SARSAT EMERGING ISSUES

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MEOSAR - EOC TO IOC

- Early Operating Capability (EOC) to Initial Operating Capability (IOC)
- IOC (Estimated November 2019)
  - Resolution for moving beacon issues
  - Compared to EOC, IOC is based on an extended L-band space segment, an extended ground segment operating at full specifications, and a completed D&E Phase. The MEOSAR system need not necessarily provide global coverage during the IOC phase
  - All nodal MCCs and at least one MEOLUT associated with each nodal MCC are commissioned to the requirements as per performance specifications
- Full Operating Capability (FOC) (Estimated 2021)
  - System should be considered fully operational and have global coverage
  - Could be assumed that the MEOSAR system could become the primary alerting source for 406 MHz beacons.

SUSPECT ALERTS

- Definition – A single alert from a single MEOSAR satellite.
  - It can be real alert or it can be a system generated anomaly.
    - We have seen examples of real cases with only Suspect Alerts
- Thanks to your feedback and the USMCC's hard work = significant reduction in alerts summer of 2018
  - 3 or more corrections + Networking
- Name is changing to "***Uncorroborated MEOSAR Alert***"
- Note that the commissioning of all nodal MCCs is a prerequisite for MEOSAR Initial Operating Capability (IOC)
  - For IOC, Uncorroborated MEOSAR Alert rate must be $<10_x^{-4}$ level (.0001) (1 for every 10,000 alerts)
  - Several papers by countries trying to classify and analyze these alerts
- Unfortunately, these will never be 100% eliminated

ENCODED POSITION (E-SOLUTION) FROM INTERNAL GNSS

- First Generation Beacons (FGB)s
  - 100 meter accuracy
  - Some beacons not required to ever update position
  - The internal navigation device shall make at least one attempt every 15 minutes to obtain an initial location; until an initial location is obtained. After an initial location is obtained or 2 hours has passed after beacon activation without obtaining an initial location, the navigation device shall attempt location updates according to the following regime:
    - First 6 hours - update every 30 minutes
    - After 6 hours – update every 60 minutes
    - If unable to obtain updated position, beacon will transmit last known GNSS position for up to 4 hours
      - Is why SAROPS currently says… "Beacon ID and/or position may be unreliable"
- Second Generation Beacons (SGB)s
  - Self-check feature
  - 30 meter accuracy
  - Transmission schedule
    - First 30 seconds – update every 5 seconds
    - 30 seconds to 30 minutes – update every 30 seconds
    - 30 minutes to 6 hours – update every 30 minutes
    - After 6 hours – update every 60 minutes
  - Whenever the beacon has fresh encoded location data at the start of a burst, this shall be indicated within the message by zeroing the "time from last encoded location" field

RETURN LINK SERVICE (RLS) – TYPE-1 ACKNOWLEDGEMENT

- Define
- Benefits of system / Risks
  - ‘Signal has been received’ vs ‘Help is on the way’
  - Beacon listening schedule and position confirmation
  - Lack of redundancy
  - 2 satellite return signal
  - U.S. Sarsat – 2 RLS papers to Cospas-Sarsat in last 6 months
- Nov 2019
  - Not yet approved for U.S. coded beacons
- No ‘direct’ impact to RCC personnel, but will be first call by survivor
- Type-2 remote activation
  - Define
  - Most likely a dead issue
- Remote activation/deactivation
  - Define
  - Program still in concept phase
  - Do RCC’s want to responsibility to remote activate; Air Traffic Control, aircraft operator? Vetting process?
  - There is a chance of remote activation before contact from Air Traffic Control / aircraft operator activation
- Advice
  - Stay engaged with informal AND formal feedback
  - JWG (ICAO +IMO)
  - European Commission is working with Cospas-Sarsat, State Department, NAVCEN, FAA

THE FUTURE

- **L Band satellite payloads**
  - **Decreased interference/suspect alerts**
  - **GPS III, Galileo, BDS schedule**
- **Second Generation Beacons (SGB)**
  - **Timeline**
  - **L band; all GNSS encoded; no moving beacon issue; greater accuracy**
- **Polar Scout**
  - **Cube Satellites**
  - **Ground station locations**
  - **Proof of concept to aid aging LEOSAR system**

MISC

- Attempt to change “Confirmed Position” for some other name. i.e. “Composite Position”
- Canadian self test feature
- If you are receiving questions or complaints, I am happy to speak to your survivors for you
  - ACR example
- Would RCC’s prefer a “better calculated” alert after 15 minutes rather than the most current coarse position?
  - Not ideal if beacon is drifting

FOLLOW-UP REQUESTS FROM LAST YEAR'S WORKSHOP

- Some of the verbal comments or written survey evaluations
  - Invited Canadian RCC
  - Added list of acronyms
  - Attempted to eliminate presentation overlap
  - Discussed
    - Having International Emergency Response Coordination Center + Commercial manufactures
    - Non-USCG personnel on USCG only days.
    - Last activated time stamp from IHDB send along with alert
  - NOCR issues
  - SSAS discussed – keep alert to both LANT and PAC
  - NOCR alert and ALL subsequent alerts to a U.S. JRCC
    - Call USMCC
  - Non-maritime case study
  - Send altitude information to RCCs
    - Not commissioned therefore can not predict accuracy
  - 121.5 alert to Uncertainty and multiple to Alert

  - Looking to update language in USMCC RCC manual of Primary/Secondary
  - USCG - try to coordinate through SARSAT Liaison Officer before going to USMCC
  - SAR Case Studies – policy update

NOW…

- Group photo