Next Generation Beacons

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The development of DASS and other Mid-Earth Orbiting Search & Rescue (MEOSAR) systems (i.e. Galileo, GLONASS, Beidou, etc.) - which are all currently in their development stages - provides the SARSAT community a unique opportunity to reinvent the wheel...
Next Generation Beacons - An Introduction

DASS System Overview

GPS Constellation (DASS-equipped satellites)

- DASS Local User Terminal (LUT) & Mission Control Center (USMCC)
- SAR Aircraft
- Rescue Coordination Center (RCC)
- Uplink: 406 MHz Emergency Beacon
With over 25 years of experience as our guide, what should the future 406 MHz beacon segment look like?

How can/should we improve upon current generation 406 MHz beacons?

What do SAR responders need out of a distress beacon?

Where are current 406 MHz beacons deficient?

Have requirements changed?
Defining the Requirements

- Identify the interested parties for the future system
  - Beacon owners & user groups (for ELTs, EPIRBs, PLBs, etc.)
  - System operators (MCCs & LUTs)
  - Beacon manufacturers
  - System users (SAR responders, IMO/ICAO, etc.)

- Solicit input from these interested parties
  - Identify the limitations of the current system & beacon technology
  - Document the desired features of the future system
  - Participate in national & int’l Work Groups

- Identify assumptions & constraints
  - MEOSAR ground system by 2011 with space segment by 2017(ish)
  - Will next generation beacons need to work with GOES?
  - Will the system need to follow the current C-S Frequency Mgmt Plan?
  - What are/will be the international (i.e. C-S) and national (i.e. RTCM/RTCA) requirements...
Defining the Requirements

Step 1: Gather a captive audience of industry professionals...
The real Step 1: Let’s outline current problems & limitations (from YOUR perspective):

- **Reliability**: Are 406 MHz beacons failing or under-performing out in the field? Consider maritime and aviation scenarios and their operating environments...

- **Accuracy**: are 406MHz beacons accurate enough?

- **Timeliness**: is information provided quick enough?

- **Beacon identification**: do beacons provide enough info?

- **False alerts**: a no-brainer?

- **Ancillary features (e.g. return-link)**: are these useful?

- **What else???
Step 2: Let’s outline the requirements:

- **Reliability**: do we need beacons to be 100% reliable, 100% of the time? If so, consider the implications...

- **Accuracy**: How accurate do we need beacons to be?

- **Timeliness**: How quickly do SAR responders need positional information?

- **Beacon identification**: Should more info be programmed into a beacon instead of relying upon owner/user-provided data? Can/should we expand data beyond current bit limit?

- **False alerts**: What is the false-alert threshold? None!?! Is this realistic? What about training & testing??
Step 2: Let’s outline the SAR requirements:

- **Operational & technical requirements:** are current operational and technical requirements sufficient? If not, what are the SAR requirements??

- **Ancillary-features:**
  - 121.5 homer: is this necessary esp. once MEOSAR is operational?
  - What about other types of homers: AIS-SART, etc.
  - Return-link
  - Other comms features
  - Should other features like SVDR-EPI RBs continue?

- **What else???
The Way Ahead...

• Your inputs will be documented and carried forward...
  – Internationally
    • SARSAT will collect input from all user-communities
    • A Task Group will be established:
      ➢ Will focus on what is possible with the future MEOSAR system
      ➢ Address what impacts will be on the current system
    • Will be reported back thru IMO/ICAO/ITU
    • Presumably, RTCM and RTCA requirements will have to updated
    • Need to ensure that new requirements and new technology is understood by user-communities
Initial draft requirements should be submitted by Oct. 2008 (C-S Open Council)

Cospas-Sarsat should commence developing Next Generation Beacon requirements in 2009-2010.

Cospas-Sarsat should commence testing during DASS D&E Phase (2011-2013)

Cospas-Sarsat should begin endorsing and integrating NGBs into C-S standards by 2013-2014(ish) to enable Type-Approval and Production to begin by 2015-2016(ish) timeframe with units in the market and in the field by 2017.

DASS should (God-willing) begin flying in 2017.
Thank You!

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