



SARSAT MEOSAR/MCC and Ground System Updates

SARSAT Beacon Manufacturers Workshop 2022

Apurve Mather

ERT, Inc.

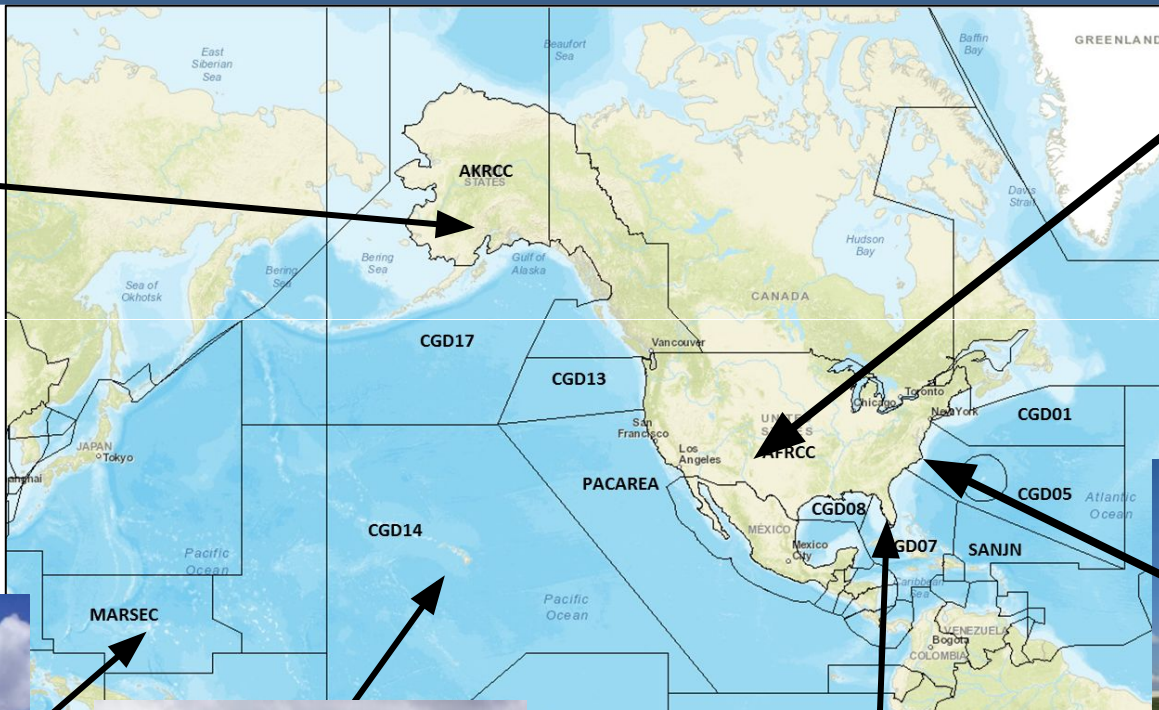




US SARSAT Ground Segment



Alaska
NOAA Command and Data Acquisition Station (FCDAS)
Fairbanks, Alaska
2 LEO/MEOLUTs



New Mexico
SUSA MEOLUT
planned for 2022



Guam
Andersen AFB
2 LEOLUTs to be replaced by
2 LEO/MEOLUTs in 2022



Hawaii
2 LEO/MEOLUTs &
6-antenna MEOLUT



Florida
2 LEO/MEOLUTs &
6-antenna MEOLUT



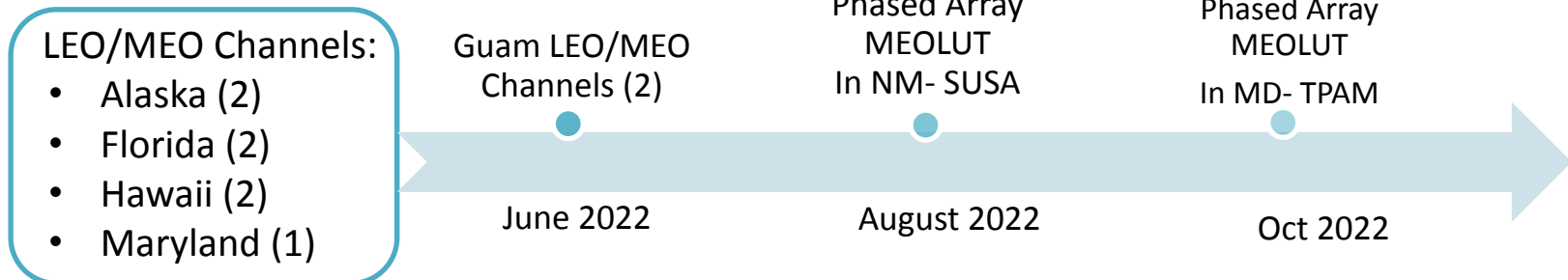
Maryland
US Mission Control Center
2 GEOLUTs
&
1 Test GEOLUT
1 Test LEOLUT
1 Test LEO/MEOLUT (FL9)
1 Planned Test Phased-Array
MEOLUT (TPAM)



USA LEO/MEOLUT Plans

- Hybrid LEO/MEO LUTs bridge the transition from LEOSAR to MEOSAR
 - 2 more LEO/MEO planned (Guam)
 - The 4th Generation LEOLUTs track MEOSAR when no LEOSAR satellites are in view
 - The MEO data provided will be used as additional channels to existing MEOLUTs
 - Guam will feed MEO data to HI MEOLUT
- MEOLUTs
 - FL and HI MEOLUTs to be commissioned at IOC in 2022
 - New Mexico - Phased-Array MEOLUT planned (SUSA)
 - Maryland - Test Phased-Array MEOLUT planned (L-band only) (TPAM)

Currently Operational:





USA LGM MCC

Commissioning Schedule

- Commissioned
 - 2021 CHMCC declared FOC October 2021
- 2022 Planned Commissionings
 - LGM CMCC commissioning in progress, on hold until CMCC is ready
 - ARMCC still selecting an LGM vendor
 - BRMCC support contract pending
 - PEMCC expected to be ready for commissioning in late 2022
 - ELT(DT) / SGB capability - USMCC / FMCC cross commissioning started in Feb 2022
 - ELT(DT) / SGB capability - AUMCC commissioning planned to start in Sep 2022



MEOSAR Initial Operational Capability (IOC)

Florida MEOLUT – IOC commissioning March 2022

Hawaii MEOLUT – IOC commissioning Mid 2022

Challenges from the US perspective:

- Expected Horizontal Error (EHE)

- Slow-moving beacon location accuracy

- Uncorroborated (previously Suspect) alerts



Return Link Service - Type 1

The USA SARSAT Program approved EPIRBs and PLB RLS Type 1 beacons for sale in the USA once both the updated EPIRB and PLB RTCM standards are published.

- EPIRB Standards have been published
- PLB Standards expected to be out for Committee Draft for Vote (CDV)



Moving Beacons

- The Florida MEOLUT is capable of handling slow moving beacons as of 25 March 2022
- The Hawaii MEOLUT will be capable of handling slow moving beacons later 2022



C/S System Test - ELT(DT)s and SGBs

- In June of 2021, C/S participants conducted an System Test focused on the new beacon technologies, ELT(DT)s (FGB and SGB) and SGBs in general
- This testing encompassed 6 days and demonstrated the end-to-end performance of the System to:
 - Validate the associated specifications
 - Assess the readiness of the C/S System to process and distribute alert data generated by these beacons
- Operational MCCs and LUTs were employed with key participants including Canada, France/EC, Spain, Russia, Turkey and the USA
- LUTs and MCCs received alert data from simulators as well as actual beacon prototypes, and distributed it throughout the C/S global network



C/S System Test - ELT(DT)s and SGBs

- The test campaign uncovered issues at both the national and global system levels, the most notable being the increased data load caused by ELT(DT)s:
 - ELT(DT)s transmit as many as 12 bursts per minute
 - Sending all this data throughout the system, in particular when in human readable form, proved overwhelming
 - MCC Specifications were changed to reduce this impact
- A mini retest was run in January of 2022 and successfully demonstrated improvements in managing the data load
- This end-to-end testing was a success, significantly advancing C/S readiness for operational use of these new beacons
- Internationally coordinated testing continues, now focused on the secondary matter of verifying the System's capacity to handle a large number of simultaneously active SGBs



SGB Status

- The Florida and Hawaii MEOLUTs are capable of detecting Second Generation Beacons (SGBs), making SGB solutions, and sending those SGB solutions to the USMCC
- The USMCC is not yet using or distributing SGB alert data operationally



QUESTIONS?

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