--------------------------------|--|-------------------------|
| | <ul style="list-style-type: none"> • Heart attack or stroke • Despondent/depressed • Injury • Separation • False alarm (intentional) • False alarm (unintentional) • Fatigue/exhaustion • Exposure/hypothermia • Suicide or attempt • Wildlife conflict • Mechanical breakdown • Ran out of fuel • Stuck • Stranded • Current/high waves/tides • Earthquake • Flood/high water • Forest fire • Land or rock slide • Alzheimer's/Dementia • Autism Spectrum Disorder • Interference/foul play • Navigation error • Equipment failure • Loss of control/crash • Other (Specify) • Unknown | |
| <p>Reported Weather</p> | <p>The weather conditions that were reported when the incident occurred. Possible values:</p> <ul style="list-style-type: none"> • Snow or blowing snow • Rain/drizzle • Freezing rain • Strong winds • Thunderstorm • Clear • Partly Cloudy • Overcast • Foggy • Blizzard • Smokey • Not applicable • Other • Unknown | <p>Single Selection</p> |
| <p>Reported</p> | <p>The temperature that was reported when the incident</p> | <p>Single</p> |

| | | |
|-----------------------------|--|------------------|
| Temperature | <p>occurred. Possible values:</p> <ul style="list-style-type: none"> • -35°C or colder • -15°C to -35°C • 0°C to -15°C • 15°C to 0°C • 15°C or warmer | Selection |
| Reported Visibility | <p>The visibility that was reported when the incident occurred. Possible values:</p> <ul style="list-style-type: none"> • Unrestricted (clear) • Limited • Obscured | Single Selection |
| Response Weather | <p>The weather conditions that were observed when the incident was responded to. Possible values:</p> <ul style="list-style-type: none"> • Snow or blowing snow • Rain/drizzle • Freezing rain • Strong winds • Thunderstorm • Clear • Partly Cloudy • Overcast • Foggy • Blizzard • Smokey • Not applicable • Other • Unknown | Single Selection |
| Response Temperature | <p>The temperature that was observed when the incident was responded to. Possible values:</p> <ul style="list-style-type: none"> • -35°C or colder • -15°C to -35°C • 0°C to -15°C • 15°C to 0°C • 15°C or warmer | Single Selection |
| Response Visibility | <p>The visibility that was observed when the incident was responded to. Possible values:</p> <ul style="list-style-type: none"> • Unrestricted (clear) • Limited • Obscured | Single Selection |
| Land Use Zone | <p>The type of land zone that the incident occurred on. Possible values:</p> | Single Selection |

| | | |
|-----------------------------------|--|------------------|
| | <ul style="list-style-type: none"> • Backcountry (park, wilderness) • Rural - agricultural land • Rural - town/village • Suburban • Urban (city centre) • Not applicable • Other • Unknown | |
| Terrain | <p>The type of terrain that the incident occurred on. Possible values:</p> <ul style="list-style-type: none"> • cave/crevasse • flat • mountainous • rolling/hilly • steep/cliff • water - open water/ice • water - shoreline/coastline • water – swift water • water - wetland/swamp • Not applicable • Other • Unknown | Single Selection |
| Land Cover | <p>The type of land cover that the terrain contains. Possible values:</p> <ul style="list-style-type: none"> • Forested • Open Fields • Bare Rock • Glacier / Ice Field • Residential | Single Selection |
| Weather Factor in Response | Indicates whether the weather was a significant factor in the response. | Boolean |
| Number in Party | Indicates the number of subjects in the party to be rescued. | Integer |
| Number Rescued | Indicates the number of subjects who were found and rescued. | Integer |
| Number Saved | Indicates the number of subjects that lived. | Integer |
| Number Lost | Indicates the number of subjects who were never found. | Integer |
| Number Fatalities | Indicates the number of subjects that died. | Integer |
| SAR Authority | The SAR authority that coordinated the search and rescue effort. | String |
| SRR | <p>The Search and Rescue Region of the incident. Possible values:</p> <ul style="list-style-type: none"> • Victoria • Trenton • Halifax | Single Selection |

| | | |
|------------------------------------|--|------------------|
| Comments | Text field containing a brief narrative of the incident. | String |
| Destination Latitude | Indicates the latitude of the destination towards which the subjects were headed. | Decimal Degrees |
| Destination Longitude | Indicates the longitude of the destination towards which the subjects were headed. | Decimal Degrees |
| Initial Direction of Travel | Indicates the initial direction of travel as a bearing of true north if known. (0 - 359.9) | Decimal |
| Type of Response | Indicates the general type of incident response. Possible values: <ul style="list-style-type: none"> • Search and Rescue • Search • Rescue • Recovery • Evidence Search | Single Selection |

6.2. Alerts

| Field | Description | Type |
|-----------------------------|--|------------------|
| Incident ID * | The unique identifier used to map the alert back to its corresponding incident. | Number or String |
| Alert Type | The type of alert used. Possible values: <ul style="list-style-type: none"> • Distress beacon - PLB • Distress beacon - ELT • Distress beacon - EPIRB • Other SAR alerting device - e.g. SPOT • Email or text message • Radio - Land (VHF/HF/FRS-GMRS) • Radio - Aircraft or Marine • Radio - Amateur (Ham) • Telephone - cellular • Telephone - land line • Telephone - satellite • Signal - aural (shout, whistle) • Signal - visual (flare, smoke, sign) • Concerned family member • Concerned citizen • Request from other SAR authority • Other (specify) • Unknown | Single Selection |
| Alert Time | The date and time that the alert was detected. | Date / Time |
| Secondary Alert Type | The secondary type of alert used. Possible values: <ul style="list-style-type: none"> • Distress beacon - PLB • Distress beacon - ELT • Distress beacon - EPIRB | Single Selection |

| | | |
|--|--|--|
| | <ul style="list-style-type: none"> • Other SAR alerting device - e.g. SPOT • Email or text message • Radio - Land (VHF/HF/FRS-GMRS) • Radio - Aircraft or Marine • Radio - Amateur (Ham) • Telephone - cellular • Telephone - land line • Telephone - satellite • Signal - aural (shout, whistle) • Signal - visual (flare, smoke, sign) • Concerned family member • Concerned citizen • Request from other SAR authority • Other (specify) • Unknown | |
|--|--|--|

6.3. Response Resources

| Field | Description | Type |
|----------------------|---|------------------|
| Incident ID * | The unique identifier used to map the response resource back to its corresponding incident. | Number or String |
| Source | The organization or unit that responded to the incident. Possible values: <ul style="list-style-type: none"> • RCAF • CASARA • CAF • Rangers • CCG • CCGA • RCMP • Parks Canada • Provincial/Territorial Police • Provincial/Territorial Fire Department • Provincial/Territorial Fire EHS • Provincial/Territorial EMO • Volunteer GSAR • Other | Single Selection |
| Name | The specific name of the unit that responded to the incident | String |
| Affiliation | Indicates the affiliation of the response unit | String |
| Type | The type of response unit that responded to the incident. Possible values: <ul style="list-style-type: none"> • Duty Officer • Ground searchers - on foot | Single Selection |

| | | |
|----------------------------|---|-------------|
| | <ul style="list-style-type: none"> • Ground searchers – snow machine or ATV • Ground search units - cars/trucks • CASARA - Aircraft (Fixed Wing) • CASARA - Aircraft (Commercial fixed wing) • CASARA Aircraft (Commercial Helicopter) • CASARA spotter(s) • Air Observer - Other • Aircraft other - fixed-wing • Aircraft other - helicopter • Marine search unit (inland water) • Marine search unit - Other • CCG Marine SAR Unit • CCGA Marine SAR Unit • Canine unit (volunteer) • Canine unit (Police) • Canvassers • Investigators • Medical specialist(s) • Remote sensing (UAV) • Social Services • Command post • Logistics • Search manager(s)/coordinators • Telecom company • Family/friends • Untrained/spontaneous volunteers • Military - fixed wing SAR • Military Helicopter SAR • Military Fixed wing search support • Military Helicopter search support • Military Ground Support • Military Marine support • Military marine divers • Police Marine unit • Police dive unit • Commercial dive team • Regional Duty Officer | |
| Hours Used | The number of hours that were used for the rescue effort by the resource. | Decimal |
| Units Used | The number of units that were deployed for the rescue effort. | Integer |
| Number of Personnel | The number of individual personnel deployed for the rescue effort. | Integer |
| First to Respond | An indicator of whether the resource was the first to respond to the incident. | Boolean |
| Time Tasked | The date and time that the resource was first tasked. | Date / Time |

| | | |
|-------------------------------|---|-------------|
| Time Resource Departed | The date and time that the resource departed for the incident. | Date / Time |
| Time On Scene | The date and time that the resource arrived on scene at the incident. | Date / Time |
| Time Off Scene | The date and time that the resource departed the incident scene. | Date / Time |
| Time Completed | The date and time that the resource completed their tasking for the incident. | Date / Time |

6.4. Response Resource Sortie

| Field | Description | Type |
|-------------------------------|--|------------------|
| Response Resource ID * | The unique identifier used to map the response resource sortie back to its corresponding response resource. | Number or String |
| Search Technique | The search technique used by the response resource units. Possible values: <ul style="list-style-type: none"> • Contour Search • Track Crawl • Electronic Search • Coast Crawl • Other values still need to be defined | Single Selection |

6.5. Subject

| Field | Description | Type |
|-------------------------|---|------------------|
| Incident ID * | The unique identifier used to map the subject back to the corresponding incident. | Number or String |
| Age | The age group of the subject. Possible values: <ul style="list-style-type: none"> • 00-06 • 07-12 • 13-18 • 19-24 • 25-30 • 31-40 • 41-50 • 51-60 • 61+ • Unknown | Integer |
| Gender | The gender of the subject. Possible Values: <ul style="list-style-type: none"> • Male • Female • Unknown | Single Selection |
| Subject Activity | The activity that the subject was participating in when the | Single |

| | | |
|------------------------------|--|-------------------------|
| | <p>incident occurred. Possible values:</p> <ul style="list-style-type: none"> • BA - Flying (non-powered) • A - Flying (powered) • A - Parachuting/Para-jumping • A - Paragliding/Parasailing • L - ATV riding • L - Base jumping • L - Camping • L - Caving • L - Climbing (alpine) • L - Climbing (ice) • L - Cycling/Mountain biking • L - Driving (Car/truck) • L - Gathering/picking (fruit/plants) • L - Geocaching • L - Hiking • L - Horseback riding • L - Hunting • L - Skiing (alpine) • L - Skiing (cross-country) • L - Snowboarding • L - Snow machine riding • L - Snowshoeing • L - Surveying/Observing • L - Walking/Wandering • M - Boating (canoe/kayak) • M - Boating (inboard motor) • M - Boating (outboard motor) • M - Boating (personal watercraft) • M - Boating (sailboat) • M - Fishing (from boat) • M - Fishing (from shore/structure) • M - Fishing (through ice) • M - Swimming • X - Not applicable • Y - Other • Z - Unknown | <p>Selection</p> |
| <p>Search Outcome</p> | <p>The outcome of the search and rescue effort for this subject. Possible values:</p> <ul style="list-style-type: none"> • Found Alive • Found Deceased • False Alert • False Search | <p>Single Selection</p> |

| | | |
|-----------------------|---|------------------|
| Condition | <p>The condition of the subject when they were found. Possible values:</p> <ul style="list-style-type: none"> • Good condition • Minor injuries • Major injuries • Ill • Hypothermic • Shock • Unconscious • Deceased • Other • Unknown | Single Selection |
| Found Location | <p>The location where the subject was found. Possible values:</p> <ul style="list-style-type: none"> • cave/crevasse • flat • mountainous • rolling/hilly • steep/cliff • water - open water/ice • water - shoreline/coastline • water – swift water • water - wetland/swamp • Not applicable • Other • Unknown | Single Selection |
| Found By | <p>Indicates who the subject was found by. Possible values:</p> <ul style="list-style-type: none"> • Ground searchers - on foot • Ground searchers – snow machine or ATV • Ground search units - cars/trucks • CASARA - Aircraft (Fixed Wing) • CASARA - Aircraft (Commercial fixed wing) • CASARA Aircraft (Commercial Helicopter) • Aircraft other - fixed-wing • Aircraft other - helicopter • Marine search unit (inland water) • Marine search unit - Other • CCG Marine SAR Unit • CCGA Marine SAR Unit • Canine unit (volunteer) • Canine unit (Police) • Canvassers • Investigators • Remote sensing (UAV) | Single Selection |

| | | |
|--------------------------|---|------------------|
| | <ul style="list-style-type: none"> • Telecom company • Family/friends • Untrained/spontaneous volunteers • Military - fixed wing SAR • Military Helicopter SAR • Military Fixed wing search support • Military Helicopter search support • Military Ground Support • Military Marine support • Military marine divers • Police Marine unit • Police dive unit • Commercial dive team | |
| Distance from LKP | The distance (in kilometres) that the subject was found from their last known position. | Decimal |
| Local Knowledge | The subject's knowledge of the area. Possible values: <ul style="list-style-type: none"> • Extensive • Limited Knowledge • No knowledge • Unknown • Not applicable | Single Selection |
| Prior Experience | The subject's prior experience with the activity they were participating in. Possible values: <ul style="list-style-type: none"> • Extensive Experience • Limited Experience • No Experience • Unknown • Not applicable | Single Selection |
| Equipment | The subject's safety equipment that they were using during their activity. Possible values: <ul style="list-style-type: none"> • Lifejacket • Helmet • None • Unknown • | Single Selection |
| Prior Experience | Indicates the experience of the subject at the activity being undertaken. Possible values: <ul style="list-style-type: none"> • Extensive experience • Limited experience • No experience • Not applicable • Unknown | Single Selection |

| | | |
|--------------------------------------|--|------------------|
| Subject Find Latitude | Indicates the latitude of the location at which the subject was found. | Decimal Degrees |
| Subject Find Longitude | Indicates the longitude of the location at which the subject was found. | Decimal Degrees |
| Mobility (in Hours) | Indicates the number of hours the subject(s) spent mobile during the incident. | Decimal |
| Subject Fitness | The subject's physical fitness level. | Single Selection |
| Subject Found Date / Time | The date and time that the subject was found. | Date / Time |
| Subject Last Seen Date / Time | The date and time that the subject was last seen. | Date / Time |
| Track Offset | The distance (in metres) that indicates the shortest (closest point of approach) between the subject's find location and the nearest linear features (road, trail, drainage, pipeline, etc.) | Decimal |

6.6. Operational Challenge

| Field | Description | Type |
|----------------------|--|------------------|
| Incident ID * | The unique identifier used to map the operational challenge back to the corresponding incident. | Number or String |
| Type | The type of operational challenge faced during the rescue. Possible values: <ul style="list-style-type: none"> • Communication Difficulty • Equipment limitation or failure • Resource Availability • Adverse Weather • Geographic Barrier | Single Selection |