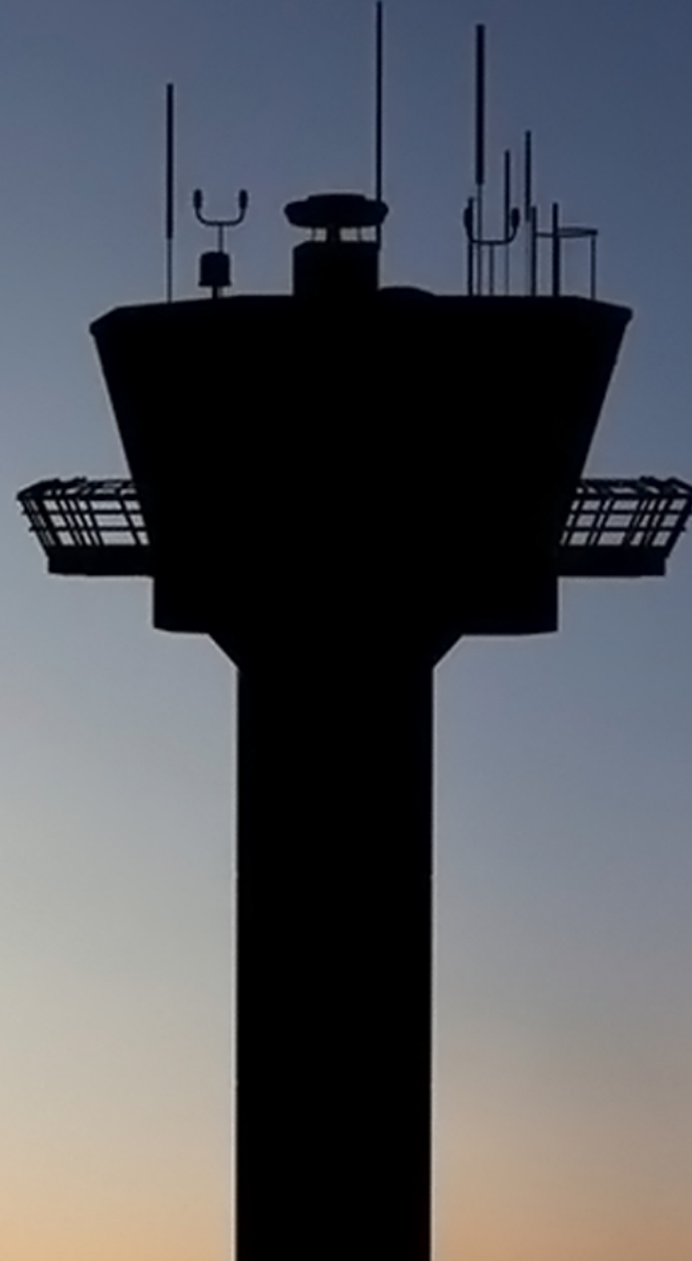


The ADS-B Webinar



ICAO
MID & EUR/NAT



Sean Patrick

GM Oceanic Services IAA

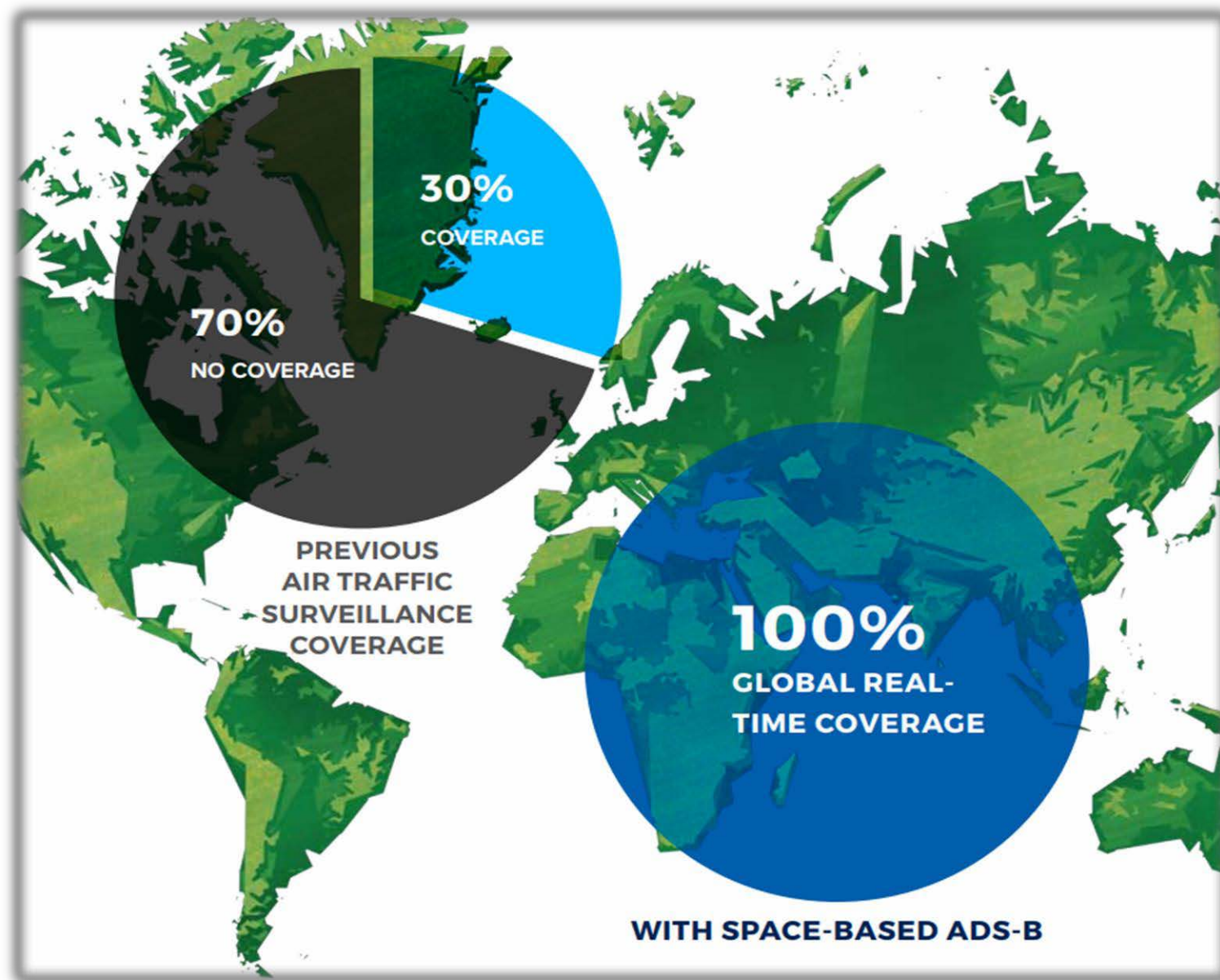
Aireon ALERT



Global Air Traffic Surveillance Challenges



70% of the Earth has no Real-Time Air Traffic Surveillance: That has Changed



Line of Sight Limitations

GROUND-BASED ADS-B

Efficiencies from low-cost surveillance.
Limited to line of sight and land-based installations.



SPACE-BASED ADS-B

The same efficiencies everywhere on the planet.



Aireon Overview





Global, space-based ADS-B



Iridium Constellation Overview



66 Total number of satellites
in the Iridium NEXT
Constellation

- 11 satellites per plane Plus
- 9 in-orbit spare satellites
- 6 ground spare satellites

Orbital Planes: 6

Availability: ≥ 0.999

Typical Lifecycle: 14 Yrs

Operational Altitude: 485 miles (780 km)

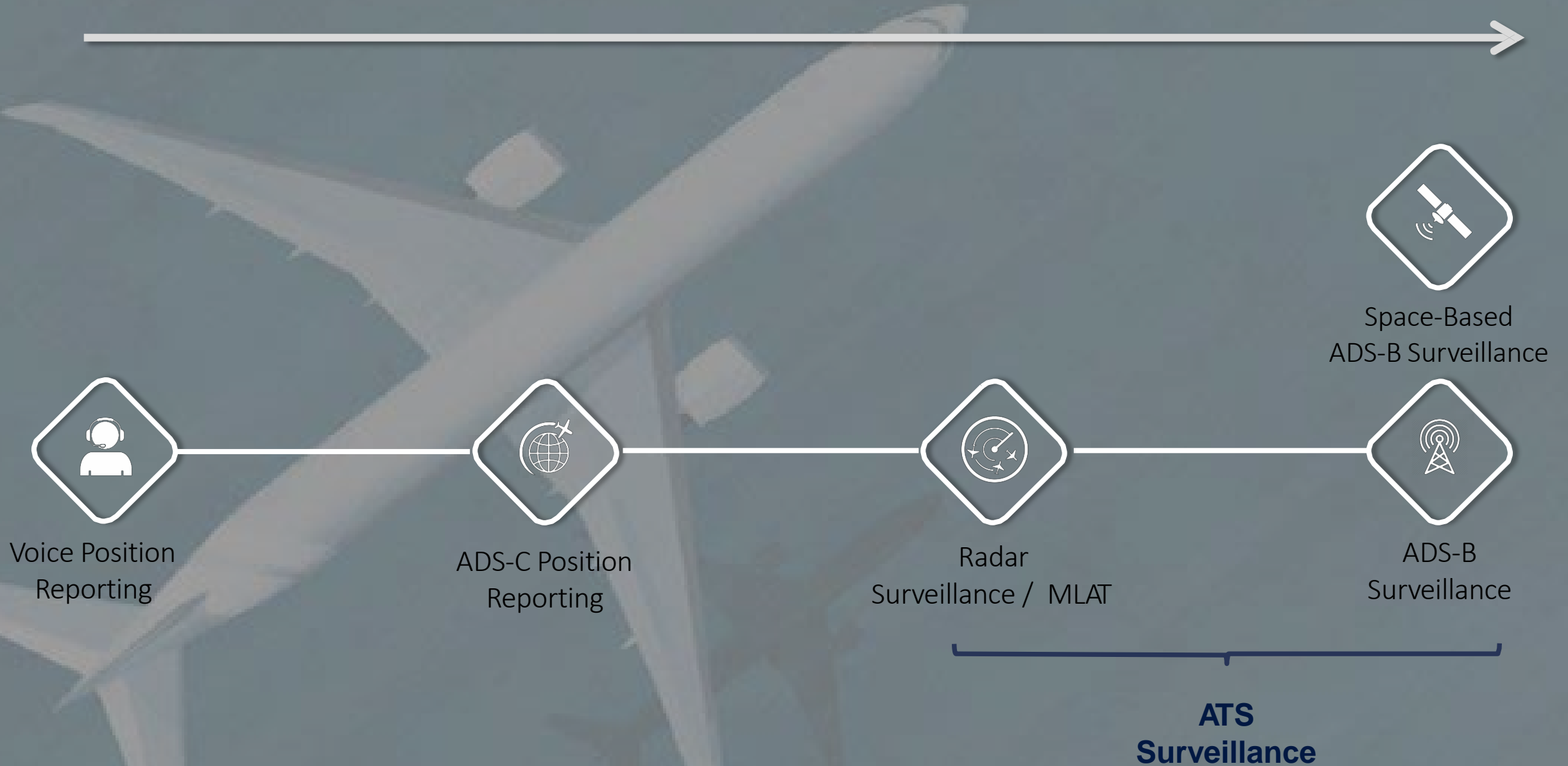
Colored By Altitude

Color Legend	
Red	0 to 2,000 Feet
Orange	2,000 to 5,000 Feet
Yellow	5,000 to 10,000 Feet
Green	10,000 to 18,000 Feet
Light Blue	18,000 to 40,000 Feet
Dark Blue	40,000 Feet & Above



As of April 2019: 100% Global

Position Accuracy / Update Interval





Effect on Search and Rescue



SAR: Less Time on Search & Faster Rescue

Position Accuracy / Update Interval



Voice Position Reporting



ADS-C Position Reporting



Radar Surveillance / MLAT



Ground and Space-Based ADS-B Surveillance

		Narrow Body Aircraft	Wide Body Aircraft
Potential Search Area (Sq Km)	Cruise Speed (Knots)	427	475
	PIREP (30min)	491,165	607,798
	ADS-C (15min)	122,791	151,949
	Space-Based ADS-B (8sec)	9.7	12



Aireon ALERT

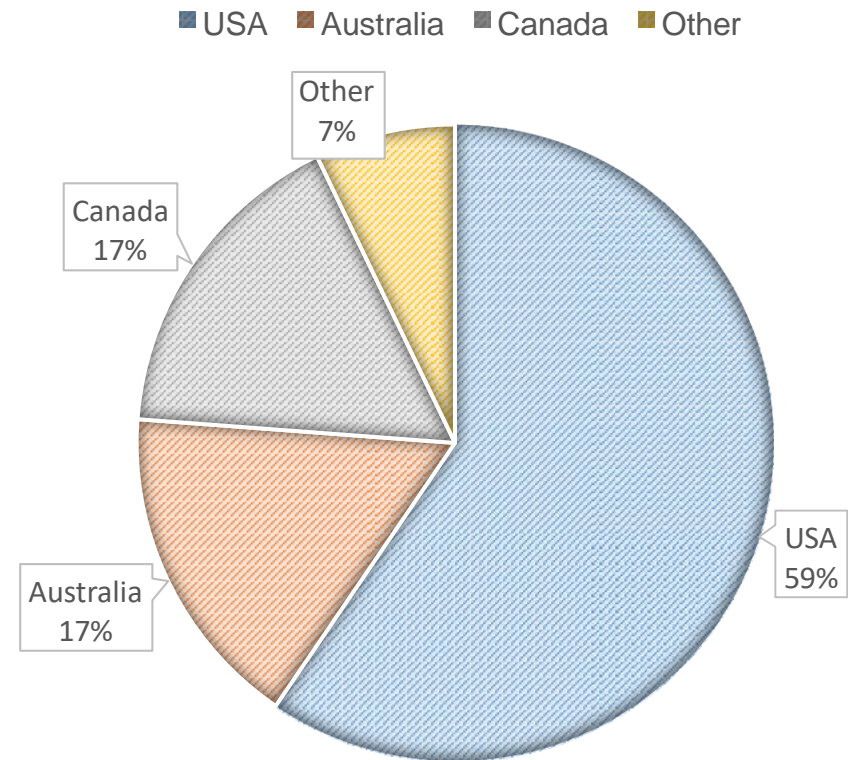


Aireon ALERT Statistics and Key Figures



427 Total, Active Registrations	308 Unique Organizations Registered	119 Countries Represented
158 Airlines Registered	112 ANSPs Registered	72 SAR Organizations Registered
70 Regulators Registered	15 Others/Misc. Registered	

104 AIREON ALERT REQUESTS (BY COUNTRY)



How Does Aireon ALERT Work?

AireonALERT  **steps:**

- 1.** Register for free at aireonalert.com. If you are an ANSP, Aircraft Operator/Airline, Regulator or Search and Rescue Organization, you will be granted access.


- 2.** If your aircraft, an aircraft in your airspace, or an aircraft you are tasked with locating is in an emergency situation, **log in to your Aireon ALERT account**.


- 3.** Call Aireon ALERT 24/7/365 operator with the number found on your Aireon ALERT Dashboard.


- 4.** When prompted, enter your **8-digit user number followed by #** (this is located on the Aireon ALERT Dashboard).


- 5.** When prompted, enter your **current 8-digit pin followed by #** (this is located on the Aireon ALERT Dashboard).


- 6.** You will then be connected to the Aireon ALERT operator.


- 7.** The Aireon ALERT operator will then request the **ICAO 24-bit identifier or the Flight ID** of the aircraft having the emergency.

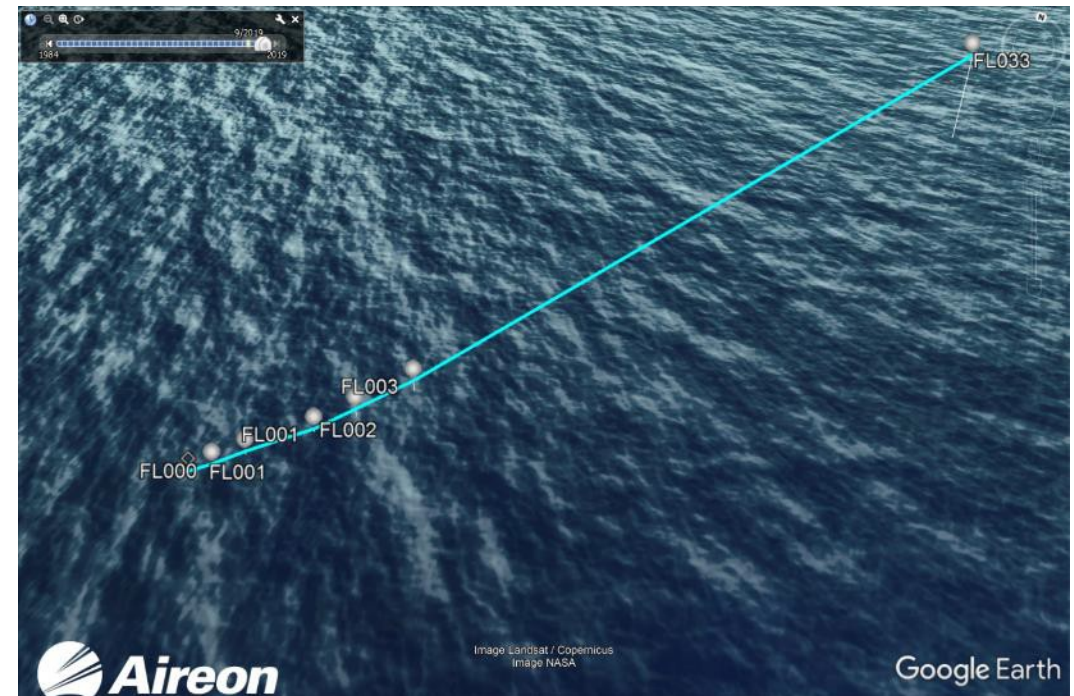

- 8.** The Aireon ALERT operator will then locate the last known position of the aircraft and, if found, **will verbally provide a 4-dimensional report that includes latitude, longitude, altitude and time**.


- 9.** The Aireon ALERT operator will also email a package to the requester's email address. **It will include a map of the last 15 minutes of flight with one plot per minute and the 4-dimensional report information.**



Aireon ALERT – Real Life Examples

- On 23 December 2019 a request was made by a SAR team in locating a missing Cessna Centurion aircraft in the Bahamas
- The last known radar target from FAA was received at 1300 feet and rescue was dispatched to that location to start a search grid
- Aireon data showed the last position >2NM away from last FAA position, allowing SAR to immediately direct the helicopter to the right position
- The pilot was found **ALIVE**, treading water in the ocean without a lifejacket as the plane had already sunk

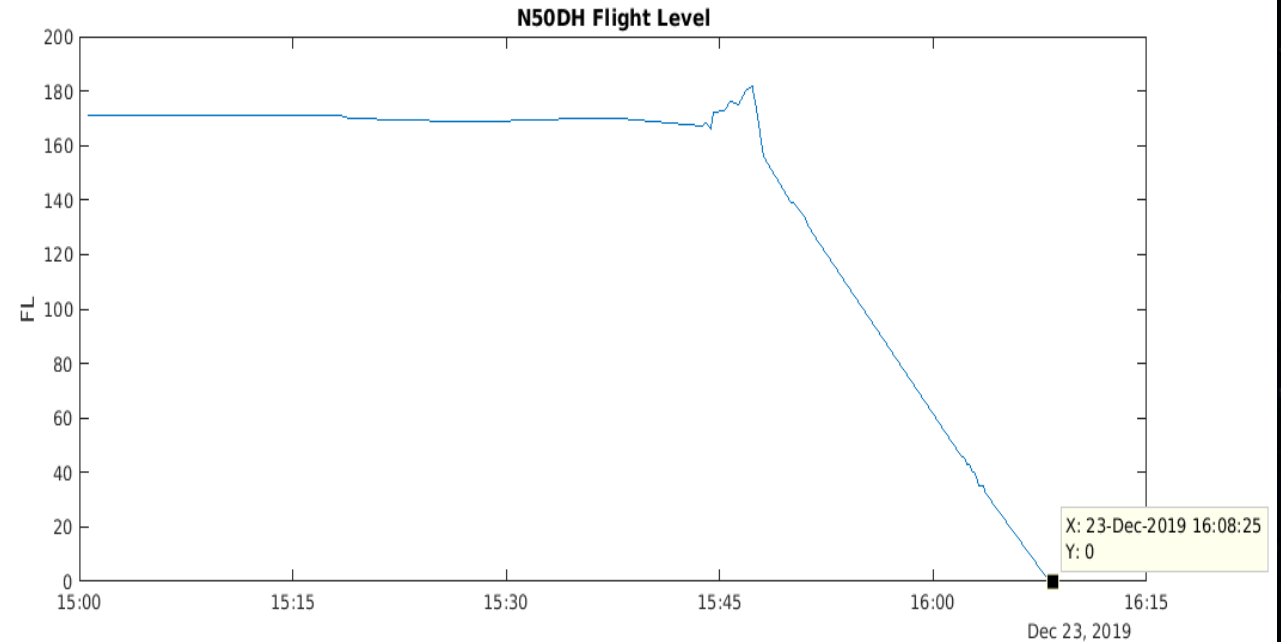


Search Criteria: FLIGHT ID N50DH

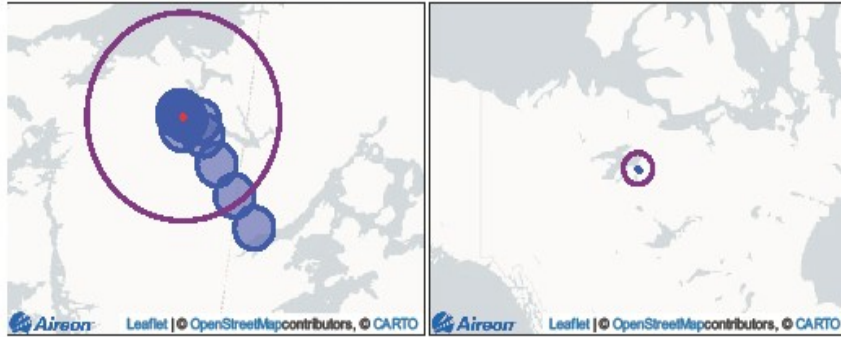


Timestamp	ACID	Mode 3/A	Latitude	Longitude	FL	Speed	Heading
2019-12-23 16:08:25 UTC	N50DH	2499	25° 42' 05" N	076° 38' 58" W	FL000	72.0	226
2019-12-23 16:08:21 UTC	N50DH	2499	25° 42' 08" N	076° 38' 54" W	FL000	72.0	231
2019-12-23 16:08:14 UTC	N50DH	2499	25° 42' 13" N	076° 38' 48" W	FL001	72.0	223
2019-12-23 16:08:01 UTC	N50DH	2499	25° 42' 24" N	076° 38' 36" W	FL001	72.0	221
2019-12-23 16:07:53 UTC	N50DH	0000	25° 42' 32" N	076° 38' 29" W	FL002	72.0	218
2019-12-23 16:07:41 UTC	N50DH	0000	25° 42' 44" N	076° 38' 19" W	FL003	72.0	217
2019-12-23 16:03:34 UTC	N50DH	2499	25° 46' 28" N	076° 35' 39" W	FL033	36.0	213

Bahamas



Search Criteria: ICAO C07D86

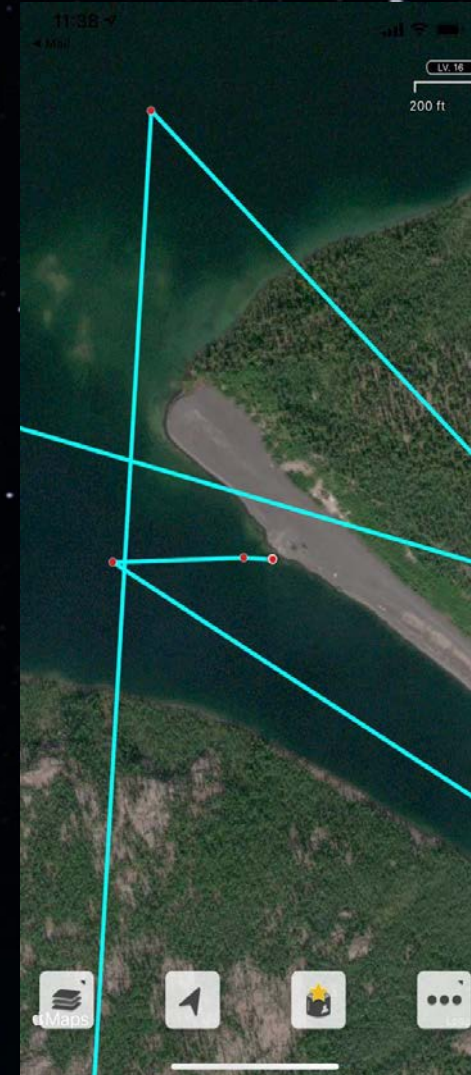


Timestamp	ACID	Mode 3/A	Latitude	Longitude	FL	Speed	Heading
2020-09-04 16:17:08 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:17:03 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:16:58 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:16:53 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:16:49 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:16:43 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:16:38 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:16:33 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:16:28 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:16:23 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:16:18 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:16:14 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:16:08 UTC	GVNX	0640	65° 36' 46" N	118° 09' 16" W			
2020-09-04 16:15:08 UTC	GVNX	0640	65° 36' 46" N	118° 09' 18" W			
2020-09-04 16:14:04 UTC	GVNX	0640	65° 36' 46" N	118° 09' 29" W			
2020-09-04 16:13:01 UTC	GVNX	0640	65° 36' 36" N	118° 08' 51" W	FL004	72.0	308
2020-09-04 16:12:01 UTC	GVNX	0640	65° 36' 32" N	118° 06' 58" W	FL010	72.0	147
2020-09-04 16:10:58 UTC	GVNX	0640	65° 36' 54" N	118° 10' 09" W	FL011	72.0	96
2020-09-04 16:09:57 UTC	GVNX	0640	65° 37' 02" N	118° 09' 46" W	FL010	72.0	318
2020-09-04 16:08:53 UTC	GVNX	0640	65° 36' 08" N	118° 09' 34" W	FL014	72.0	105
2020-09-04 16:07:51 UTC	GVNX	0640	65° 37' 00" N	118° 09' 26" W	FL017	108.0	283
2020-09-04 16:06:48 UTC	GVNX	0640	65° 35' 48" N	118° 06' 33" W	FL020	108.0	339
2020-09-04 16:05:46 UTC	GVNX	0640	65° 34' 18" N	118° 04' 43" W	FL021	108.0	327
2020-09-04 16:04:45 UTC	GVNX	0640	65° 32' 40" N	118° 02' 18" W	FL021	108.0	328
2020-09-04 16:03:44 UTC	GVNX	0640	65° 31' 00" N	117° 59' 41" W	FL022	108.0	329

Date Generated: 2020-09-04T17:19:48.673Z

The Aireon ALERT Services data is provided subject to the Aireon ALERT Service End User License Agreements located at www.aireonalert.com.

Northern Canada

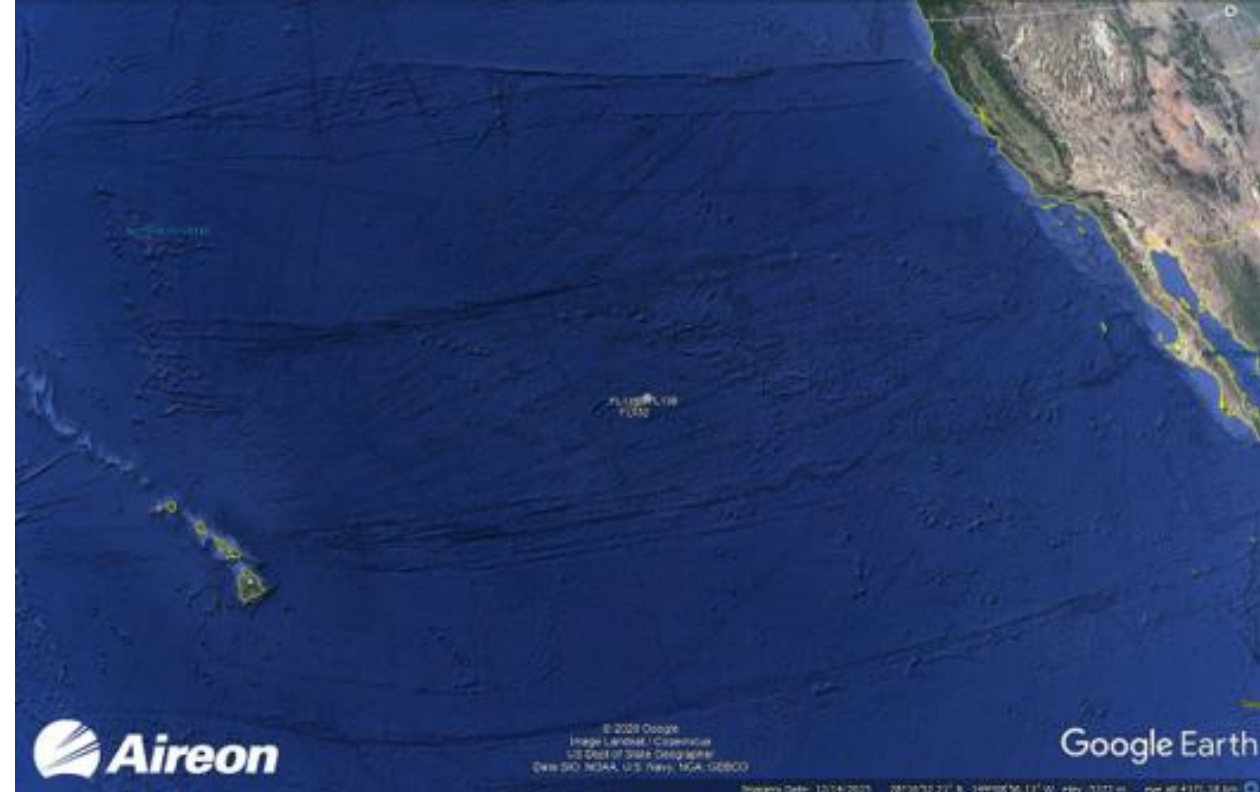


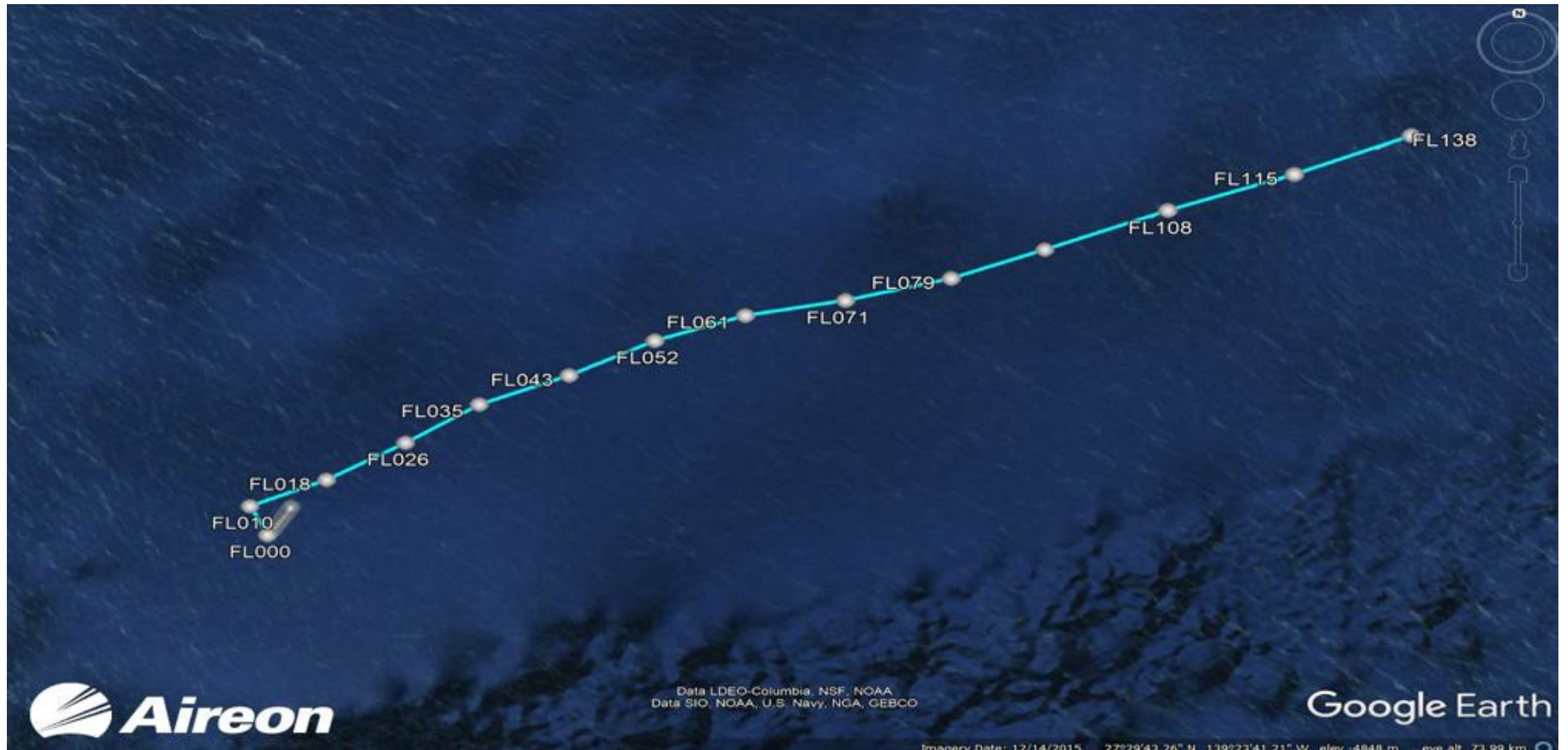
Search and Rescue Mission – Mid Pacific – 8th Nov 2020

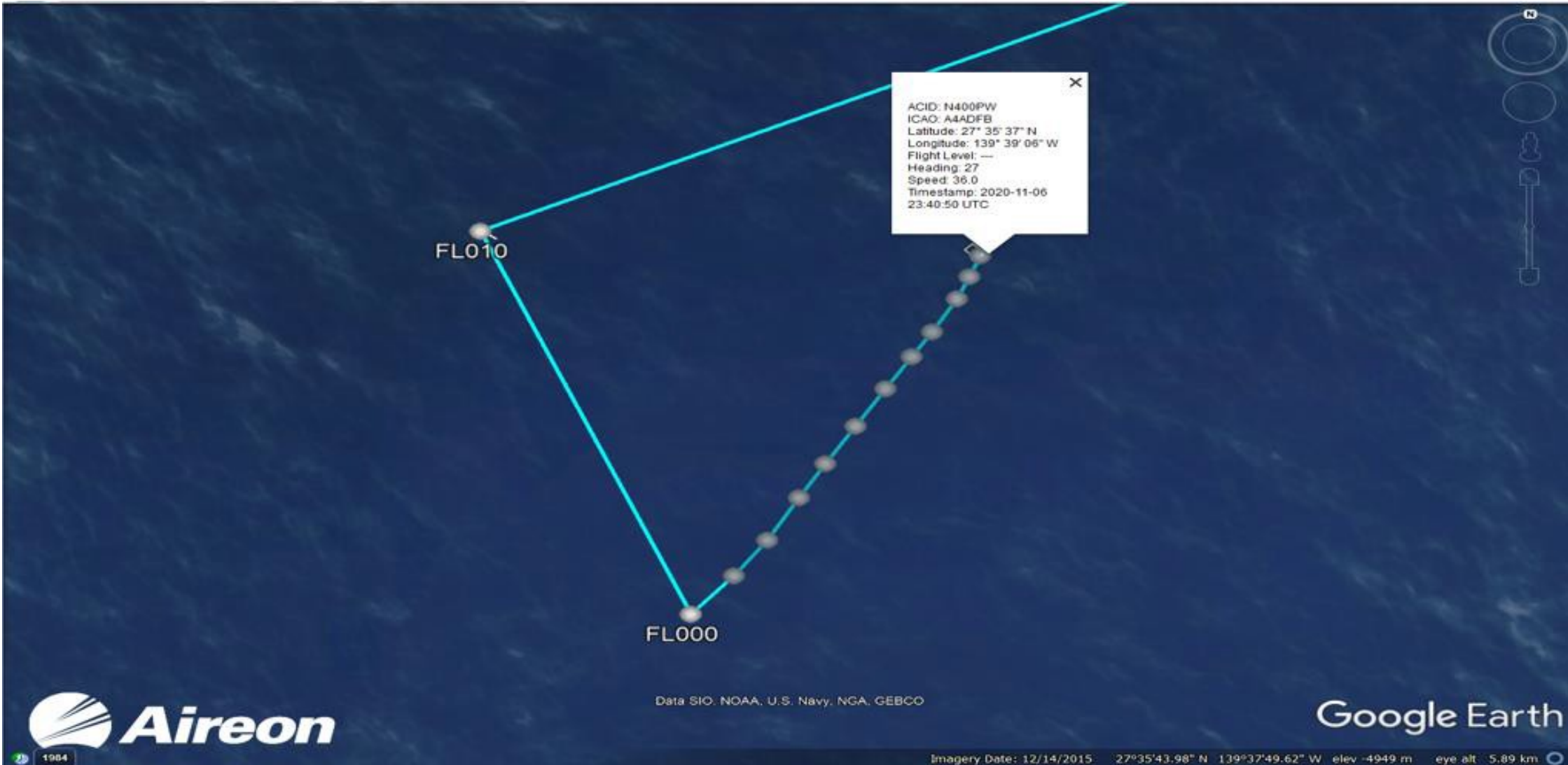
- Pilatus PC-12, with 2 crew, declared a mayday with an engine failure mid-pacific.
- The aircraft successfully ditched mid-pacific 1100nm from land.
- Aireon ALERT data tracked the aircraft down to sea level, including multiple returns whilst the aircraft floated on the surface.
- The Aireon data confirmed the ELT position to within 0.57 NM and was crucial in aiding the recovery of the crew alive 5 hours later by a passing cargo ship.

Australian JRCC direct quote:

“This is the second incident this week where your data has been invaluable for our SAR operations”







Aireon **ALERT**



Q & **A**



The ADS-B Webinar

The Automatic Dependent Surveillance-Broadcast



ICAO
MID & EUR/NAT

THANK YOU

