Civil Air Patrol



NRAT Update

LtCol. John Henderson
07 August 2019

ONE CIVIL AIR PATROL, EXCELLING IN SERVICE TO OUR NATION AND OUR MEMBERS!

CAP National Radar Analysis Team (NRAT)

NHQ-008

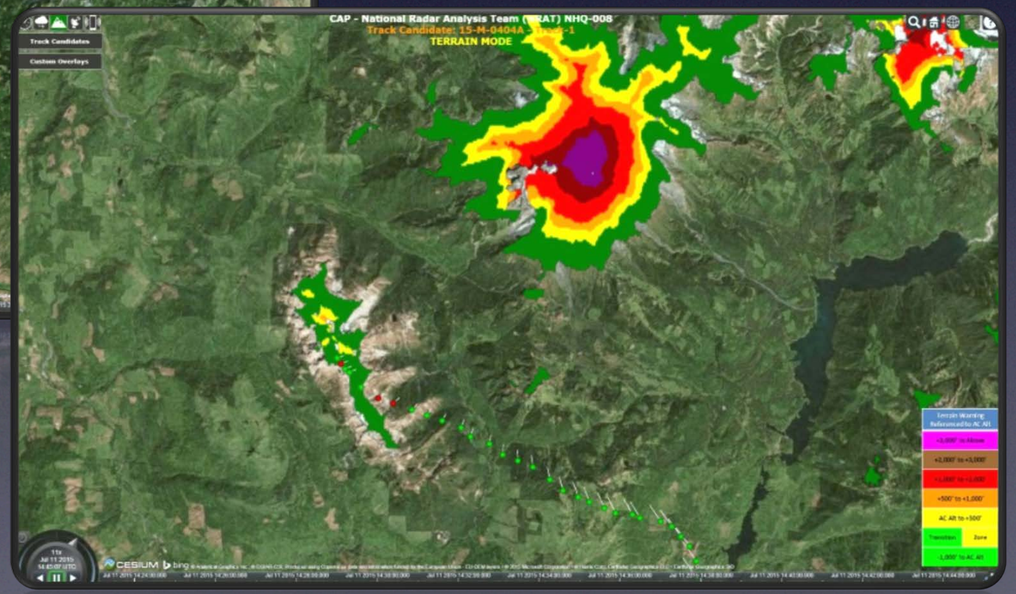
Saving Lives Through Innovation

August 2019 Update

Presented By:
LtCol. John Henderson

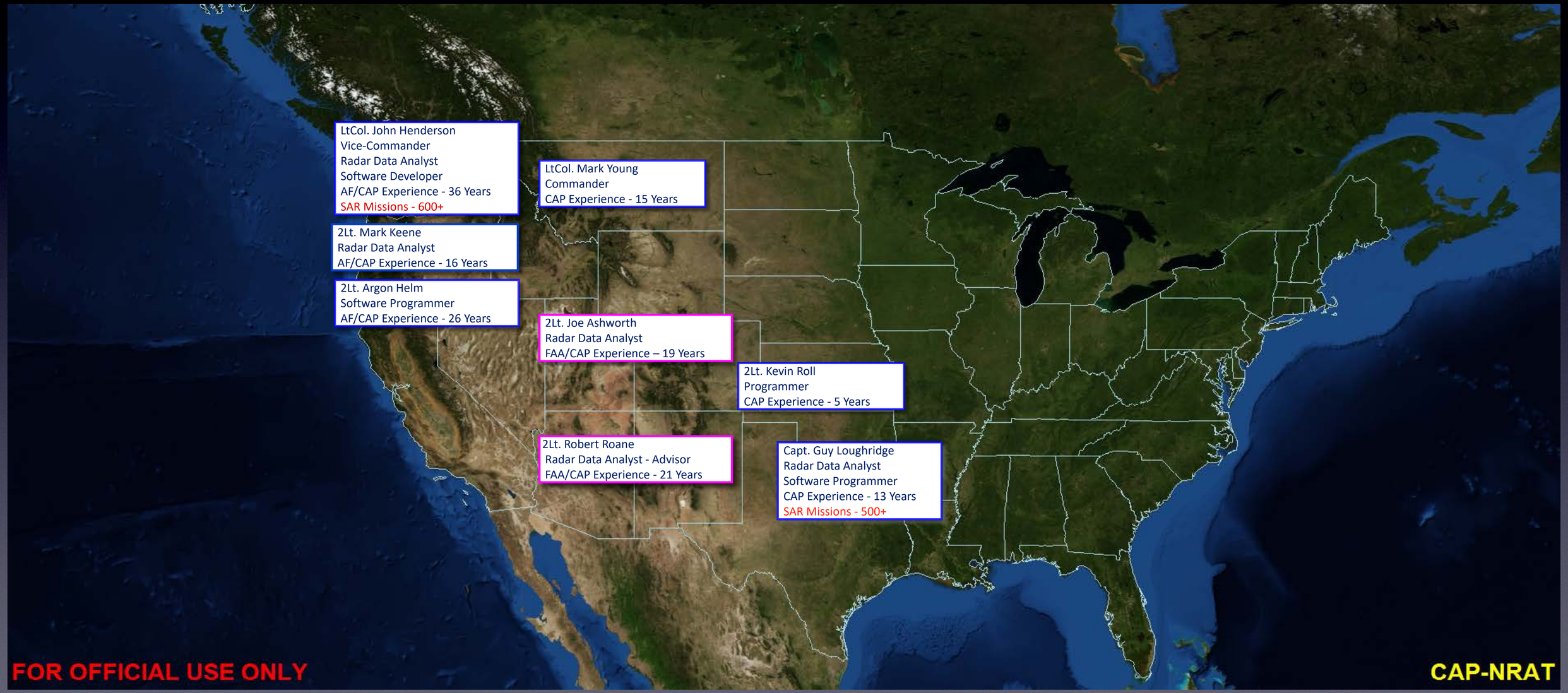






CAP National Radar Analysis Team (NRAT)

The Team



FOR OFFICIAL USE ONLY

CAP-NRAT

CAP National Radar Analysis Team (NRAT)

Mission Success – Since Team Formation

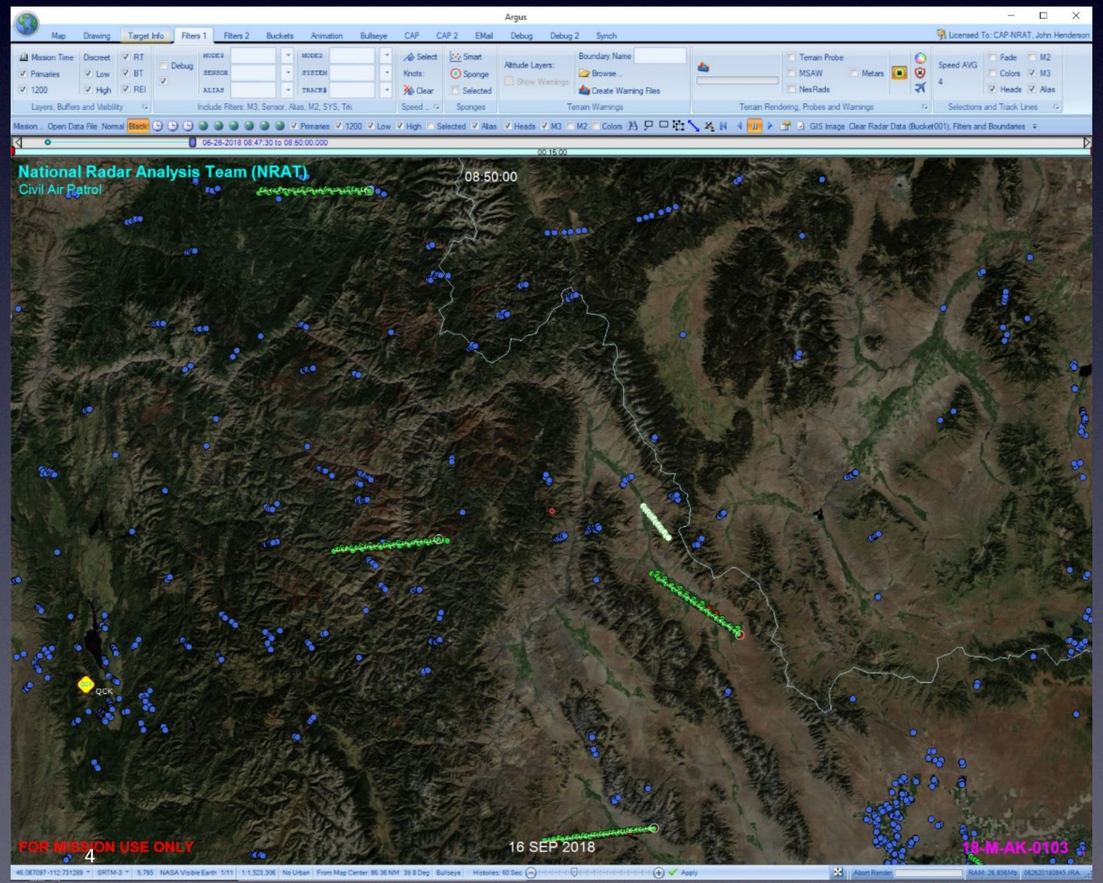
AFRCC – Credited – 1 Jan 2009 to 31 Dec 2018	
Aircraft SAR Missions -	**603**
Finds -	**283**
Saves -	**34**
Disaster Response -	**4**
Exercises -	**7**

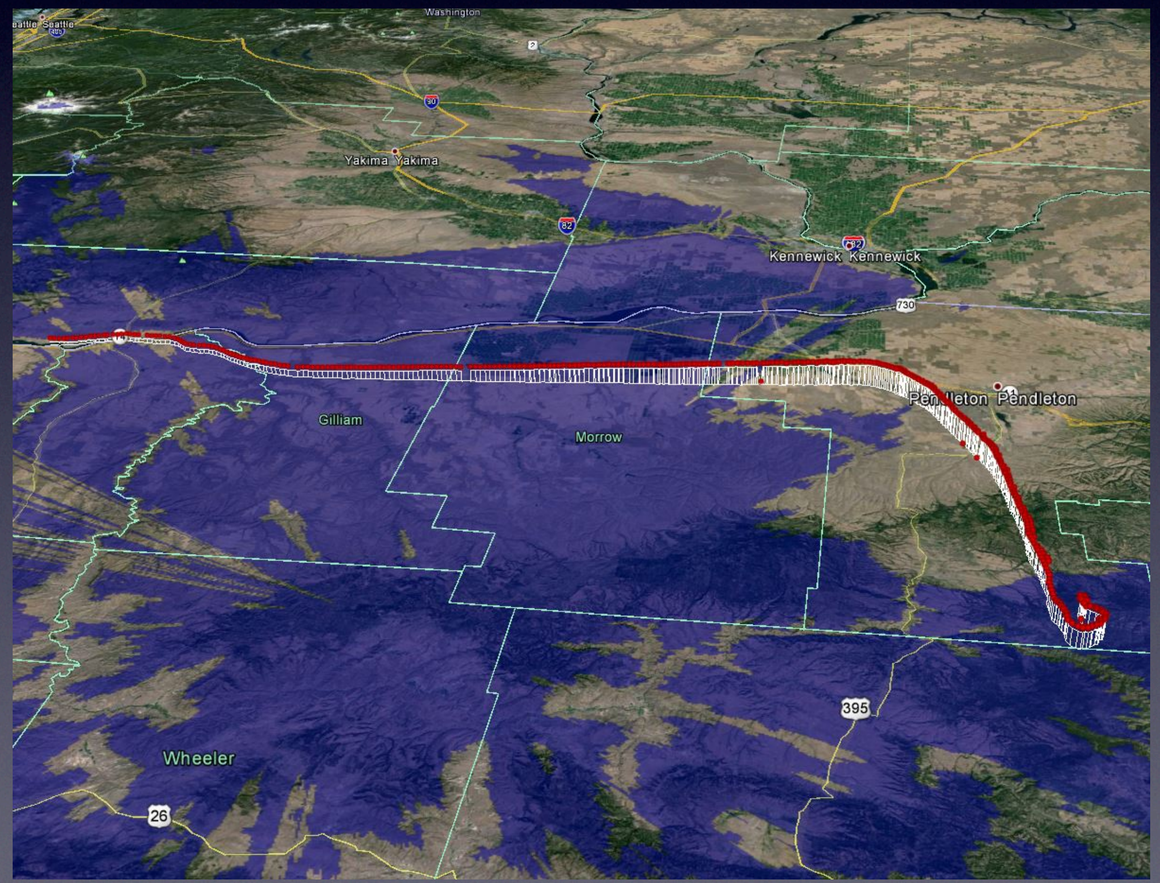
AFRCC – Credited - 2019	
Aircraft SAR Missions -	**38**
Finds -	**26**
Saves -	**0**
Disaster Response -	**1**
Exercises -	**5**

History of Radar Analysis for Aircraft SAR

Period: 2009 – 2014
Method: ARGUS
Provided By: NRAT
Production Time (From Notification) –

Travel:	60 Min
Data Request/Retrieval:	30 Min
Analysis:	30 Min
Product Production:	30 Min
Total Time:	2:30 Hrs.

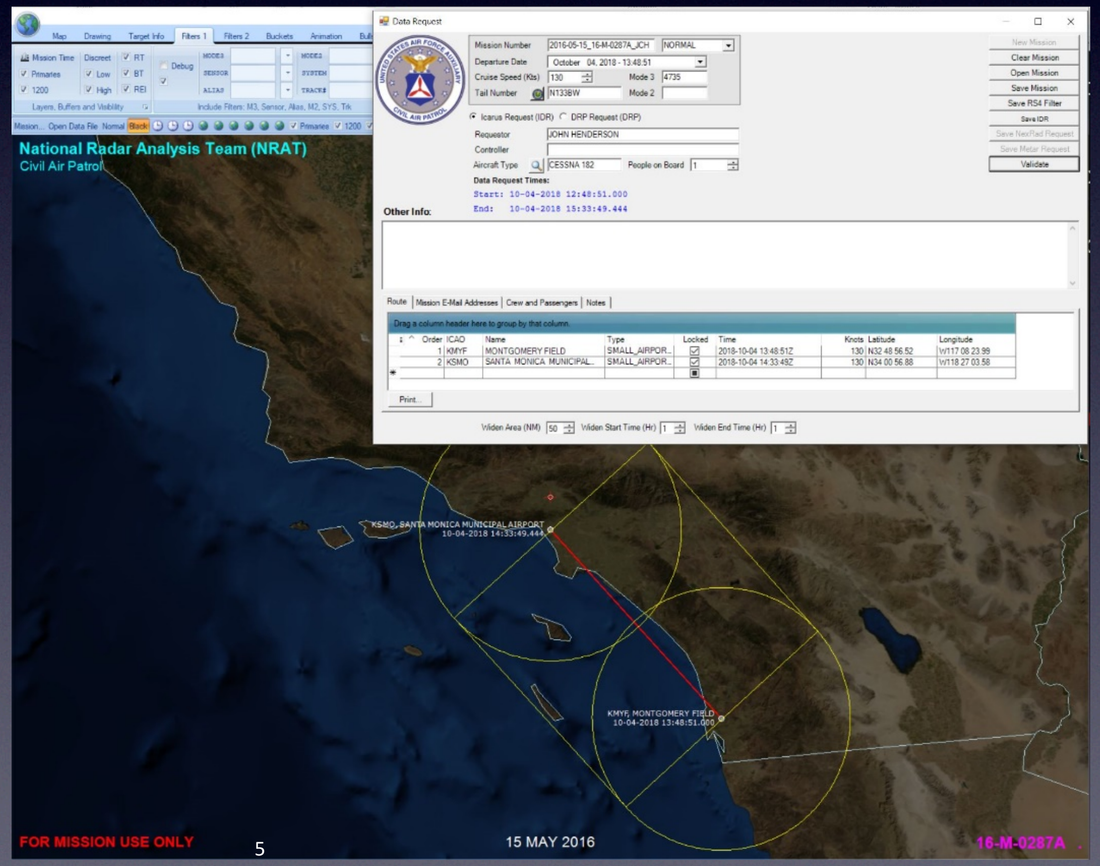


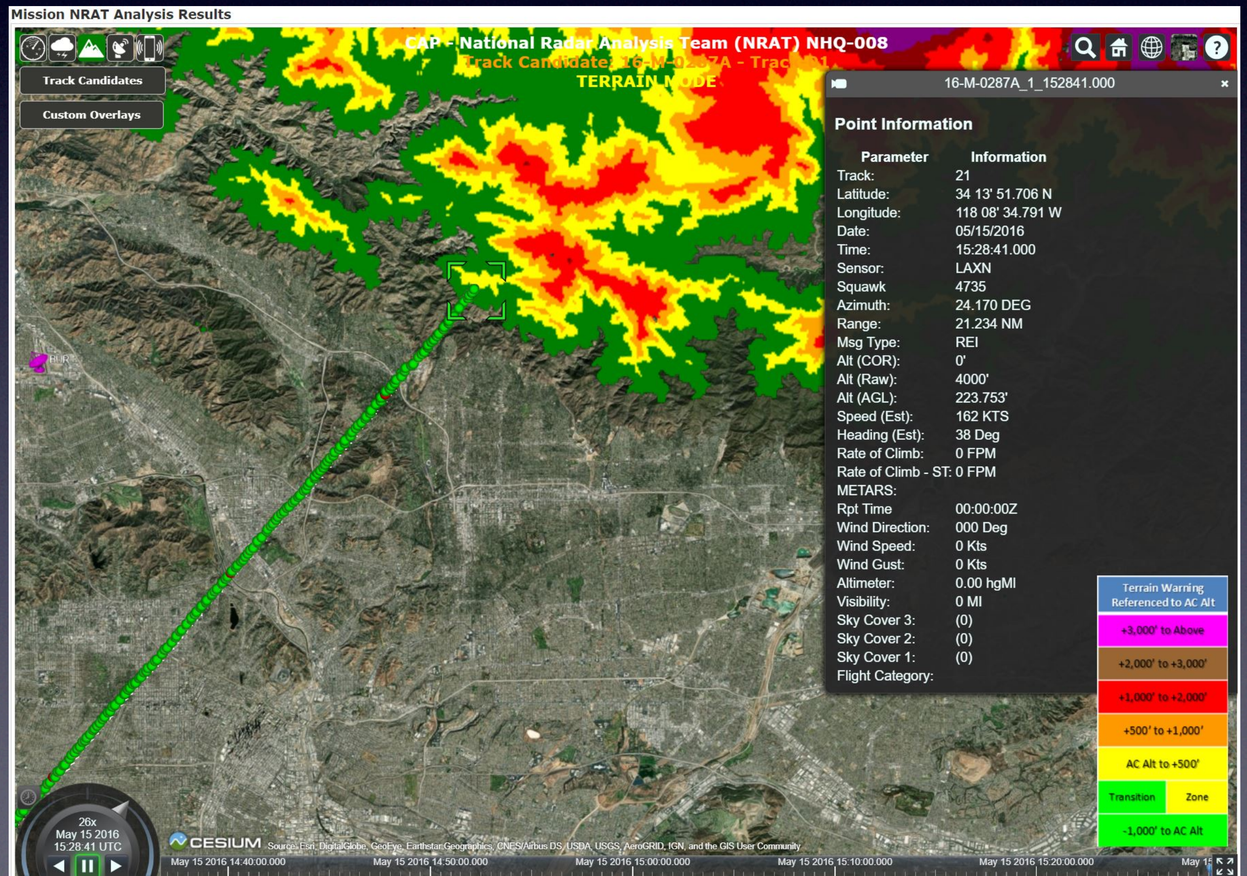


History of Radar Analysis for Aircraft SAR

Period: 2014 – 2019
Method: ARGUS – NRAT Recorded Radar Data
Provided By: NRAT
Production Time (From Notification) –

Travel:	5 Min
Data Request/Retrieval:	30 Min
Analysis:	15 Min
Product Production:	10 Min
Total Time:	1:00 Hrs.





History of Radar Analysis for Aircraft SAR

Period: 2019 –

Method: ARGUS – Micro-Requests

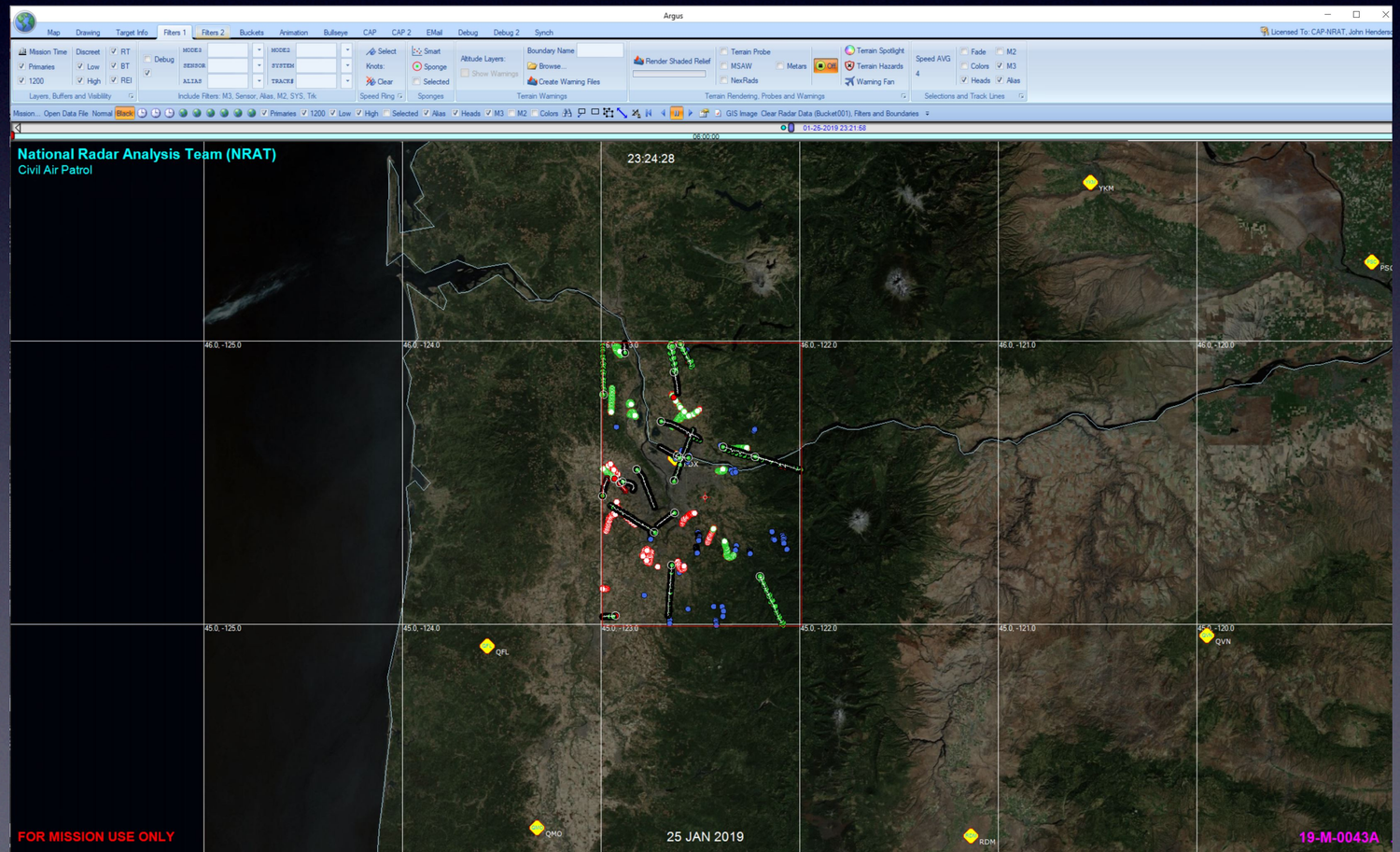
Provided By: NRAT

Production Time (From Notification) –

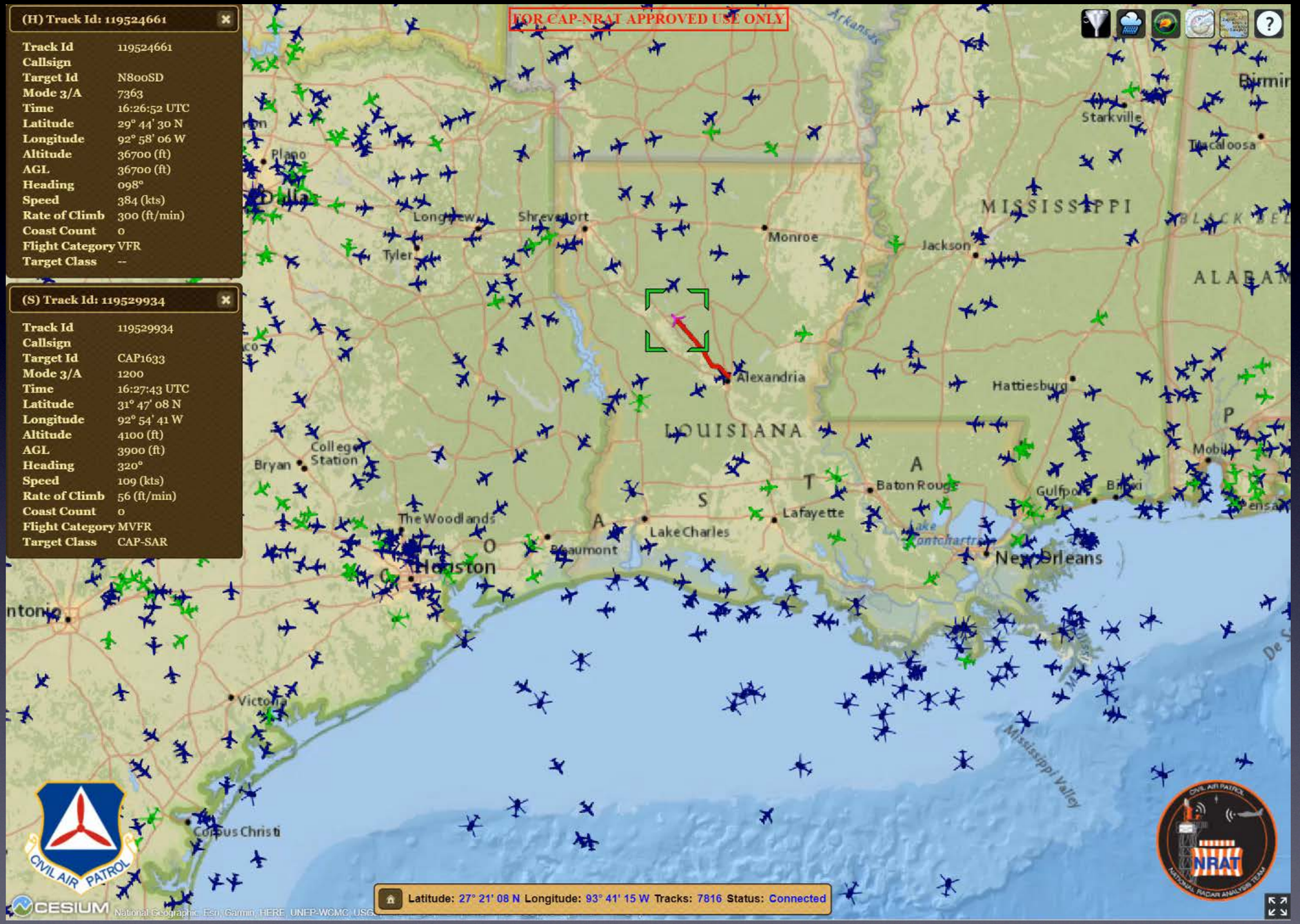
Travel:	5 Min
Data Retrieval:	10 Sec
Analysis:	10 Min
Product Production:	10 Min
Total Time:	0:26 Hrs.

What Comes Along With This?

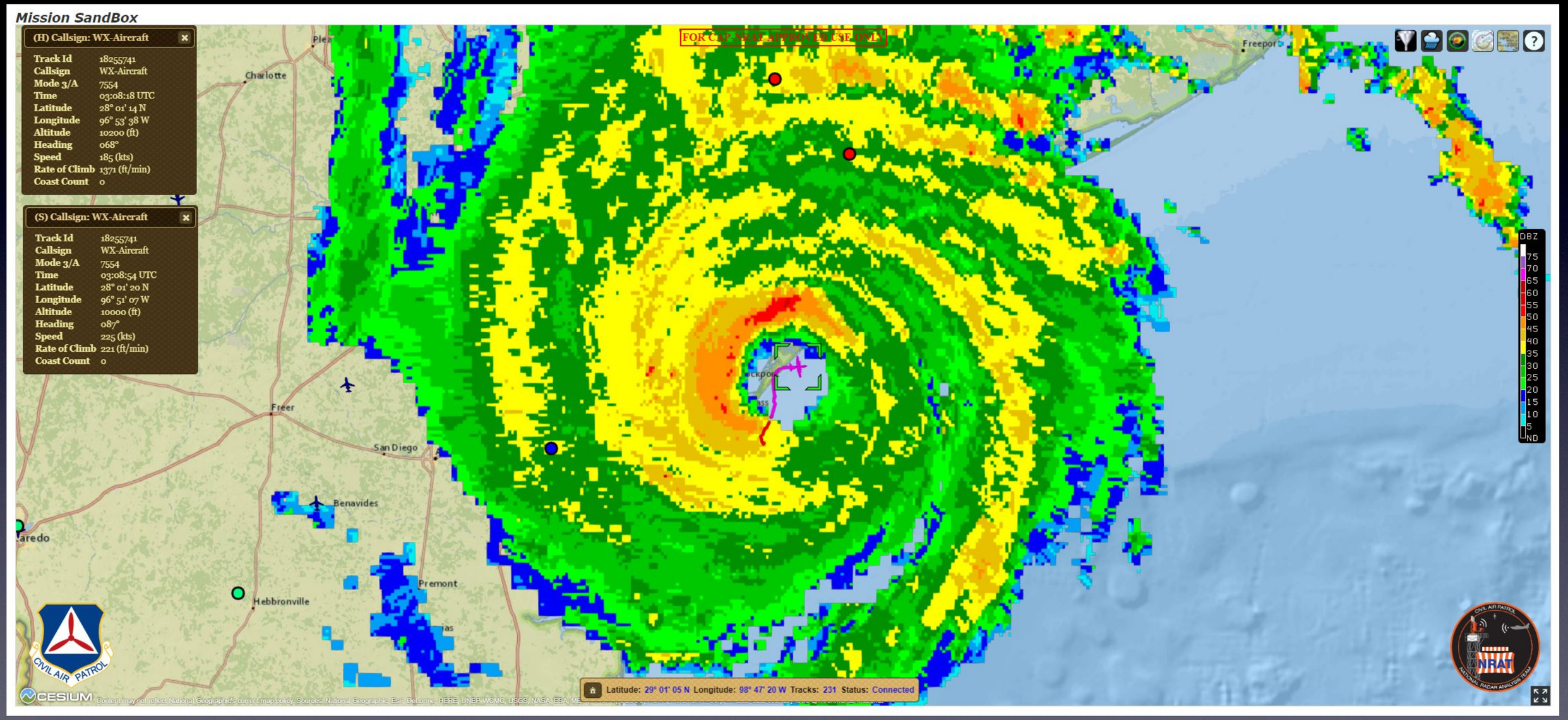
- New Data Format
- Combines Radar & ADS-B



Mission SandBox



Mission SandBox – Hurricane Harvey

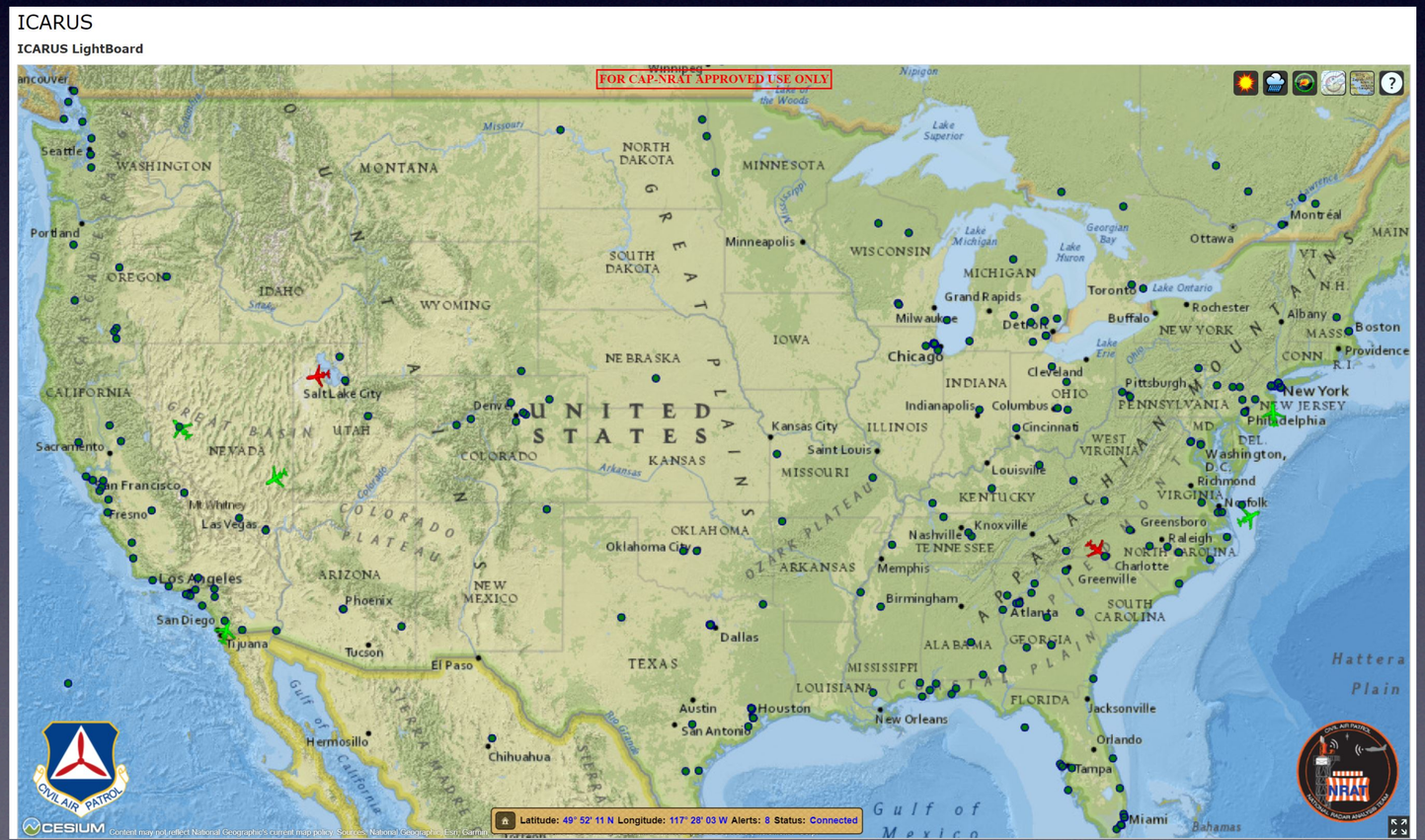


ICARUS

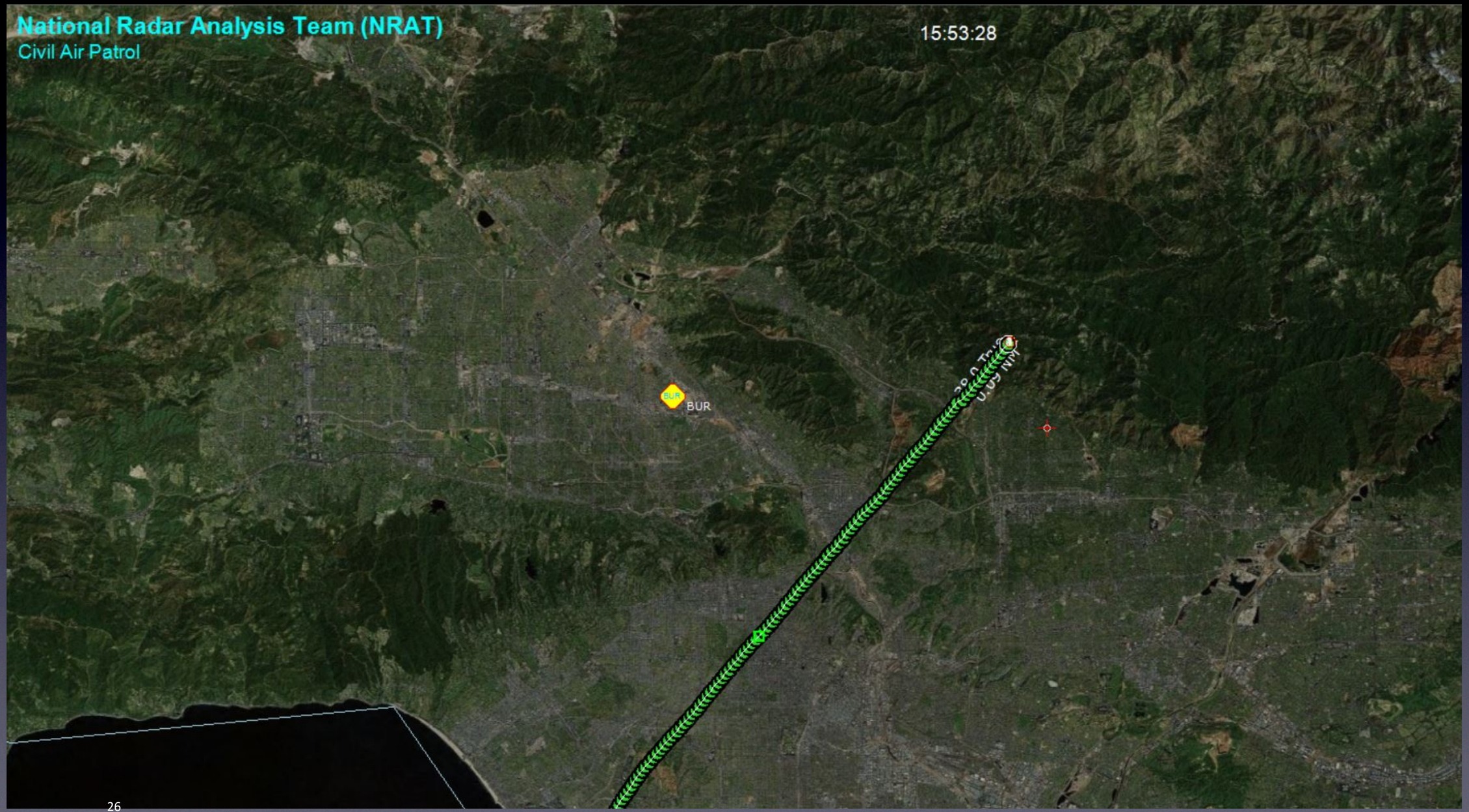
What is ICARUS?

- An NRAT built system that takes raw radar and ADS-B data, sends it through a tracker, and uses complex algorithms to analyze tracks when they drop.

- Runs dropped track data through a complex scoring matrix to catch possible crashes.



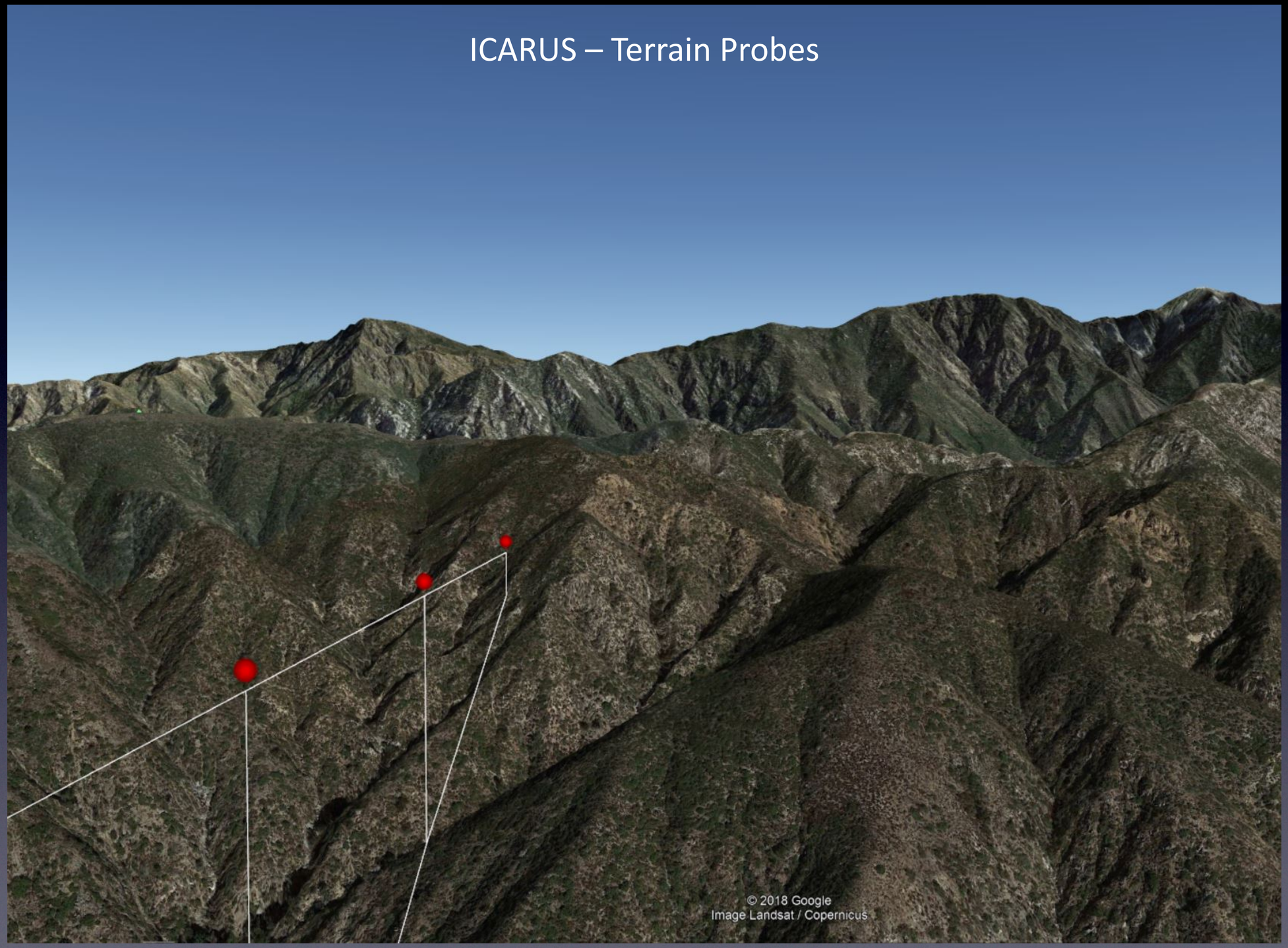
ICARUS – Terrain Probes



ICARUS – Terrain Probes



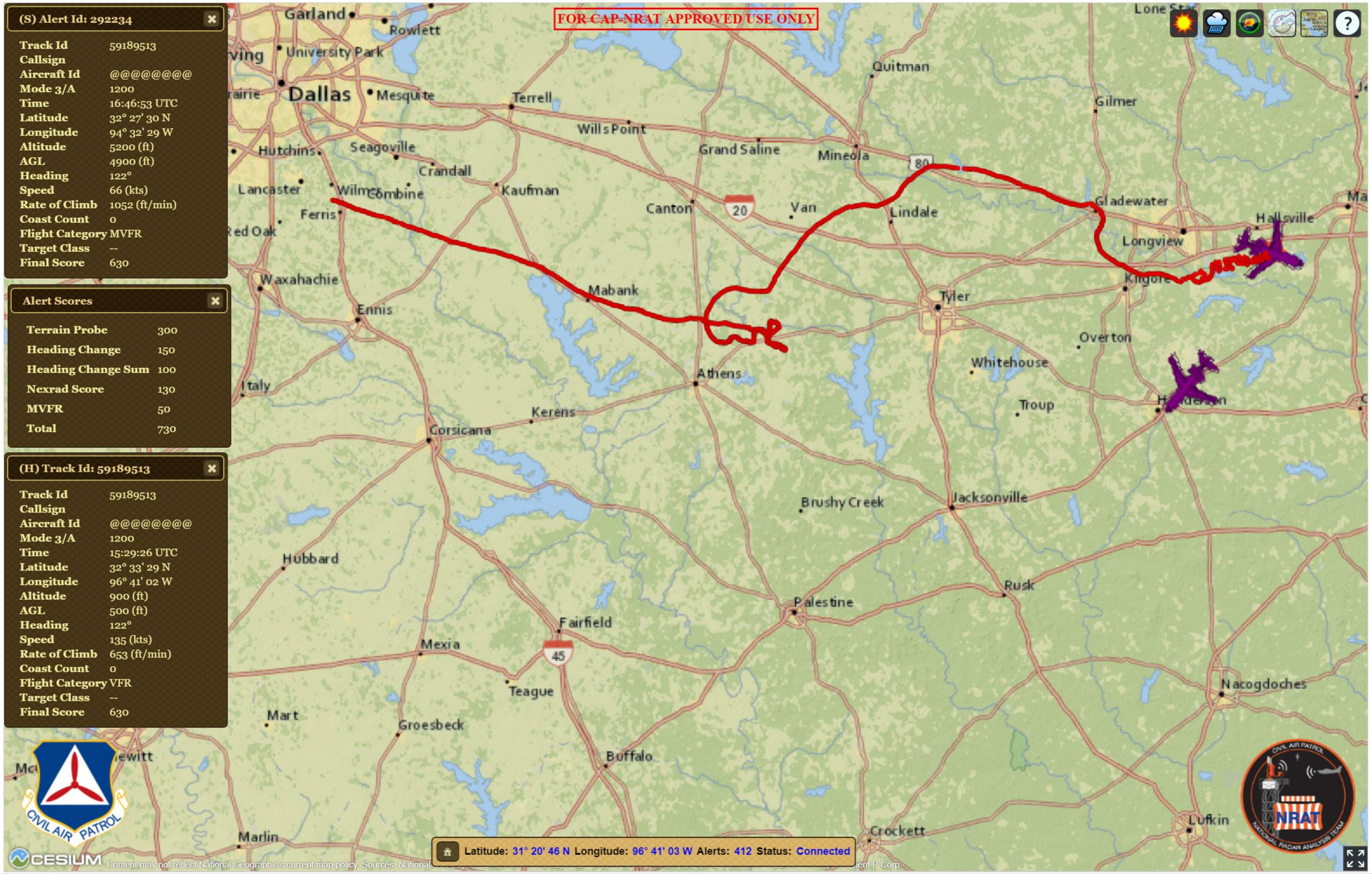
ICARUS – Terrain Probes



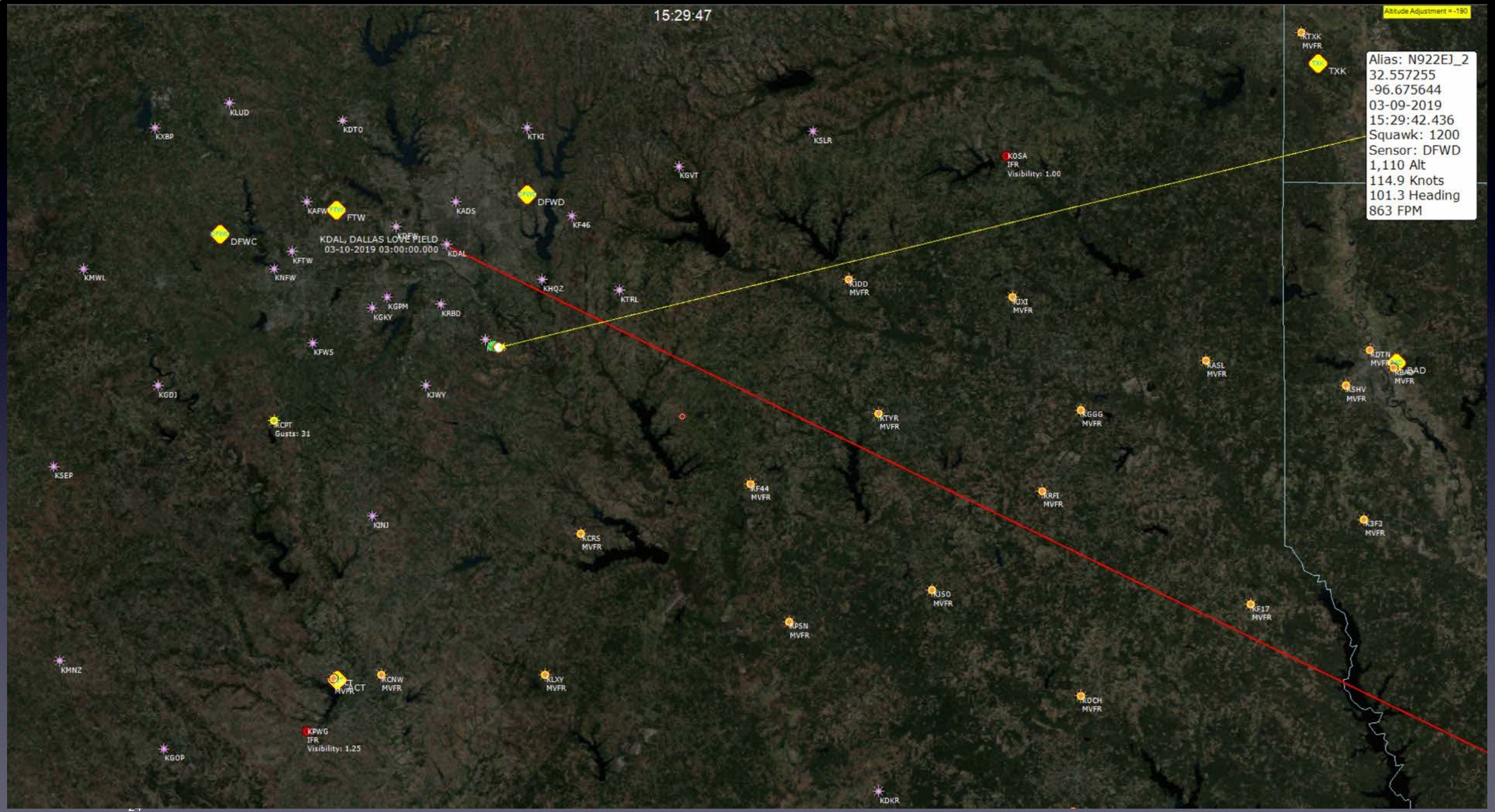
ICARUS

ICARUS

ICARUS LightBoard



ICARUS


15:29:47
Altitude Adjustment = -190
Alias: N922EJ_2
32.557255
-96.675644
03-09-2019
15:29:42.436
Squawk: 1200
Sensor: DFWD
1,110 Alt
114.9 Knots
101.3 Heading
863 FPM
KDAL, DALLAS LOVE FIELD
03-10-2019 03:00:00.000
DFWD
DFWC
FTW
KTXK
MVFR
TXK
KOSA
IFR
Visibility: 1.00
KCPT
Gusts: 31
KPWG
IFR
Visibility: 1.25

NRAT Mission – Torrance, CA to Catalina Island



Robinson - R44 - Clipper II

Mission: *19-M-0318A*

Mission Date: 2019-06-17 23:57 Z

AFRCC Controller: SrA. Alex Kadajski
NRAT Primary Analyst: John Henderson
Mission Status: Closed **Found Status:** Found
Credited Find: Yes
Credited Save: No

Aircraft Information

N Number: N7187D
Manufacture: Robinson
Model: Robinson - R44 - Clipper II
FAA Model: R44
Aircraft Year: 2001
Cruise Speed: 110 KTS
Rate of Climb - Sea Level: 1,000 FPM **Rate of Climb - 10,000':** 250 FPM
Service Ceiling: 14,000 Feet
Range: 300 NM

Souls on Board: **Survivors:** 0

Mode 3 Code: 1200

Route Information

Departure Airport: TOA
ZAMPERINI FIELD
TORRANCE, CA
Location: 33.80338889 -118.3396111
Elevation: 103'
Daylight State:

12:16 — dawn
12:45 — sunrise
19:56 — solar noon
03:07 — sunset
03:36 — dusk
More detailed »

Departure Date/Time: 2019-06-17 23:57Z

Destination Airport: AVX
CATALINA
AVALON, CA
Location: 33.40499722 -118.4157694
Elevation: 1602'
Daylight State:

12:16 — dawn
12:45 — sunrise
19:56 — solar noon
03:07 — sunset
03:36 — dusk
More detailed »

Cruise Altitude: '

Route Point 1: **Route Point 2:** **Route Point 3:**

Initial Mission Notes:

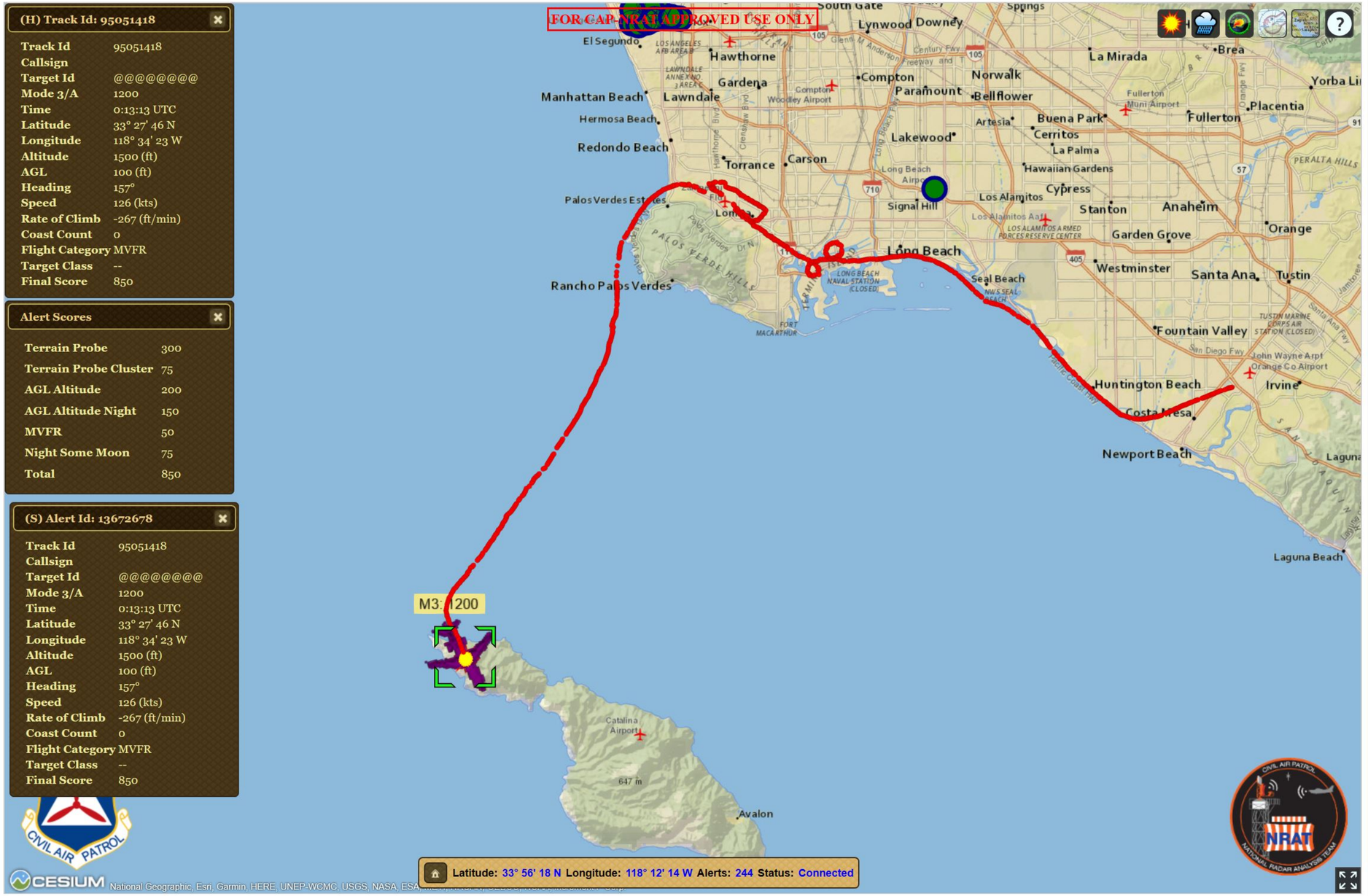
19-M-0318A - REQUESTING RADAR FORENSICS TO AID IN THE SEARCH FOR AN OVERDUE ACFT IVO OF SANTA CATALINA ISLAND, CA. POC: SRA KADAJSKI AFRCC 800-851-3051 or 850-283-5955

ALNOT N7187D
FLIGHT RULES.....VFR
AIRCRAFT TYP.....R44
BEACON CODE.....UNKN
ALTITUDE.....UNKN
AIRSPEED.....UNKN
LAST KNOWN POSITION (LAT/LONG).....UNKN
TIME LAST KNOWN POSITION.....UNKN
HOW DETERMINED.....UNKN
TIME OF LAST TRANSMISSION RCVD.....UNKN
FREQUENCY.....UNKN
POSITION.....UNKN
DEPARTURE POINT.....TOA
DEPARTURE DATE.....6/17/19
PROPOSED DEPARTURE TIME.....UNKN
ACTUAL DEPARTURE TIME.....2357Z
DESTINATION.....AVX
ROUTE OF FLIGHT.....UNKN
ESTIMATED TIME OF ARRIVAL.....UNKN
COLOR OF AIRCRAFT.....UNKN
EQUIPMENT.....UNKN
FEXHA.....
PERSONS ON BOARD.....
REMARKS....CONCERNED FAMILY MEMBER STATED ACFT DIDN´T RETURN TO TOA.NO WORD FROM PILOT
PILOT NAME.....UNKN
PILOT ADDRESS.....UNKN
TAIL NUMBER.....N7187D
REASON AIRCRAFT CONSIDERED OVERDUE...
ADDITIONAL INFORMATION.....NEGATIVE REPLIES REQUESTED

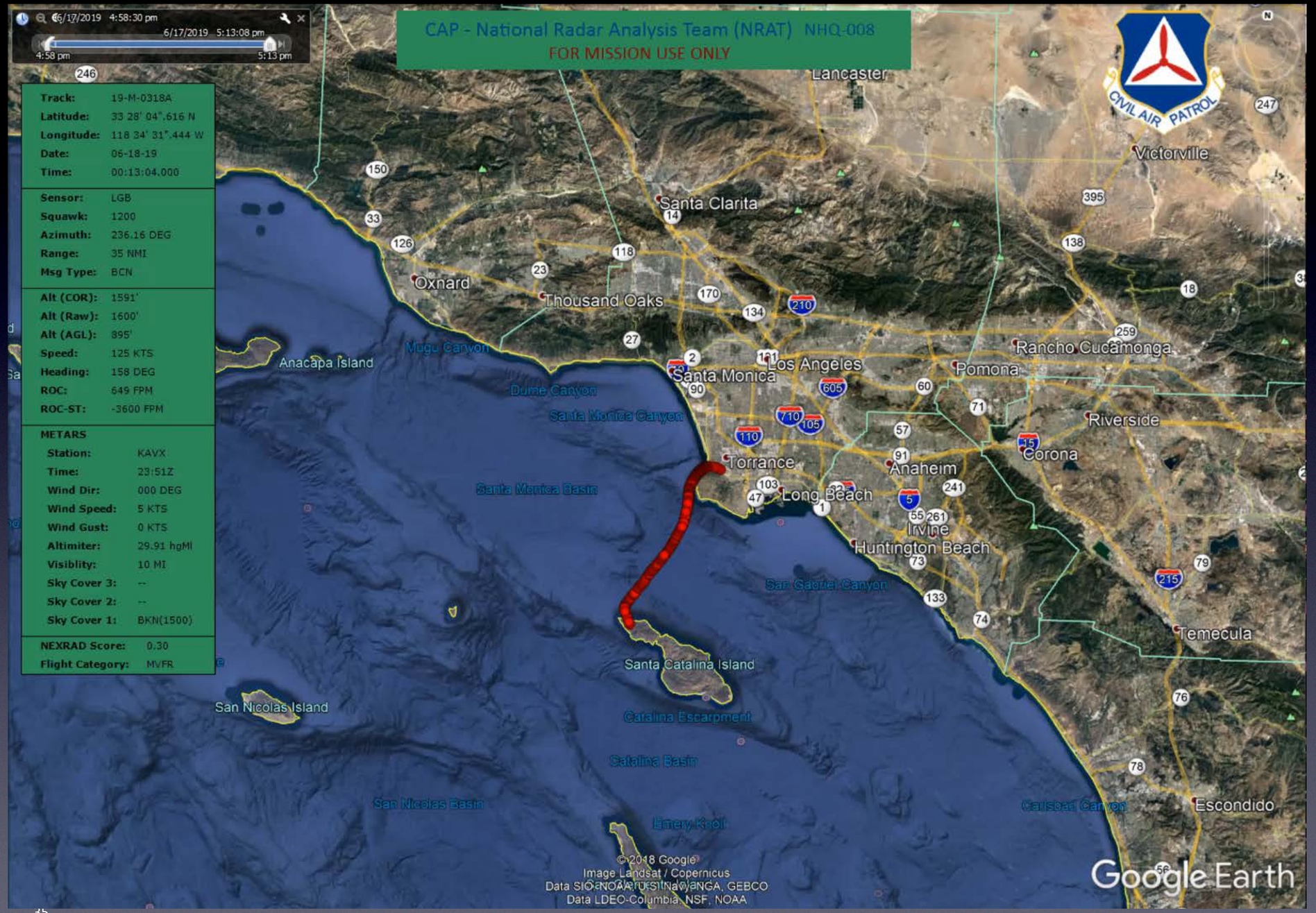
ICARUS Alert for NRAT Mission 19-M-0318A

ICARUS - LightBoard

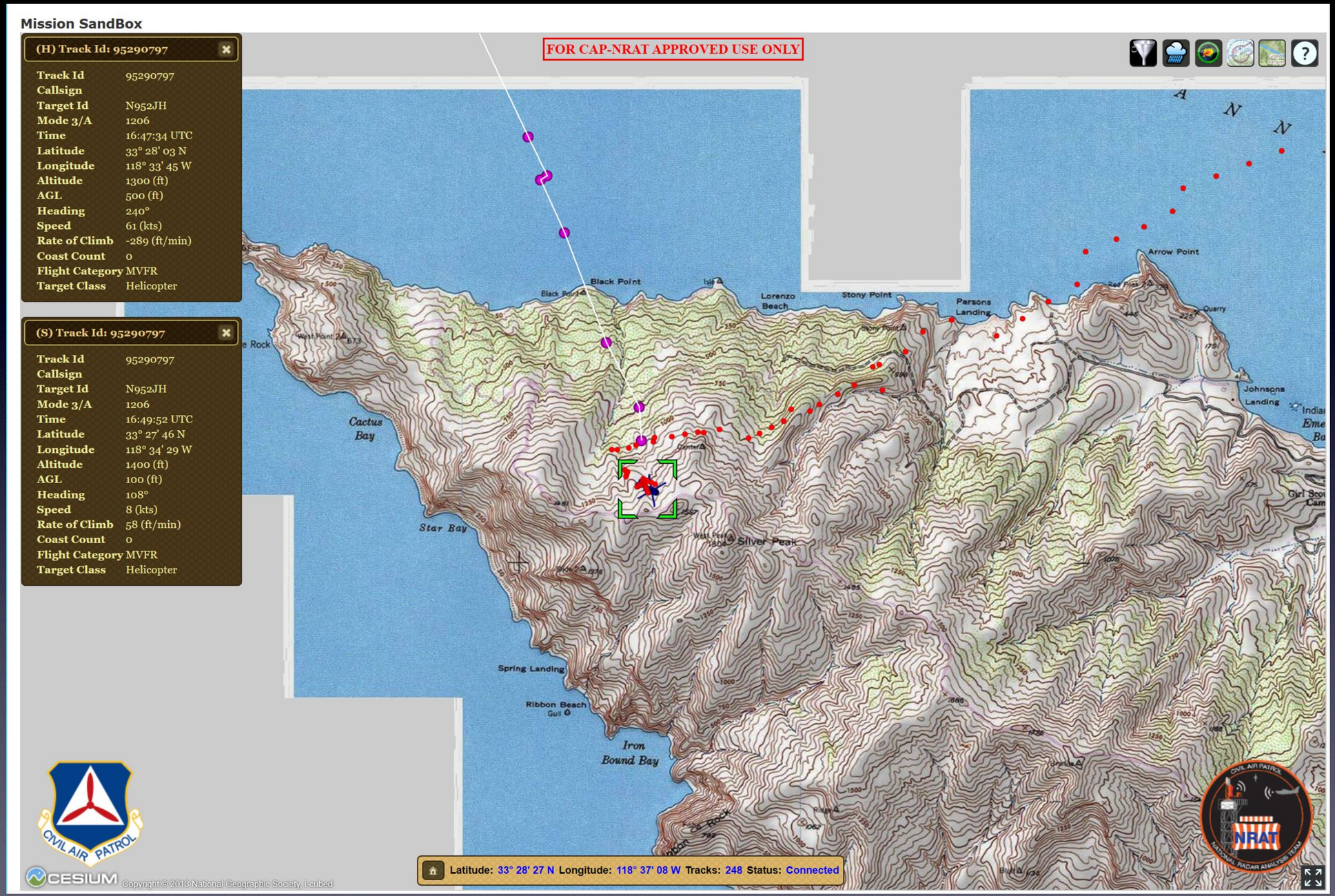
ICARUS LightBoard



19-M-0318A – NRAT Enhanced Google Earth Product



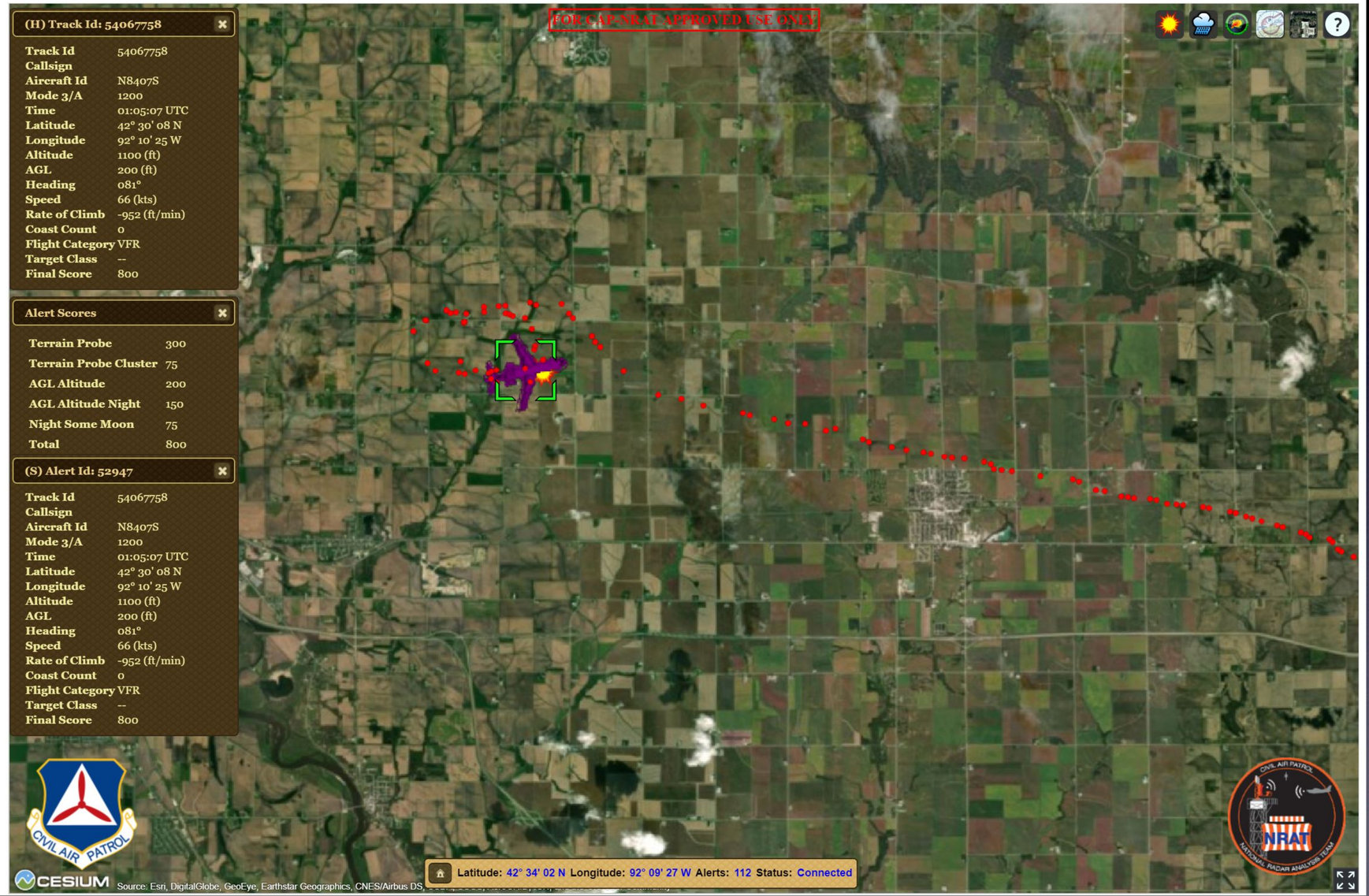
19-M-0318A – Rescue Helicopter Followed in Mission SandBox



ICARUS Alert That Looked Promising – Short Terrain Probes, 200’ AGL

ICARUS

ICARUS LightBoard



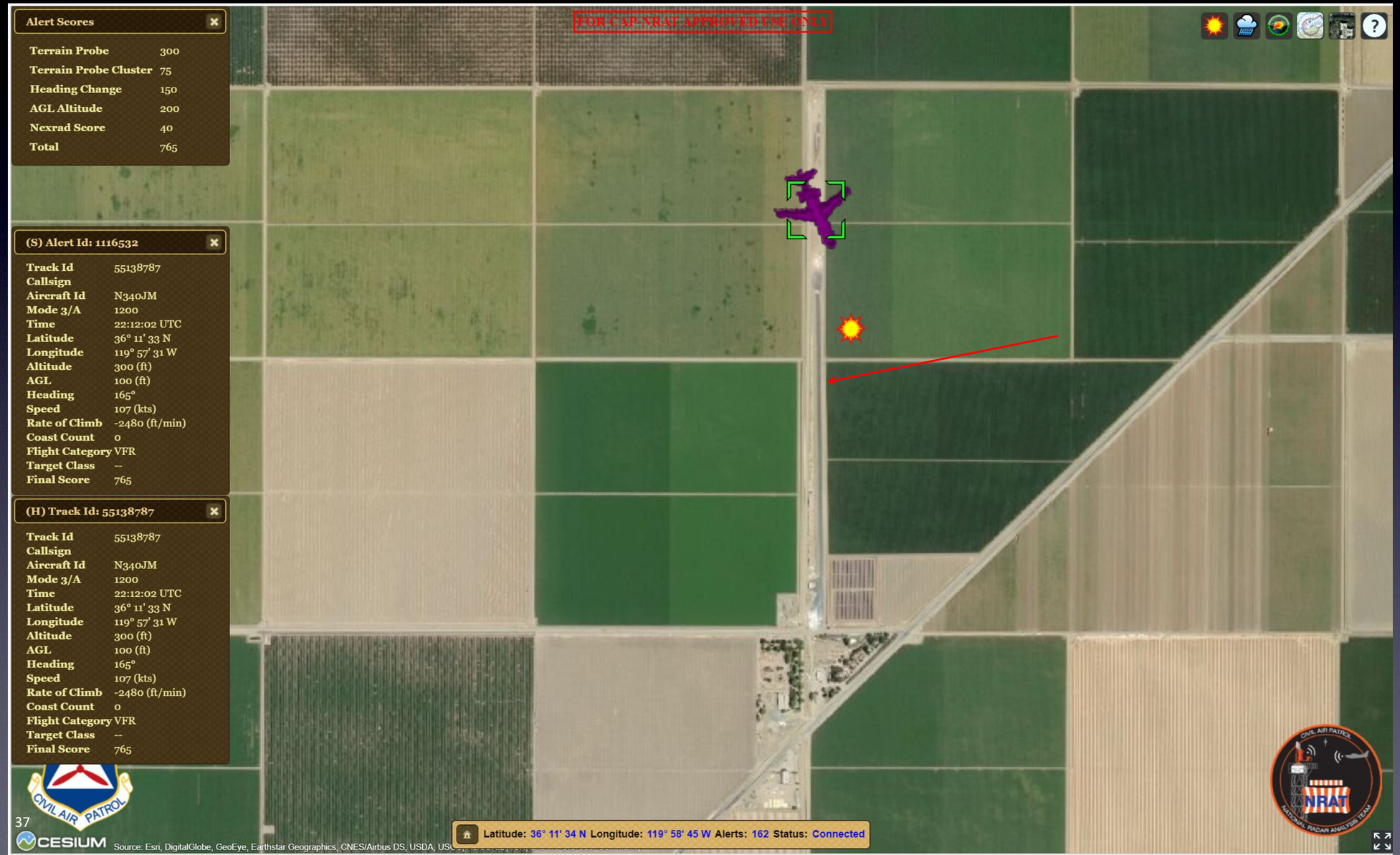
Farmer Landing on His Private Grass Strip

ICARUS

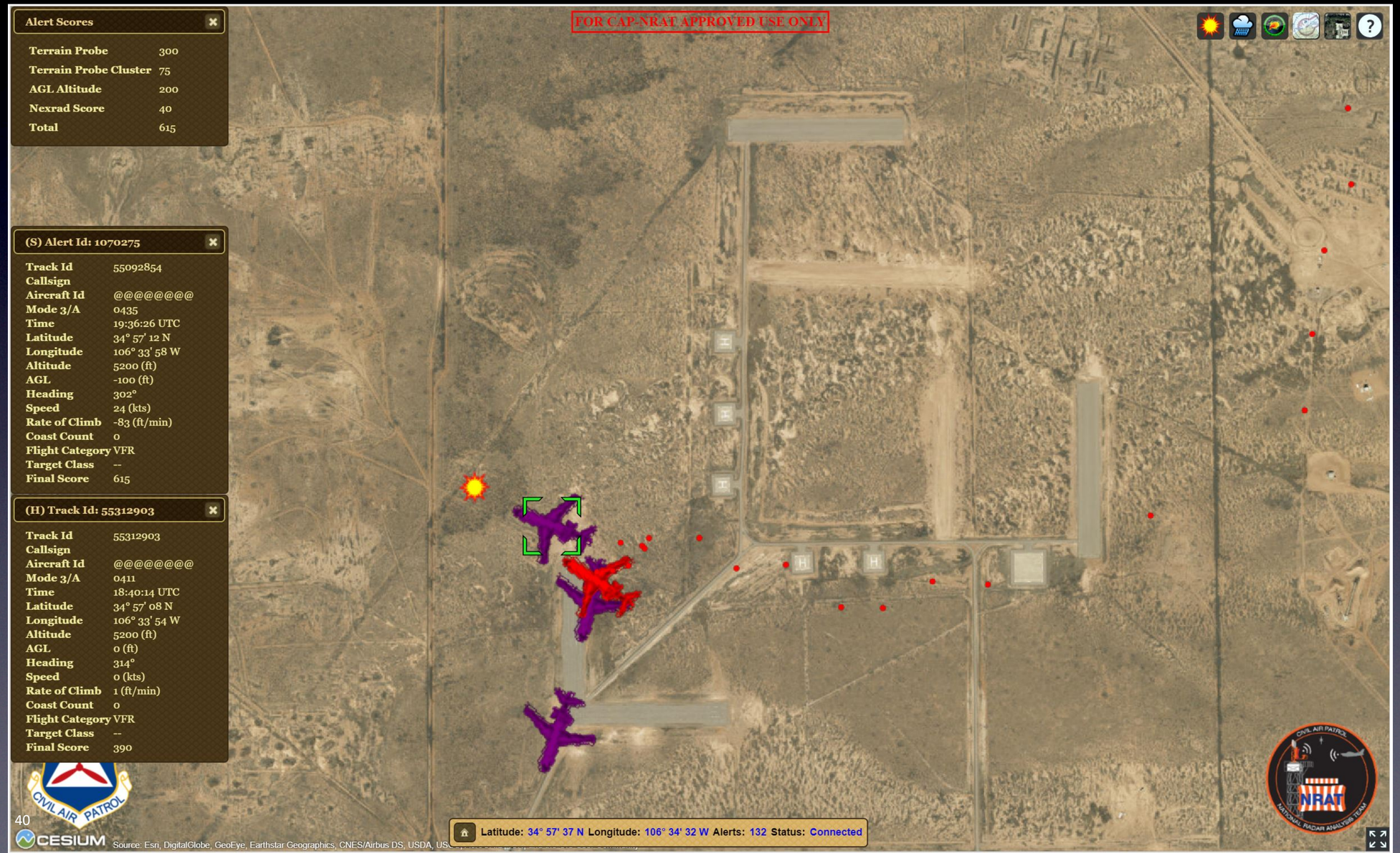
ICARUS LightBoard



Unlisted Private Strip



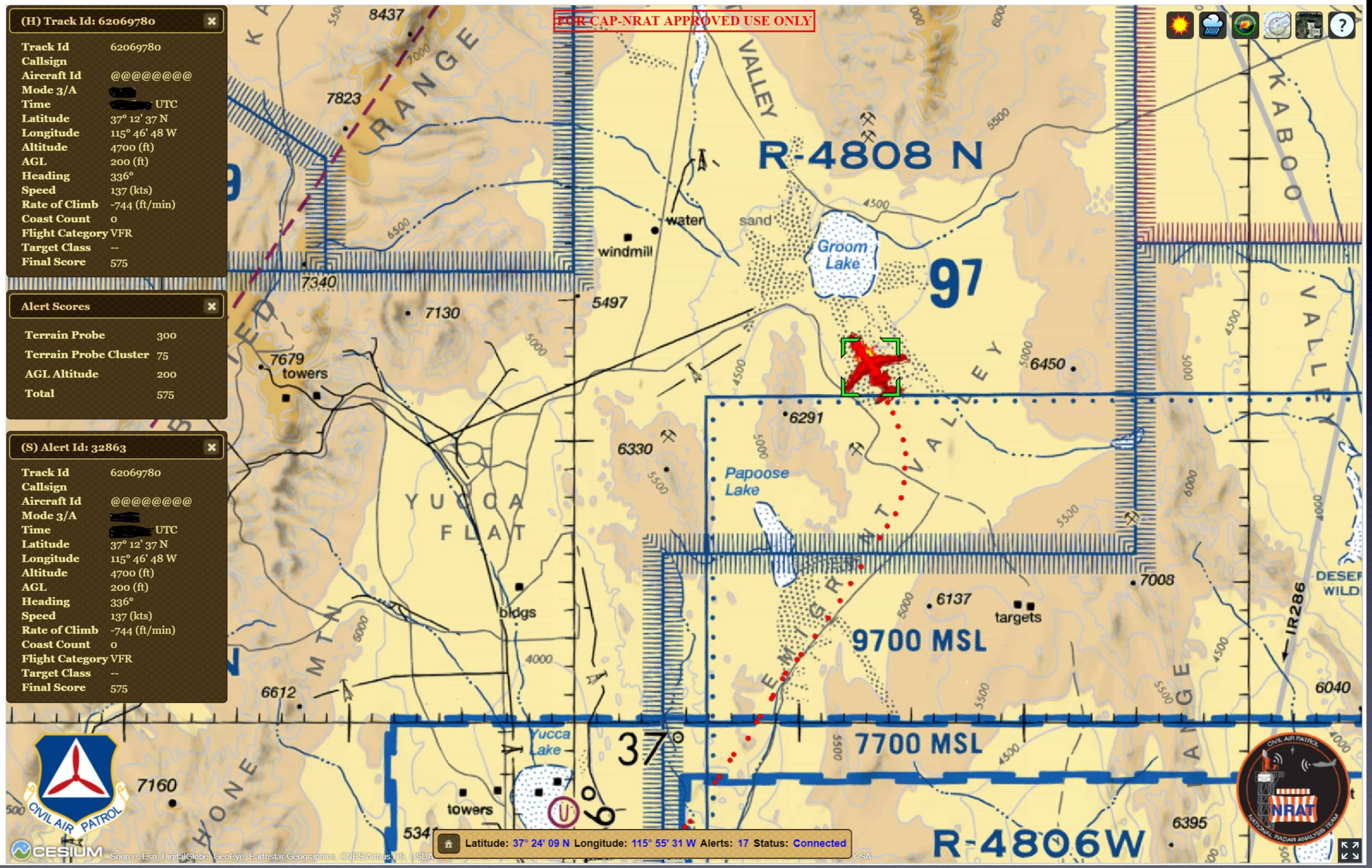
Unlisted Military Training Area



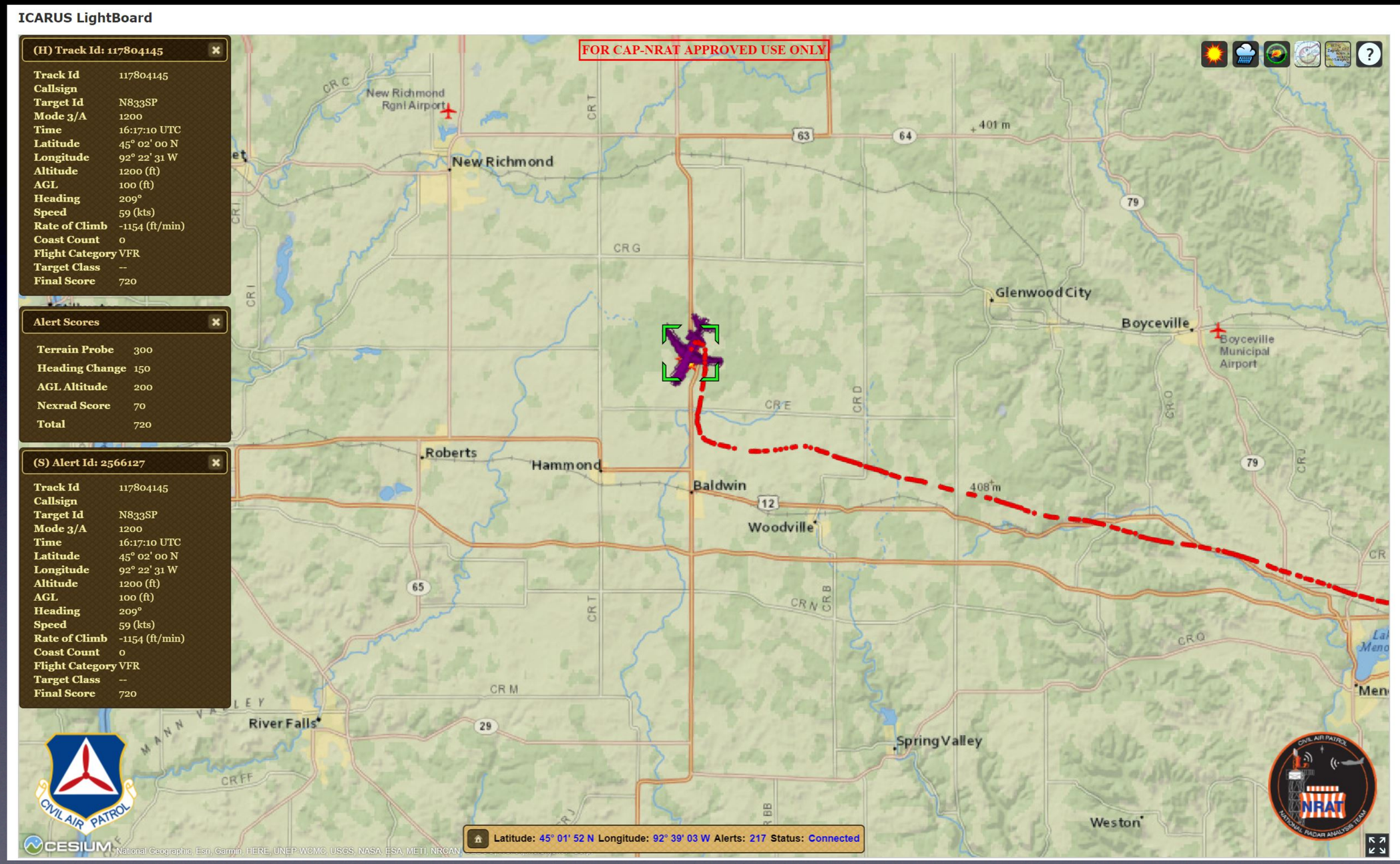
Restricted Military Area

ICARUS

ICARUS LightBoard



New ADS-B / ICARUS Alert Checker



New ADS-B / ICARUS Alert Checker

ICARUS LightBoard

FOR CAP-NRAT APPROVED USE ONLY

(H) Track Id: 117804145

Track Id	117804145
Callsign	
Target Id	N833SP
Mode 3/A	1200
Time	16:17:10 UTC
Latitude	45° 02' 00 N
Longitude	92° 22' 31 W
Altitude	1200 (ft)
AGL	100 (ft)
Heading	209°
Speed	59 (kts)
Rate of Climb	-1154 (ft/min)
Coast Count	0
Flight Category	VFR
Target Class	--
Final Score	720

Alert Scores

Terrain Probe	300
Heading Change	150
AGL Altitude	200
Nexrad Score	70
Total	720

(S) Alert Id: 2566127

Track Id	117804145
Callsign	
Target Id	N833SP
Mode 3/A	1200
Time	16:17:10 UTC
Latitude	45° 02' 00 N
Longitude	92° 22' 31 W
Altitude	1200 (ft)
AGL	100 (ft)
Heading	209°
Speed	59 (kts)
Rate of Climb	-1154 (ft/min)
Coast Count	0
Flight Category	VFR
Target Class	--
Final Score	720



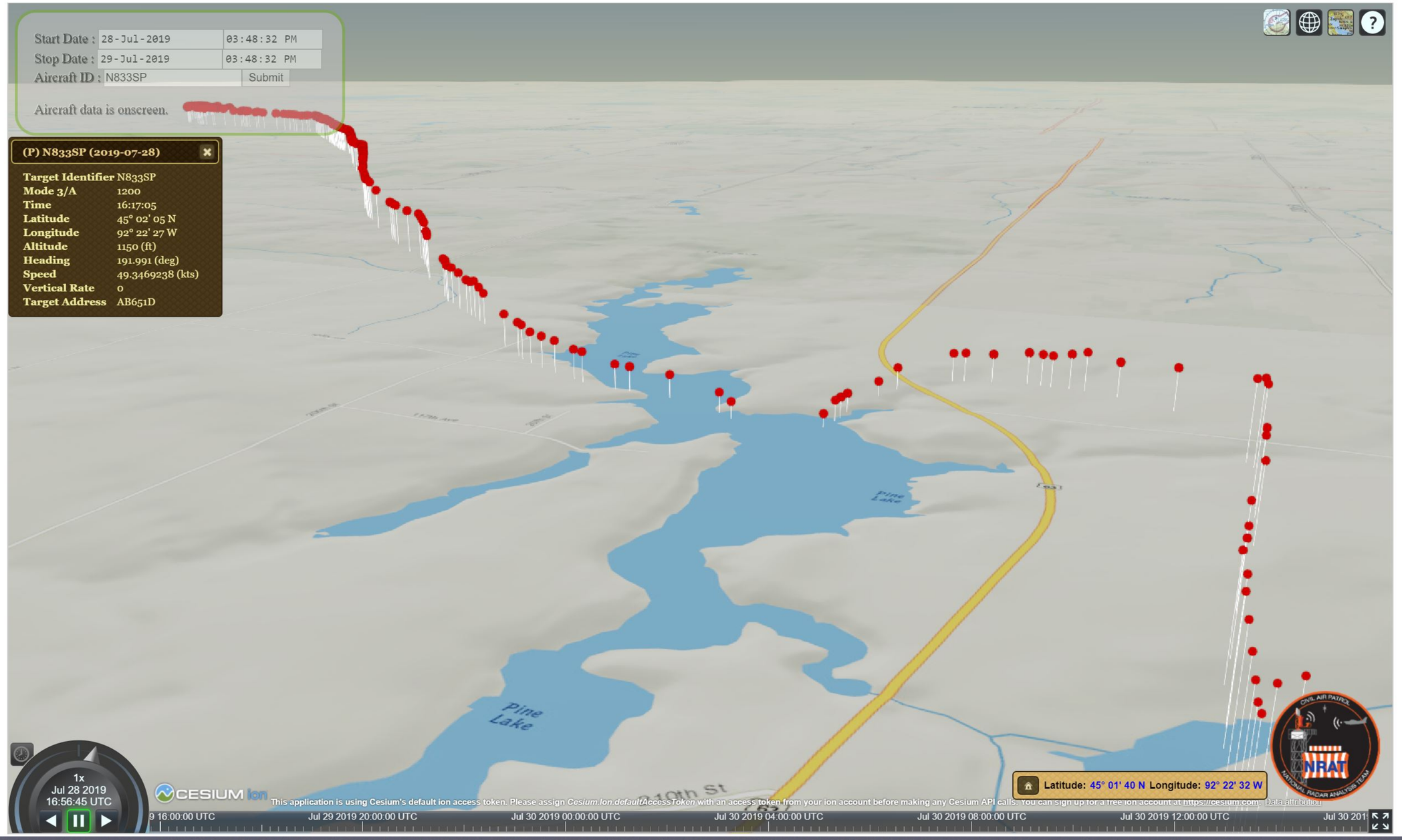
0th Ave
117th Ave
205th St
115th Ave
63
Lake

Latitude: 45° 02' 01 N Longitude: 92° 23' 22 W Alerts: 215 Status: Connected

CESIUM National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN

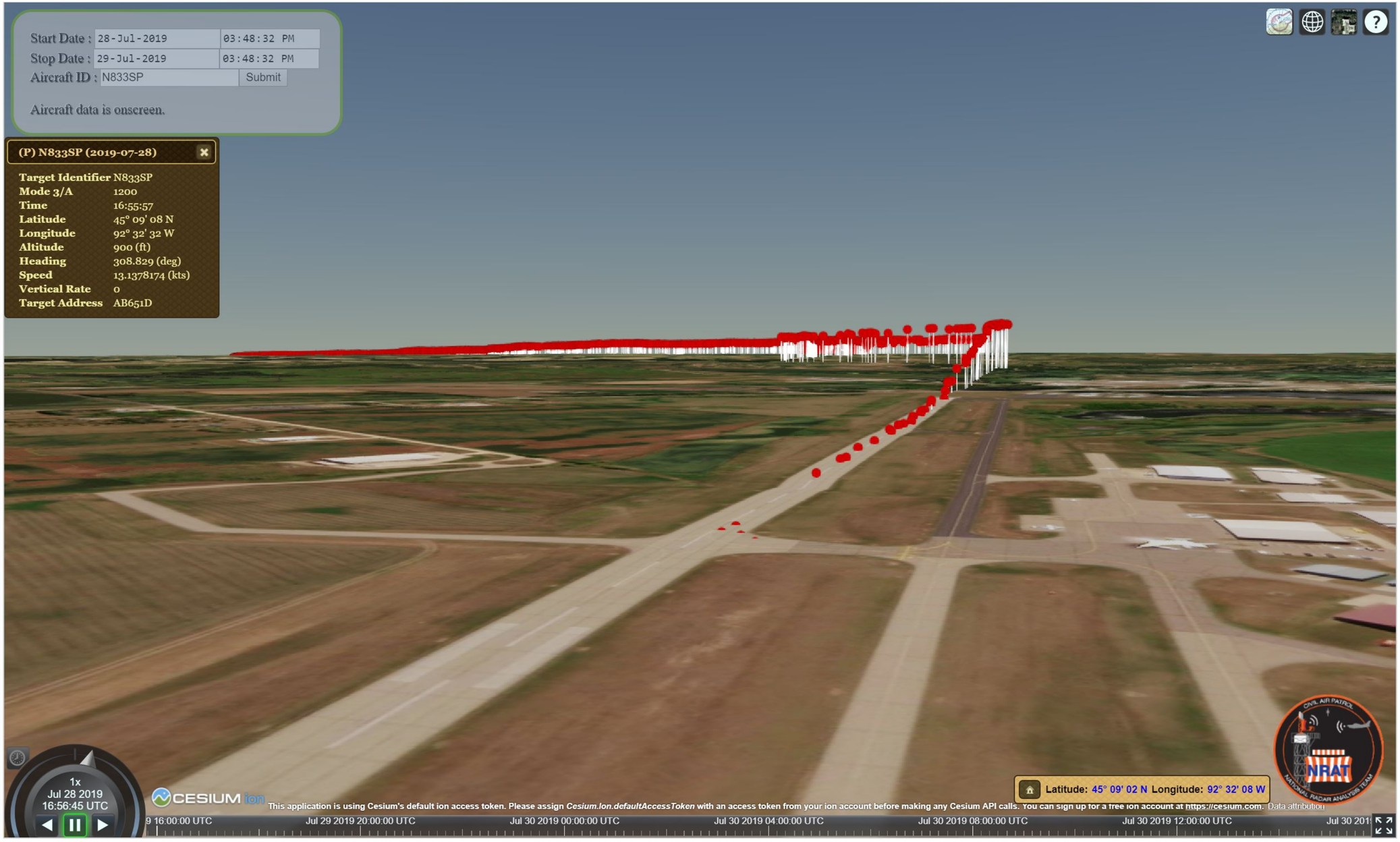
New ADS-B / ICARUS Alert Checker

ADS-B Track Check

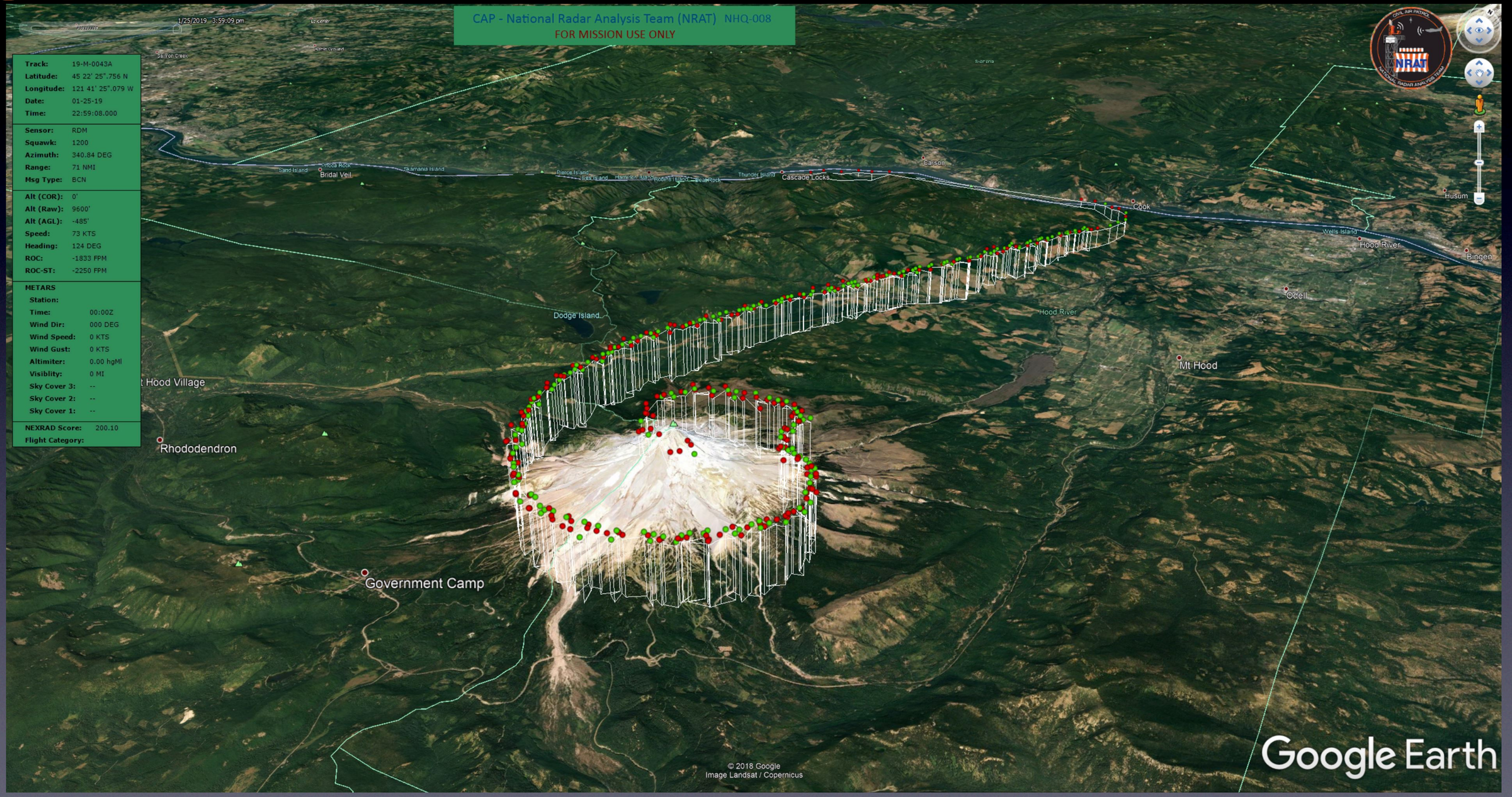


New ADS-B / ICARUS Alert Checker

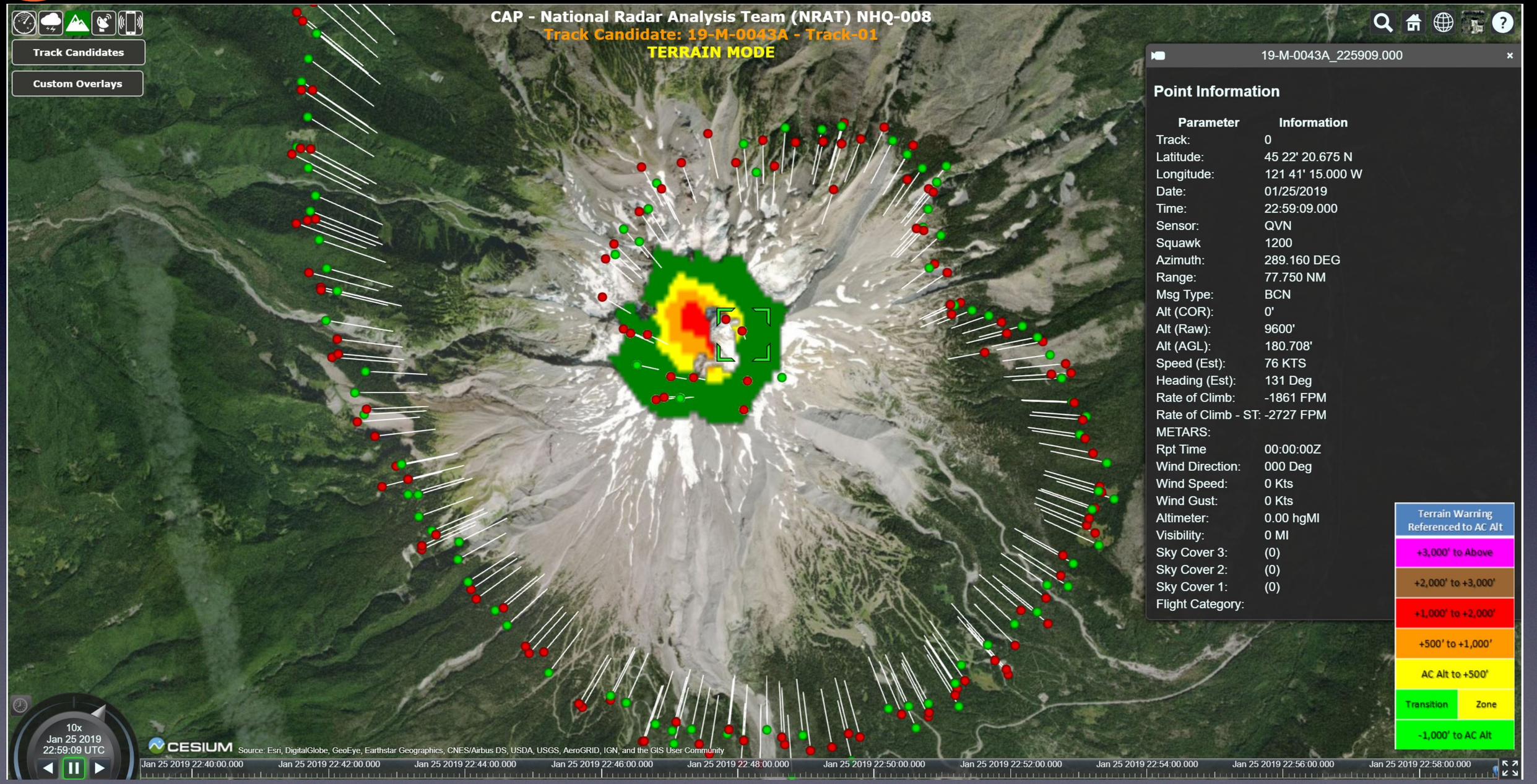
ADS-B Track Check



NRAT Analysis Products – Enhanced Google Earth



NRAT Analysis Products – IC Tool – Terrain Warning



NRAT Analysis Products – IC Tool – Radar Coverage



19-M-0043A – Crash Site




CIVIL AIR PATROL
CELEBRATING
Our Partnerships