Emerging Technology in SAR in the Canadian Context: Challenges, Risks and Strategies

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Canada at a glance

- World’s second largest country (9,970,610 km²)
- World’s longest coastline (243,000 km)
- Extensive mountains
- 3 million lakes
- Population: 32.6M

80% of Canadian pop.
60% of Canadian pop.
Outline

- Many jurisdictions, one horizontal program
- National Search and Rescue Program
- Examples multi-jurisdictional issues
- Emerging Technologies - Emergency Notification Devices
  - Challenges and risks
  - Strategies to mitigate
  - Way forward
The National SAR Program: Many jurisdictions, one horizontal program
Program delivery: responsibilities

- Lead Minister for Search and Rescue
- Interdepartmental Committee on Search and Rescue
- National SAR Secretariat
- Environment Canada
- RCMP
- Transport Canada
- Parks Canada
- Canadian Coast Guard
- CASARA
- CCGA
- Ground SAR Council
- Northwest Territories
- Yukon
- Nunavut
- PEI
- Alberta
- Quebec
- British Columbia
- Ontario
- Nova Scotia
- Manitoba
- New Brunswick
- Saskatchewan
- Newfoundland
- Police Services
- Ground SAR Volunteers - SARVAC
National SAR Secretariat

Head of Delegation to

- COSPAS-SARSAT
  - MEOSAR
  - 121.5 phase out
  - Policy and comms pertaining to 406 MHz beacon registry

- COSPAS SARSAT is mature and robust
- The gold standard in satellite alerting
Current National SAR Program challenges

- Northern SAR Strategy
Current National SAR Program challenges (cont’d)

- Support for SAR Interagency Frequency (SAR-IF) implementation
Current National SAR Program challenges (cont’d)

- Beacon Awareness Campaign
Emerging Technology (Context)

Notification Devices/ services that are not compliant with COSPAS SARSAT

- Satellite Emergency Notification Devices (SENDs)
- Location, Tracking and Emergency Notification Devices
- Commercial Emergency Notification and Locating Devices (CENALDs)
- Cellular phones

Those affected by these SENDs include

- Member and Contracting States (SAR Authorities),
- Service Providers, (business models)
- End Users, (those in distress)
Emerging Technology - SENDs

Advantages to End User
- Multipurpose - offering added value in tracking, personal communication and emergency notification (gadget factor)
- Inexpensive and readily available

Disadvantages to End User (unknown by many users)
- Risk in using a non-standardized device/system
- Prolonged SAR response, - Service Providers do not know the correct points of contact within SAR Systems
- Terms and Conditions limit the liability of the Service Provider
- Ambiguous terminology such as “Global” and “Insurance”
Emerging Technology - SENDs

Advantages to SAR Authorities

- Additional source of incidental information

Disadvantages to SAR Authorities

- Uncoordinated SAR response, - Service Providers do not know the correct points of contact within our SAR System
- Must work outside of convention to communicate with different service providers
  ie: communications protocols and access to data.
- In a word, these devices are “disruptive”.
Emerging Risks

- Disruptive inputs to the SAR system require extra resources and time
  - to analyze and process incoming information
  - to coordinate and communicate between authorities
  - to manage counterproductive efforts
- The lack of proper coordination and communication protocols increase the risk to both the end users and the SAR responders
Emerging Challenges

- The challenge is to mitigate the associated risks through,
  - the development of relevant regulations, standards, policies and protocols,
  - the development and roll-out of public education programs - this goes to managing expectations (and homeostatic levels of risk),
- These mitigating measures must be coordinated and harmonized amongst all of the SAR authorities in Canada,
Emerging Strategy (Baseline)

- NSS considers Cospas Sarsat and 406 MHz beacons as the standard in alerting technologies,
  - All regulations, standards, policies and protocols should meet those of Cospas Sarsat, to the extent possible
  - Share our experience with the international community,
  - Leverage existing conventional practices
    - ICAO IMO JWG on SAR
    - Radio Technical Commission for Maritime Services
      Technical standards
    - National Search and Rescue Committee (USCG)
      Operational criteria and interface control
    - SAR Forum UAE and ICAO
Emerging Strategy (Actions to Date)

- Engaged international parties,
  - ICAO/IMO JWG 16 final report “Appendix H”,
  - Cospas/Sarsat Council,
  - Input our needs, issues and concerns through
    - RTCM Special Committee 128,
    - NSARC (USCG)
- Engaged domestic regulators,
  - Transport Canada (Civil Aviation and Marine Safety)
  - Industry Canada (Spectrum and Consumer Protection)
- Engaged Service Providers
- Engaged Canadian Public,
  - Development of comms products “Making the right call”
JWG 16 Final Report Appendix H

- On the subject of commercially available locating, tracking, and emergency notification devices, the ICAO IMO JWG 16 on SAR provided an information circular to both ICAO and IMO recommending…

- …If an emergency notification device or service falls short of COSPAS SARSAT performance standards and operational criteria, transparency would require that the **limitations** are clearly indicated to the user by the manufacturer…
These limitations may include, but not be limited to reduced, diminished or lack of:

- global coverage,
- timeliness of alert to the responsible SAR authority,
- location accuracy and homing signal,
- automatic activation and survivability in the aeronautical and maritime environments,
- distressed user identifier capability.
In order to ensure seamless, timely and effective alert notification to the responsible SAR authority, States may require providers of non-406 MHz emergency notification devices and services to

- establish and maintain a **user database** that can be correlated with the transmitted data,

- establish and maintain **reliable contacts** with relevant SAR authorities.
JWG 16 Final Report Appendix H

- agree to **procedures and protocols** with the State concerned including test procedures, provision of data on demand, acceptable format and resolution of false alerts,

- demonstrate that they can **alert** the relevant SAR authorities **within 5 minutes**,

- demonstrate that they have **robust processes** and effective procedures for distribution of alert notification. This would include training processes and back-up systems to ensure resilience.
Also, for the benefit of the users, States may require service providers to provide users with a list of those States with which systemised arrangements have been made and in whose territories claims of coverage have been made.

In short, all efforts must me made to facilitate better coordination and communication amongst all of the members of the SAR community including, States, commercial providers and end users.
Way Forward

- Encourage all international partners to embrace the message of the ICAO IMO JWG on the Harmonization of SAR, (JWG 16, Appendix H).

- Encourage device and service providers to heed the concerns of the international search and rescue community.

- Educate the public on their choices.
Questions?

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