The Alaska Air Carriers Association

Supports and Advocates for the Commercial Aviation Community
The Alaska Air Carriers Association membership includes Part 121, 135, 125 and commercial Part 91 air operators.
AACA offers member benefits.
Emergency Locating Technology Has evolved over the Last 30 – 40 years.
Emergency Locator Equipment Background Information

• The first 121.5 MHz beacons were ELTs designed for military aircraft in the 1950’s.

• In 1970 following the Boggs-Begich tragedy in SE Alaska Congress mandated ELTs on all U.S. aircraft.

• 121.5 MHz ELT’s were designed to inform ATC and other pilots monitoring the ratio frequency 121.5 of an emergency.
Limitations of 121.5 / 243 MHz Beacons…

- 121.5 MHz ELT use an analog signal only.
- These low power output caused satellites to have difficulty detecting the signal.
- Only 1 in 8 alerts come from beacons. Many false alerts came from sources like ATM machines, pizza ovens, and even stadium scoreboards!
- Search area is roughly 500 Sq. NM.
121.50 MHz ELT Limitations: No Global Coverage
Modern Emergency Locator Equipment (ELT) on board aircraft is

The 406 MHz ELT which solved many issues that With the 121.5MHz ELT and has become the industry standard.
406 MHz has Global Coverage and Instantaneous Detection!
Limitations of 121.5 / 243 MHz Beacons…
…Poorer Accuracy

121.5 MHz

Search Time = 12+ hours

406 MHz

Search Time = 2 - 3 hours

406 MHz with GPS

Search Time = Minimal
• Newer ELTs transmit on 406 MHz and some are equipped with a low power beacon on 121.5 MHz to assist with local homing.

• Satellites hear the signals and notify local emergency response personnel.

• Beacons operating at 406 MHz are encoded and can provide name and contact information. Thus reducing false alarms.
**EPIRB**

Emergency Position Indicating Radio Beacons (EPIRBs) used to alert search and rescue services. EPIRBs transmit a coded message on 406 MHz distress frequency via satellite and earth stations. Some EPIRBs have built in GPS which enable rescue services to accurately locate you to +/- 50 meters.

**SPOT**

A SPOT will send emergency responders an SOS - GPS location with a push of a Button. In addition, the pocket size device can forward a motion-activated track. A SPOT can also send preprogrammed text messages with GPS Coordinates.

**inREACH**

Also pocket size, this satellite technology offers 2-way satellite text messaging, can share a tracks, and send a satellite request for help 24/7 thru the monitoring center.
Loran-C combined two different techniques to provide a signal that was both long-range and highly accurate. The downside was the expense of the equipment needed to interpret the signals. Loran-C was used exclusively by militaries after it was first introduced in 1957 until 1974 when use was opened to the public.

From the late 1970s, especially in the early 1980s, LORAN-C was very popular.

By the 1990s when civilian satellite navigation arrived, Loran-C use faded.
Dispatch Tracking - New Software Provides:

- Company dispatch centers with estimated flight time arrivals for any point.
- Can view the entire fleet at one time, on one screen or one aircraft at a time.
- Sends SOS alerts via email automatically when an accident occurs.
- Offers on-call personnel 24/7 to assist with emergency situations.
Legacy is a partnership with organizations who offer grants and cash scholarships.

Automatic Dependent Surveillance Broadcast (ADS-B)
The Y-K Delta was the focal point for the Capstone Phase I project.

Capstone included airports, weather products, communications, and GPS-driven systems in the bundle of avionics that were installed on 200 Aircraft. Those aircraft offered cargo, mail, passenger travel, or other in southwest Alaska.

In addition, FAA created 19 GPS non-precision instrument approach Procedures and installed automated weather observation system (AWOS) at the same airports to enable air-carrier use of the new non-precision GPS instrument approach procedures.

The aircraft were fitted with instrument flight rules (IFR) capable WAAS GPS receivers, a (UAT) data-link system that enabled ADS–B, and flight information services (FIS) including real-time weather, and a multifunction display (MFD) depicting terrain, other ADS–B aircraft, weather graphics and text data.

It was the first time weather information was available in the cockpit.
Southeast Alaska was the focal point for the Capstone Phase II Project.

Flying in SE Alaska was very different from the Y-K Delta due to the terrain. The Minimum En Route Altitude (MEA) of the airways were above the altitudes that the general aviation fleet of aircraft could safely fly without encountering icing conditions, even in the summer.

Legacy en route navigation aids require land-based sites where power and Access but neither were attainable.

Wide Area Augmentation System or WAAS GPS offers a Global Positioning System (GPS), with higher accuracy, integrity, and availability even at lower altitudes.

Routes were created in southeast based on WAAS GPS and remain in use today.
AK ADS-B Below 18K: 8/29/16-24 Hours

Green = DO-260B
Purple = DO-282B
Blue = DO-282A UAT
Safety Gear