

CASE FILE 98 / 237UAP00523

# 237UAP00523

Multiple-witness public UAP report; score 8

IDENTIFIED NORMAL OBJECT

REPORT NO.	UAP-OM-98-237UAP00523	DISPOSITION	IDENTIFIED NORMAL OBJECT
PRIMARY CASE	237UAP00523	GENERATED	2026-05-20 18:32 UTC
REPORT TIME	2023-07-21T04:25:00+00:00	OBSERVER	33.73706, -118.65365
SOURCE CASE IDS	237UAP00523		

## Abstract

This case file assesses whether the public UAP report can be reconciled with a specific launch object. The principal candidate is STARLINK-G6-15 STACK, propagated to azimuth 186.51 degrees, elevation 10.07 degrees, and range 1116.1 km at the report minute. The result is evaluated against the report's narrative language and assigned a identified confidence label.

This is a standalone independent analysis prepared from public-source records and public orbital datasets. It is not an official government determination, classification marking, or agency-authored report.

# 1. Executive Summary

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237UAP00523 is assessed as an identified normal-object case. It was matched against a specific launch-object propagation. The best object is STARLINK-G6-15 STACK at azimuth 186.51 degrees, elevation 10.07 degrees, and range 1116.1 km at the report minute. This is a strong argument for a normal aerospace object over an exotic hypothesis.

## 1.1 Key Findings

- Source score 8 based on: UAP/UFO language.
- Report time used: 2023-07-21T04:25:00+00:00.
- External object layer used: launch-object.
- Disposition standard: IDENTIFIED requires case-specific causal fit. Satellite density above the horizon is context only and cannot by itself resolve the report.
- Case-specific ordinary-object evidence: specific propagated launch object above horizon.
- Best object: STARLINK-G6-15 STACK at az 186.51 deg / el 10.07 deg / range 1116.1 km.
- No explicit Starlink/balloon wording was found in the source excerpt used for ranking.

## 1.2 Bottom Line

**IDENTIFIED NORMAL OBJECT:** A specific object is above the horizon at the report minute and the visual description independently matches a launch-object profile. Residual uncertainty is mainly sensor/witness perspective, not gross spacetime mismatch.

# 2. Source Control

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The source-control table identifies the public report records reviewed for this case and lists public access links where available. The table is included so this PDF remains interpretable when distributed by itself.

CASE ID	REPORT DATE FIELD	FACILITY / TITLE	TEXT EXTRACT	PUBLIC PDF LINK
237UAP00523	7/20/2023 9:25:00 PM (-07 PDT)	DAL2054 UFO-UAP ACTIVITY 07-21-2023	text extract present	<a href="#">237UAP00523.pdf</a>

### 3. Original Report Evidence

PRIMARY EXCERPT USED FOR MATCHING	PRELIM INFO FROM FAA OPS: LOS ANGELES, CA/UFO-UAP ACTIVITY/2152P/LOS ANGELES ARTCC ADVISED DELTA 2054, B738, SFO - LAX, REPORTED AN UNIDENTIFIED AERIAL PHENOMENON WHILE S BOUND AT 14,200 FEET 20 SW LAX. PHENOMENON DESCRIBED AS MULTIPLE STATIONARY LIGHTS APPEARING TO BE SYNCHRONIZED. NO EVASIVE ACTION TAKEN. LEO NOTIFICATION NOT REPORTED. WOC 7-3333 MO/JG
REPORT TIME USED	2023-07-21T04:25:00+00:00
OBSERVER COORDINATE USED	33.73706, -118.65365
OBSERVER SOURCE BASIS	(public text extract 237UAP00523)

### 4. Methodology

1. **Spacetime extraction.** The report time and observer coordinate were extracted from the public text report and normalized to UTC. Aviation fixes/radials were resolved during earlier preprocessing where applicable.
2. **External object dataset.** The object layer used <https://celestrak.org/NORAD/elements/supplemental/sup-gp.php?FILE=starlink-g6-15&FORMAT=tle>. The analytic mode for this case is CelesTrak supplemental TLE launch-object propagation.
3. **Propagation.** Orbital elements were propagated to the report minute and observer location. For launch-object checks, samples around the report minute were retained. For Starlink group checks, objects above the horizon were clustered by sky position and filtered for same-launch groupings.
4. **Comparison.** The output was compared against the report's count of lights, direction cue, motion language, altitude/radar language, and whether the file itself already suggested a satellite explanation.
5. **Causation standard.** Mere object presence above the horizon is treated as background context only. A normal-object disposition requires a case-specific causal fit, such as a named launch object, a compact same-launch trajectory group, or source language that directly supports that object class.
6. **Disposition assignment.** *Identified* means a specific normal object fits the report spacetime and the hard reported features do not materially conflict. *Normal-object favored* means a case-specific ordinary aerospace/orbital candidate exists, but it is not a full named identification. *Insufficient* means the file is too thin to carry high anomaly value. *High-value unresolved* is used when radar, video, rapid maneuver, or multi-witness features remain after reasonable normal-object checks.

## 5. External Object Evidence

### 5.1 Launch Object Summary

OBJECT	AZ DEG	EL DEG	RANGE KM	ALT KM	VISIBLE SAMPLES
STARLINK-G6-15 STACK	186.51	10.07	1116.1	283.2	16
STARLINK-G6-15 SINGLE	176.06	7.47	1262.7	280.1	15

### 5.2 Time Series Around Report Minute

OFFSET	UTC	AZ	EL	RANGE KM	SUBPOINT	ALT KM
-10 min	2023-07-21T04:15:00+00:00	296.2	-12.68	3821.7	41.7706, -160.7898	289.0
-5 min	2023-07-21T04:20:00+00:00	279.85	1.01	1845.0	34.9706, -138.0538	285.3
+0 min	2023-07-21T04:25:00+00:00	186.51	10.07	1116.1	24.2626, -119.8282	283.2
+5 min	2023-07-21T04:30:00+00:00	147.12	-7.31	2892.1	11.4538, -104.8564	282.9
+10 min	2023-07-21T04:35:00+00:00	138.67	-19.0	4894.1	-2.1825, -91.327	284.1

### 5.3 TLE Lines Used for Best Object

1	72000C	23102A	23201.18352894	.00097926	00000+0	29140-3	0	09
2	72000	43.0026	100.0483	0022645	172.9158	352.6063	15.90948356	10

### 5.4 Propagation Interpretation

- STARLINK-G6-15 STACK was above the horizon at the report minute: az 186.51 deg, elevation 10.07 deg, range 1116.1 km.
- Five minutes before the report it was low in the northwest: az 279.85 deg, elevation 1.01 deg.
- Five minutes after the report it was below the southeast horizon: az 147.12 deg, elevation -7.31 deg.
- The CelesTrak TLE epoch is close to the event window; this is much stronger than matching against mature Starlink constellation clutter.

### 5.6 Space-Track SATCAT Enrichment

Space-Track SATCAT metadata was pulled as a cached subset for NORAD catalog IDs appearing in this packet's evidence tables. This section adds owner/type/status context to the propagated object candidates.

PACKET SATCAT SUBSET ROWS	5370	FETCHED	2026-05-19T01:19:50+00:00
THIS CASE NORAD IDS CHECKED	2	SATCAT ROWS MATCHED	0
TOP OWNERS	no matched SATCAT rows		
OBJECT TYPES	no matched SATCAT rows		

### 5.7 Space-Track Metadata for Top Propagated Objects

NORAD	OBJECT NAME	TYPE	OWNER	LAUNCH DATE	DECAY DATE
No Space-Track SATCAT rows matched the top propagated objects for this case.					

### 5.9 NASA / NOAA / ADS-B Expansion Layer

NASA POWER/Horizons/DONKI batch context had not yet been written for this case at packet build time.

### 5.11 Free Source Availability and Remaining Work

LAYER	STATUS	CASE-SPECIFIC NOTE
ADSB.LOL HISTORICAL RELEASE LISTING	screened/present	planes-readsb-staging-0 1198.8 MiB; planes-readsb-prod-1 1199.7 MiB; planes-readsb-prod-0 1198.8 MiB
ADSB TRACKS DOWNLOADED	not yet exhausted	Requires targeted extraction from large daily history archives before claiming aircraft exhaustion.
NOAA GOES IMAGERY	not yet exhausted	Needed for cloud/lightning visual context.
NOAA GOES ABI/GLM MANIFEST	screened/present	Public S3 object availability for the report hour.
NOAA NEXRAD WEATHER RADAR	not yet exhausted	Weather radar only; not ATC radar.
NOAA IGRA RADIOSONDE	screened/present	Needed for balloon drift plausibility.
ASOS/METAR WEATHER OBSERVATIONS	screened/present	Nearest station surface observations around report time.

- ADSB.lol historical: extract aircraft traces from adslol/globe\_history\_2023 for 2023-07-21, then filter +/-60 min and 250 nmi around 33.7371,-118.6537.
- NASA POWER/Horizons/DONKI: batch context for 237UAP00523 at 2023-07-21T04:25:00+00:00.
- NOAA GOES: pull nearest ABI/GLM products for the UTC hour and render cloud/lightning map.
- NOAA NEXRAD: select nearest radar stations and render Level-II/III weather radar sweep around event time.
- NOAA IGRA: find nearest radiosonde station launches bracketing the event and model wind drift for balloon-like descriptions.
- Space-Track gp\_history/decay: fetch exact historical element rows and decay/reentry status for top candidate NORAD IDs.

### 5.12 Weather, Imagery, and Balloon Query Plan

This plan identifies the concrete free sources needed for the next case-specific weather and balloon checks. These are not treated as completed exclusions until the data are downloaded and plotted.

GOES SATELLITE	GOES18
GOES ABI PREFIX	<a href="https://noaa-goes18.s3.amazonaws.com/ABI-L2-CMIPF/2023/202/04/">https://noaa-goes18.s3.amazonaws.com/ABI-L2-CMIPF/2023/202/04/</a>
GOES GLM LIGHTNING PREFIX	<a href="https://noaa-goes18.s3.amazonaws.com/GLM-L2-LCFA/2023/202/04/">https://noaa-goes18.s3.amazonaws.com/GLM-L2-LCFA/2023/202/04/</a>

### 5.13 Nearest Weather-Airport Candidates

STATION	NAME	DISTANCE KM	COORDINATE
KLAX	Los Angeles International Airport	32.20	33.94, -118.41
KHHR	Jack Northrop Field Hawthorne Municipal Airport	36.00	33.92, -118.33
KSMO	Santa Monica Municipal Airport	36.20	34.02, -118.45
KLGB	Long Beach International Airport	47.40	33.82, -118.15
KVNY	Van Nuys Airport	54.70	34.21, -118.49

- KLAX: [IEM ASOS/METAR daily CSV query](#)
- KHHR: [IEM ASOS/METAR daily CSV query](#)
- KSMO: [IEM ASOS/METAR daily CSV query](#)

### 5.14 Nearest Radiosonde Stations

STATION	NAME	DISTANCE KM	COORDINATE
USM00072391	POINT MUGU/NAS	60.10	34.12, -119.12
USM00072381	EDWARDS AFB; CA.	148.30	34.92, -117.90
USM00072293	SAN DIEGO/MIRAMAR; NAS; CA.	174.70	32.83, -117.12
USM00072393	VANDENBERG AFB; CA. (72393-0)	208.80	34.75, -120.57
USM00074612	CHINA LAKE; NAF; CA.	233.90	35.68, -117.68

### 5.15 ASOS/METAR Surface Weather Observations

surface visibility ranged 10-10 statute miles; no precipitation was reported in the retained observations; no low broken/overcast cloud ceiling was evident in the retained station observations. Surface ASOS/METAR observations describe airport-level weather and visibility; they do not by themselves prove conditions at the sighting altitude or line of sight.

STATION	DISTANCE KM	NEAREST OBS UTC	VIS SM	SKY	WIND DEG/KT	METAR
KLAX	32.20	2023-07-21T04:53:00 +00:00	10.00	CLR, M, M, M	220.00 / 7.00	KLAX 210453Z 22007KT 10SM CLR 19/16 A2992 RMK AO2 SLP128 T01940161 \$
KHHR	36.00	2023-07-21T04:53:00 +00:00	10.00	CLR, M, M, M	290.00 / 3.00	KHHR 210453Z 29003KT 10SM CLR 22/17 A2992 RMK AO2 SLP130 T02220167
KSMO	36.20	2023-07-21T04:51:00 +00:00	10.00	CLR, M, M, M	210.00 / 4.00	KSMO 210451Z AUTO 21004KT 10SM CLR 19/15 A2992 RMK AO2 SLP128 T01940150 \$

### 5.16 NOAA IGRA Radiosonde Wind Profile

No nearby IGRA sounding was parsed within the +/-1 day window. Radiosonde winds are sparse station soundings; balloon drift remains approximate without launch time, ascent rate, object altitude, and exact line-of-sight bearing.

STATION	NAME	DISTANCE KM	SOUNDING UTC	MEAN DRIFT BEARING	MEAN SPEED M/S	2H DRIFT KM	MAX WIND
USM00072391	POINT MUGU/ NAS	60.10	no sounding	n/a	n/a	n/a	n/a at n/a m

### 5.17 NOAA GOES ABI/GLM Public File Manifest

GOES public S3 objects are listed for the report hour where available. This is an availability manifest, not yet a rendered satellite image.

SATELLITE	GOES18	BUCKET	noaa-goes18
ABI SAMPLE FILES	12	GLM SAMPLE FILES	12

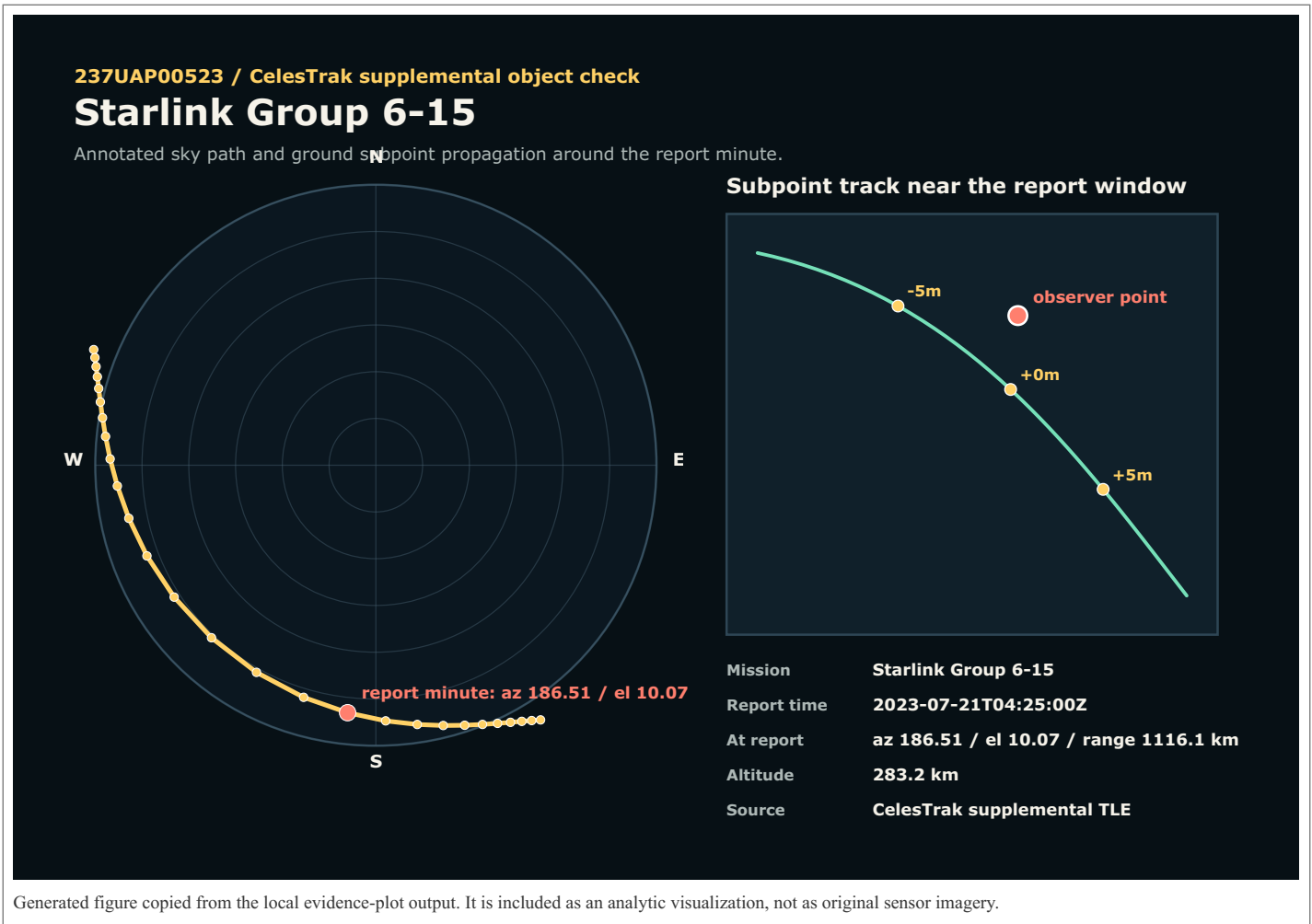
#### ABI sample objects:

- [ABI-L2-CMIPF/2023/202/04/OR\\_ABI-L2-CMIPF-M6C01\\_G18\\_s20232020400226\\_e20232020409535\\_c20232020410000.nc](#)
- [ABI-L2-CMIPF/2023/202/04/OR\\_ABI-L2-CMIPF-M6C01\\_G18\\_s20232020410226\\_e20232020419534\\_c20232020420000.nc](#)
- [ABI-L2-CMIPF/2023/202/04/OR\\_ABI-L2-CMIPF-M6C01\\_G18\\_s20232020420226\\_e20232020429536\\_c20232020430001.nc](#)
- [ABI-L2-CMIPF/2023/202/04/OR\\_ABI-L2-CMIPF-M6C01\\_G18\\_s20232020430226\\_e20232020439534\\_c20232020440000.nc](#)

#### GLM lightning sample objects:

- [GLM-L2-LCFA/2023/202/04/OR\\_GLM-L2-LCFA\\_G18\\_s20232020400000\\_e20232020400200\\_c20232020400214.nc](#)
- [GLM-L2-LCFA/2023/202/04/OR\\_GLM-L2-LCFA\\_G18\\_s20232020400200\\_e20232020400400\\_c20232020400415.nc](#)
- [GLM-L2-LCFA/2023/202/04/OR\\_GLM-L2-LCFA\\_G18\\_s20232020400400\\_e20232020401000\\_c20232020401017.nc](#)
- [GLM-L2-LCFA/2023/202/04/OR\\_GLM-L2-LCFA\\_G18\\_s20232020401000\\_e20232020401200\\_c20232020401218.nc](#)

6. Annotated Evidence Figure



## 7. Analytic Comparison

CRITERION	REPORT EVIDENCE	ANALYTIC TREATMENT
TIME CONSTRAINT	2023-07-21T04:25:00+00:00	Directly used in propagation; this is a hard filter, not descriptive context.
LOCATION CONSTRAINT	33.73706, -118.65365	Directly used as observer point for azimuth/elevation/range computation.
COUNT / PATTERN	three-object/light language present	Launch-object stack/single pair tested; report count language is secondary to rocket-like plume/stack geometry.
MOTION LANGUAGE	stationary	Motion is tested through time-series samples around the report minute.
RADAR / OFFICIAL CHECK	not specified	No ATC radar return can be consistent with distant orbital objects or visual aircraft-light hypotheses, but it does not prove the match.
ANALYTIC DISPOSITION	identified	237UAP00523 is assessed as an identified normal-object case. It was matched against a specific launch-object propagation. The best object is STARLINK-G6-15 STACK at azimuth 186.51 degrees, elevation 10.07 degrees, and range 1116.1 km at the report minute. This is a strong argument for a normal aerospace object over an exotic hypothesis.

## 8. Caveats, Limitations, and Collection Gaps

- No raw cockpit video, ATC replay, radar plot, or witness interview transcript was reviewed unless explicitly stated in the public source text.
- Aviation-derived coordinates can represent a nearby fix/radial or report point, not necessarily the actual line-of-sight intercept point.
- Starlink visibility depends on illumination, observer altitude, atmospheric conditions, and apparent brightness; this analysis tests geometry, not photometry. No brightness model is used unless explicitly stated elsewhere in the case file.
- TLE propagation is appropriate for screening and reconstruction but is not a substitute for authoritative operational ephemerides.
- When many satellites are above the horizon, generic presence is weak evidence and is not treated as causation. The report emphasizes named launch-object checks or compact same-launch trajectory groups.



## Appendix A. Public Report Text Extracts

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### 237UAP00523

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Washington Operations Center

Date: 7/20/2023 9:25:00 PM (-07 PDT)  
Title: DAL2054 UFO-UAP ACTIVITY 07-21-2023  
Latitude: 33.737060970000002                      Latitude: -118.65365079999999

DESCRIPTION

PRELIM INFO FROM FAA OPS: LOS ANGELES, CA/UFO-UAP ACTIVITY/2152P/LOS ANGELES ARTCC ADVISED DELTA 2054, B738, SFO - LAX, REPORTED AN UNIDENTIFIED AERIAL PHENOMENON WHILE S BOUND AT 14,200 FEET 20 SW LAX. PHENOMENON DESCRIBED AS MULTIPLE STATIONARY LIGHTS APPEARING TO BE SYNCHRONIZED. NO EVASIVE ACTION TAKEN. LEO NOTIFICATION NOT REPORTED. WOC 7-3333 MO/JG

## Appendix B. Computational Evidence Digest

This appendix preserves the principal computed values used in the assessment, shortened to the fields most relevant to audit and review.

```
{
  "mission": "Starlink Group 6-15",
  "report_time_utc": "2023-07-21T04:25:00+00:00",
  "source_excerpt": "PRELIM INFO FROM FAA OPS: LOS ANGELES, CA/UFO-UAP ACTIVITY/2152P/LOS ANGELES ARTCC ADVISED DELTA 2054,
B738, SFO - LAX, REPORTED AN UNIDENTIFIED AERIAL PHENOMENON WHILE S BOUND AT 14,200 FEET 20 SW LAX. PHENOMENON DESCRIBED AS
MULTIPLE STATIONARY LIGHTS APPEARING TO BE SYNCHRONIZED. NO EVASIVE ACTION TAKEN. LEO NOTIFICATION NOT REPORTED. WOC 7-3333 MO/
JG",
  "celestrak_url": "https://celestrak.org/NORAD/elements/supplemental/sup-gp.php?FILE=starlink-g6-15&FORMAT=tle",
  "observer": {
    "lat": 33.73706097,
    "lon": -118.6536508,
    "source": "(public text extract 237UAP00523)"
  },
  "case_id": "237UAP00523",
  "interpretation": [
    "STARLINK-G6-15 STACK was above the horizon at the report minute: az 186.51 deg, elevation 10.07 deg, range 1116.1 km.",
    "Five minutes before the report it was low in the northwest: az 279.85 deg, elevation 1.01 deg.",
    "Five minutes after the report it was below the southeast horizon: az 147.12 deg, elevation -7.31 deg.",
    "The Celestrak TLE epoch is close to the event window; this is much stronger than matching against mature Starlink
constellation clutter."
  ],
  "best_object": {
    "name": "STARLINK-G6-15 STACK",
    "event_sample": {
      "altitude_km": 283.2,
      "azimuth_deg": 186.51,
      "elevation_deg": 10.07,
      "offset_seconds": 0,
      "range_km": 1116.1,
      "subpoint_lat": 24.2626,
      "subpoint_lon": -119.8282,
      "time_utc": "2023-07-21T04:25:00+00:00"
    },
    "line1": "1 72000C 23102A 23201.18352894 .00097926 00000+0 29140-3 0 09",
    "line2": "2 72000 43.0026 100.0483 0022645 172.9158 352.6063 15.90948356 10",
    "samples": [
      {
        "altitude_km": 289.0,
        "azimuth_deg": 296.2,
        "elevation_deg": -12.68,
        "offset_seconds": -600,
        "range_km": 3821.7,
        "subpoint_lat": 41.7706,
        "subpoint_lon": -160.7898,
        "time_utc": "2023-07-21T04:15:00+00:00"
      },
      {
        "altitude_km": 285.3,
        "azimuth_deg": 279.85,
        "elevation_deg": 1.01,
        "offset_seconds": -300,
        "range_km": 1845.0,
        "subpoint_lat": 34.9706,
        "subpoint_lon": -138.0538,
        "time_utc": "2023-07-21T04:20:00+00:00"
      },
      {
        "altitude_km": 283.2,
        "azimuth_deg": 186.51,
        "elevation_deg": 10.07,
        "offset_seconds": 0,
        "range_km": 1116.1,
        "subpoint_lat": 24.2626,
        "subpoint_lon": -119.8282,
        "time_utc": "2023-07-21T04:25:00+00:00"
      },
      {
        "altitude_km": 282.9,
        "azimuth_deg": 147.12,
        "elevation_deg": -7.31,
        "offset_seconds": 300,
        "range_km": 2892.1,
        "subpoint_lat": 11.4538,
        "subpoint_lon": -104.8564,
        "time_utc": "2023-07-21T04:30:00+00:00"
      },
      {
        "altitude_km": 284.1,
        "azimuth_deg": 138.67,
        "elevation_deg": -19.0,
```

```
    "offset_seconds": 600,  
    "range_km": 4894.1,  
    "subpoint_lat": -2.1825,  
    "subpoint_lon": -91.327,  
    "time_utc": "2023-07-21T04:35:00+00:00"  
  }  
]  
}  
}
```

## Appendix C. Source Exhaustion Checklist

This checklist records which source layers were actually applied to this individual report. It separates checked evidence from unexhausted collection gaps so the disposition is auditable when the PDF is read alone.

SOURCE LAYER	STATUS	CASE-SPECIFIC NOTE
NARA PUBLIC UAP/FAA REPORT	reviewed	Source IDs: 237UAP00523
TIME AND OBSERVER COORDINATE	extracted	2023-07-21T04:25:00+00:00 at 33.73706, -118.65365
ORBITAL OBJECT PROPAGATION	screened	Starlink
SPACE-TRACK SATCAT METADATA	screened	2 NORAD IDs checked; 0 matched in local SATCAT subset
LAUNCH-OBJECT/SUPGP LAYER	screened	Starlink Group 6-15
NASA/JPL KNOWN SMALL-BODY LAYER	not selected	CAD/Horizons secondary screen included when this case had NEO-relevant timing/ geometry
NASA POWER/HORIZONS/DONKI CONTEXT	not exhausted	Hourly weather, sky geometry, and space-weather context where local JSON is present
AIRCRAFT/ADS-B LAYER	not exhausted	ADS-B historical release pattern is recorded separately; actual aircraft exhaustion requires targeted trace extraction
NOAA GOES IMAGERY LAYER	not exhausted	Cloud/lightning imagery layer for the report hour
NOAA GOES ABI/GLM MANIFEST	screened	Public S3 object listing for the report hour
NOAA/NEXRAD WEATHER RADAR LAYER	not exhausted	Weather radar only; not ATC/primary radar
NOAA IGRA RADIOSONDE LAYER	screened	Balloon drift plausibility layer
ASOS/METAR SURFACE WEATHER	screened	Nearest station visibility, cloud, wind, precipitation, and METAR observations
WEATHER/BALLOON SOURCE PLAN	planned	Nearest weather-airport, GOES, and radiosonde queries are listed where local plan JSON is present
FINAL ANALYTIC DISPOSITION	identified normal object	Presence-only satellite density is context only; a stronger case-specific fit is required for normal-object disposition

## References and Source Links

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1. National Archives and Records Administration. *Records Related to Unidentified Flying Objects (UFOs) and Unidentified Anomalous Phenomena (UAPs) at the National Archives*. <https://www.archives.gov/research/topics/uaps>
2. National Archives and Records Administration. *Record Group 615: Unidentified Anomalous Phenomena Records Collection*. <https://www.archives.gov/research/topics/uaps/rg-615>
3. National Archives and Records Administration. *Bulk Downloads for Records Related to Unidentified Anomalous Phenomena (UAPs)*. <https://www.archives.gov/research/catalog/catalog-bulk-downloads/uap-bulk-download>
4. National Archives Catalog. *Records from the Federal Aviation Administration Relating to Unidentified Anomalous Phenomena, National Archives Identifier 493468575*. <https://catalog.archives.gov/id/493468575>
5. National Archives direct digital object. *237UAP00523.pdf, FAA UAP report record copied from RG 615 bulk digital objects*. <https://s3.dualstack.us-east-1.amazonaws.com/NARAprodstorage/lz/electronic-records/rg-615/493468575/237UAP00523.pdf>
6. Celestrak. *Current Supplemental GP Element Sets*. <https://celestrak.org/NORAD/elements/supplemental/>
7. Celestrak. *How to Perform Supplemental GP Queries*. <https://celestrak.org/NORAD/documentation/sup-gp-queries.php>
8. Celestrak SupGP query. *Starlink Group 6-15 supplemental element set used in this report*. <https://celestrak.org/NORAD/elements/supplemental/sup-gp.php?FILE=starlink-g6-15&FORMAT=tle>
9. Space-Track.org. *API documentation for SATCAT and catalog metadata classes used for local enrichment*. <https://www.space-track.org/documentation#/api>
10. ADSB.lol. *Interactive API documentation and OpenAPI definition*. <https://api.adsb.lol/docs>
11. ADSB.lol. *Historical open-data release documentation*. <https://www.adsb.lol/docs/open-data/historical/>
12. OpenSky Network. *REST API documentation*. <https://openskynetwork.github.io/opensky-api/rest.html>
13. OpenSky Network. *Historical data via Trino documentation*. <https://openskynetwork.github.io/opensky-api/trino.html>
14. NASA GIBS. *Global Imagery Browse Services API documentation*. <https://nasa-gibs.github.io/gibs-api-docs/>
15. NASA Earthdata. *Common Metadata Repository search API documentation*. <https://cmr.earthdata.nasa.gov/search/site/docs/search/api.html>
16. NOAA / AWS Open Data. *GOES public dataset registry*. <https://registry.opendata.aws/noaa-goes/>
17. NOAA / AWS Open Data. *NEXRAD public dataset registry*. <https://registry.opendata.aws/noaa-nexrad/>
18. NOAA NCEI. *Integrated Global Radiosonde Archive*. <https://www.ncei.noaa.gov/products/weather-balloon/integrated-global-radiosonde-archive>
19. Iowa Environmental Mesonet. *ASOS/AWOS/METAR data download service*. <https://mesonet.agron.iastate.edu/request/download.phtml>
20. Celestrak. *Spacetrack Report No. 3: Models for propagation of NORAD element sets*. <https://celestrak.org/NORAD/documentation/spacetrk.pdf>