

CASE FILE 66 / 237UAP00378

237UAP00378

Radar/correlation-focused public UAP report; score 52

NORMAL-OBJECT FAVORED

REPORT NO.	UAP-OM-66-237UAP00378	DISPOSITION	NORMAL-OBJECT FAVORED
PRIMARY CASE	237UAP00378	GENERATED	2026-05-20 18:32 UTC
REPORT TIME	2024-09-15T07:15:00+00:00	OBSERVER	35.90042, -82.86661
SOURCE CASE IDS	237UAP00378		

Abstract

This case file evaluates a reported UAP sighting against historical Starlink orbital elements. The primary external-object candidate is a 4-object same-launch group from 2021-02-16, spanning azimuth 316.83-341.49 deg and elevation 10.86-26.02 deg. The analysis distinguishes plausible geometric overlap from unresolved witness-language features.

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

237UAP00378 is assessed as normal-object favored because the available public evidence gives a case-specific ordinary-object candidate: plausible ADS-B aircraft candidate F-HUVF A359 39d2a5 at 112.8 km, azimuth 294.2 deg, elevation 5.19 deg, 0.01 min from report. Dense satellite presence alone is not treated as causation in this packet.

1.1 Key Findings

- Source score 52 based on: radar/primary-return language, high-altitude report, UAP/UFO language.
- Report time used: 2024-09-15T07:15:00+00:00.
- External object layer used: Starlink.
- Disposition standard: NORMAL-OBJECT 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: plausible ADS-B aircraft candidate F-HUVF A359 39d2a5 at 112.8 km, azimuth 294.2 deg, elevation 5.19 deg, 0.01 min from report.
- Non-causal context / rejection screens: very dense orbital-object sky background; context only, not causation.
- Objects above horizon: 325; at/above 10 deg: 141.
- Top compact same-launch/designator group: 4 objects from 2021-02-16.
- No explicit Starlink/balloon wording was found in the source excerpt used for ranking.

1.2 Bottom Line

NORMAL-OBJECT FAVORED: A case-specific ordinary-object candidate exists from source language, orbital geometry, launch-object context, or compact trajectory grouping. Dense ordinary sky traffic alone is not treated as causation.

2. Source Control

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
237UAP00378	07:15 09/15/2024 Callsign: EJA538 Origin: HOU	ZTL Operator: EJA Operator Type: Commercial	text extract present	237UAP00378.pdf

3. Original Report Evidence

PRIMARY EXCERPT USED FOR MATCHING	Aircraft reported an unidentified aerial phenomenon while NE bound at FL410, 50NM E of VXV. The unknown phenomenon was three white lights in trail of each other at a slightly higher altitude in the distance. The UAP was not observed on ATC facility radar system.
REPORT TIME USED	2024-09-15T07:15:00+00:00
OBSERVER COORDINATE USED	35.90042, -82.86661
OBSERVER SOURCE BASIS	aviation_offset:50NM E of VXV (public text extract 237UAP00378)

4. Methodology

- 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.
- External object dataset.** The object layer used historical Space-Track/TLE-derived Starlink element rows. The analytic mode for this case is historical Starlink element propagation and same-launch/designator sky grouping.
- 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.
- 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.
- 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.
- 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 Search Volume and Density

This table is a screening layer only. Objects above the horizon show background opportunity; they do not establish causation unless a specific object or compact trajectory group matches the reported behavior.

STARLINK CATALOG IDS CONSIDERED	6400	HISTORICAL ELEMENT ROWS	6381
ABOVE HORIZON AT REPORT MINUTE	325	AT/ABOVE 10 DEG	141
LARGEST SAME-SKY CLUSTER	132		

5.2 Same-Launch / Same-Designator Candidate Groups

#	LAUNCH DATE	COUNT	AZIMUTH SPAN	ELEVATION SPAN	MOTION LABELS	MEMBERS
1	2021-02-16	4	316.83-341.49 deg	10.86-26.02 deg	eastward, rising, eastward, setting	STARLINK-1992, STARLINK-2019, STARLINK-2022, STARLINK-2057

5.3 Primary Group Members

OBJECT	NORAD	LAUNCH	AZ	EL	RANGE KM	APPARENT MOTION	ELEMENT AGE H
STARLINK-1992	47632	2021-02-16	341.49	26.02	1094.73	eastward, rising	1.06
STARLINK-2019	47641	2021-02-16	327.72	13.77	1586.55	eastward, rising	2.1
STARLINK-2022	47643	2021-02-16	316.83	11.53	1717.84	eastward, rising	3.46
STARLINK-2057	47666	2021-02-16	336.72	10.86	1762.41	eastward, setting	2.87

5.4 Bright-Sky Context: Top Starlink Objects by Elevation

OBJECT	AZ	EL	RANGE KM	APPARENT MOTION	LAUNCH DATE
STARLINK-30122	203.22	81.93	566.93	westward, setting	2023-05-19
STARLINK-32086	63.64	70.1	473.36	eastward, setting	2024-05-08
STARLINK-30381	91.19	67.27	604.52	eastward, setting	2023-09-04
STARLINK-31467	109.1	62.18	499.81	westward, setting	2024-03-16
STARLINK-1117	303.7	54.94	658.45	westward, setting	2020-01-07
STARLINK-3053	140.4	53.57	701.65	eastward, setting	2021-09-14
STARLINK-1923	202.61	50.88	689.58	westward, setting	2020-10-24
STARLINK-5776	347.07	50.55	709.05	eastward, setting	2023-06-23
STARLINK-3712	128.86	47.69	709.8	westward, setting	2022-03-19
STARLINK-31269	331.03	46.8	735.54	eastward, rising	2024-01-24
STARLINK-5645	187.94	46.49	767.59	westward, rising	2023-01-31
STARLINK-6157	306.03	46.26	751.15	eastward, rising	2023-05-04

5.5 Largest Sky Clusters

#	COUNT	AZIMUTH SPAN	ELEVATION SPAN	MOTION LABELS
1	132	1.95-360.0 deg	10.26-54.94 deg	eastward, rising, eastward, setting, nearly fixed azimuth, setting, westward, level,

#	COUNT	AZIMUTH SPAN	ELEVATION SPAN	MOTION LABELS
				westward, rising, westward, setting
2	4	161.13-202.61 deg	40.56-50.88 deg	westward, rising, westward, setting
3	3	63.64-109.1 deg	62.18-70.1 deg	eastward, setting, westward, setting
4	1	203.22-203.22 deg	81.93-81.93 deg	westward, setting
5	1	220.88-220.88 deg	42.4-42.4 deg	westward, setting

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	34	SATCAT ROWS MATCHED	34
TOP OWNERS	US: 34		
OBJECT TYPES	PAYLOAD: 34		

5.7 Space-Track Metadata for Top Propagated Objects

NORAD	OBJECT NAME	TYPE	OWNER	LAUNCH DATE	DECAY DATE
56688	STARLINK-30122	PAYLOAD	US	2023-05-19	n/a
59703	STARLINK-32086	PAYLOAD	US	2024-05-08	n/a
57785	STARLINK-30381	PAYLOAD	US	2023-09-04	n/a
59235	STARLINK-31467	PAYLOAD	US	2024-03-16	n/a
44952	STARLINK-1117	PAYLOAD	US	2020-01-07	2025-06-01
49149	STARLINK-3053	PAYLOAD	US	2021-09-14	2025-04-10
46754	STARLINK-1923	PAYLOAD	US	2020-10-24	2024-12-02
57151	STARLINK-5776	PAYLOAD	US	2023-06-23	n/a
52090	STARLINK-3712	PAYLOAD	US	2022-03-19	n/a
58844	STARLINK-31269	PAYLOAD	US	2024-01-24	n/a
55429	STARLINK-5645	PAYLOAD	US	2023-01-31	n/a
56379	STARLINK-6157	PAYLOAD	US	2023-05-04	n/a

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 2181.0 MiB; planes-readsb-prod-0 2181.0 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.

LAYER	STATUS	CASE-SPECIFIC NOTE
ASOS/METAR WEATHER OBSERVATIONS	screened/present	Nearest station surface observations around report time.

- ADSB.lol historical: extract aircraft traces from adsblol/globe_history_2024 for 2024-09-15, then filter +/-60 min and 250 nmi around 35.9004,-82.8666.
- NASA POWER/Horizons/DONKI: batch context for 237UAP00378 at 2024-09-15T07:15:00+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	GOES16
GOES ABI PREFIX	https://noaa-goes16.s3.amazonaws.com/ABI-L2-CMIPF/2024/259/07/
GOES GLM LIGHTNING PREFIX	https://noaa-goes16.s3.amazonaws.com/GLM-L2-LCFA/2024/259/07/

5.13 Nearest Weather-Airport Candidates

STATION	NAME	DISTANCE KM	COORDINATE
KAVL	Asheville Regional Airport	59.40	35.44, -82.54
KTRI	Tri-Cities Regional TN/VA Airport	76.00	36.48, -82.41
KTYS	McGhee Tyson Airport	102.10	35.81, -83.99
KRHP	Western Carolina Regional Airport	119.50	35.20, -83.86
KGMU	Greenville Downtown Airport	126.10	34.85, -82.35

- KAVL: [IEM ASOS/METAR daily CSV query](#)
- KTRI: [IEM ASOS/METAR daily CSV query](#)
- KTYS: [IEM ASOS/METAR daily CSV query](#)

5.14 Nearest Radiosonde Stations

STATION	NAME	DISTANCE KM	COORDINATE
USM00072318	BLACKSBURG; VA.	262.70	37.20, -80.41
USM00072317	GREENSBORO/G.-HIGH PT.; NC.	263.90	36.10, -79.94
USM00072215	PEACHTREE CITY; GA.	322.90	33.36, -84.57
USM00072327	NASHVILLE/METROPOLITAN; TN.	333.10	36.23, -86.55
USM00072426	WILMINGTON; OH.	400.40	39.42, -83.82

5.15 ASOS/METAR Surface Weather Observations

surface visibility ranged 10-10 statute miles; no precipitation was reported in the retained observations; low/broken/overcast cloud layers were present in at least one observation. 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
KAVL	59.40	2024-09-15T06:54:00+00:00	10.00	OVC02400, M, M, M	n/a / 3.00	KAVL 150654Z AUTO VRB03KT 10SM OVC024 19/16 A3018 RMK AO2

STATION	DISTANCE KM	NEAREST OBS UTC	VIS SM	SKY	WIND DEG/KT	METAR
						RAB02E13 SLP197 P0000 T01940156
KTRI	76.00	2024-09-15T06:53:00 +00:00	10.00	BKN04400, M, M, M	0.00 / 0.00	KTRI 150653Z 00000KT 10SM BKN044 16/14 A3015 RMK AO2 SLP187 T01610144
KTYS	102.10	2024-09-15T06:53:00 +00:00	10.00	CLR, M, M, M	40.00 / 5.00	KTYS 150653Z 04005KT 10SM CLR 19/15 A3005 RMK AO2 SLP168 T01940150

5.16 NOAA IGRA Radiosonde Wind Profile

Nearest sounding implies mean 0-12 km wind drift toward 219.7 deg at 2.58 m/s; a passive balloon could drift about 18.6 km in two hours under this crude layer-average model. 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
USM00072318	BLACKSBURG; VA.	262.70	2024-09-15T12:00 :00+00:00	219.70	2.58	18.60	35.80 at 14525.00 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	GOES16	BUCKET	noaa-goes16
ABI SAMPLE FILES	12	GLM SAMPLE FILES	12

ABI sample objects:

- [ABI-L2-CMIPF/2024/259/07/OR_ABI-L2-CMIPF-M6C01_G16_s20242590700208_e20242590709516_c20242590709584.nc](#)
- [ABI-L2-CMIPF/2024/259/07/OR_ABI-L2-CMIPF-M6C01_G16_s20242590710208_e20242590719516_c20242590719585.nc](#)
- [ABI-L2-CMIPF/2024/259/07/OR_ABI-L2-CMIPF-M6C01_G16_s20242590720208_e20242590729516_c20242590729585.nc](#)
- [ABI-L2-CMIPF/2024/259/07/OR_ABI-L2-CMIPF-M6C01_G16_s20242590730208_e20242590739516_c20242590739576.nc](#)

GLM lightning sample objects:

- [GLM-L2-LCFA/2024/259/07/OR_GLM-L2-LCFA_G16_s20242590700000_e20242590700200_c20242590700216.nc](#)
- [GLM-L2-LCFA/2024/259/07/OR_GLM-L2-LCFA_G16_s20242590700200_e20242590700400_c20242590700418.nc](#)
- [GLM-L2-LCFA/2024/259/07/OR_GLM-L2-LCFA_G16_s20242590700400_e20242590701000_c20242590701018.nc](#)
- [GLM-L2-LCFA/2024/259/07/OR_GLM-L2-LCFA_G16_s20242590701000_e20242590701200_c20242590701218.nc](#)

5.18 ADSB.lol Historical Aircraft Track Extraction

This layer uses the downloaded ADSB.lol daily history archive to test actual aircraft tracks near the report coordinate and minute. It is not treated as a primary-radar substitute; it is a transponder/receiver-derived aircraft screen.

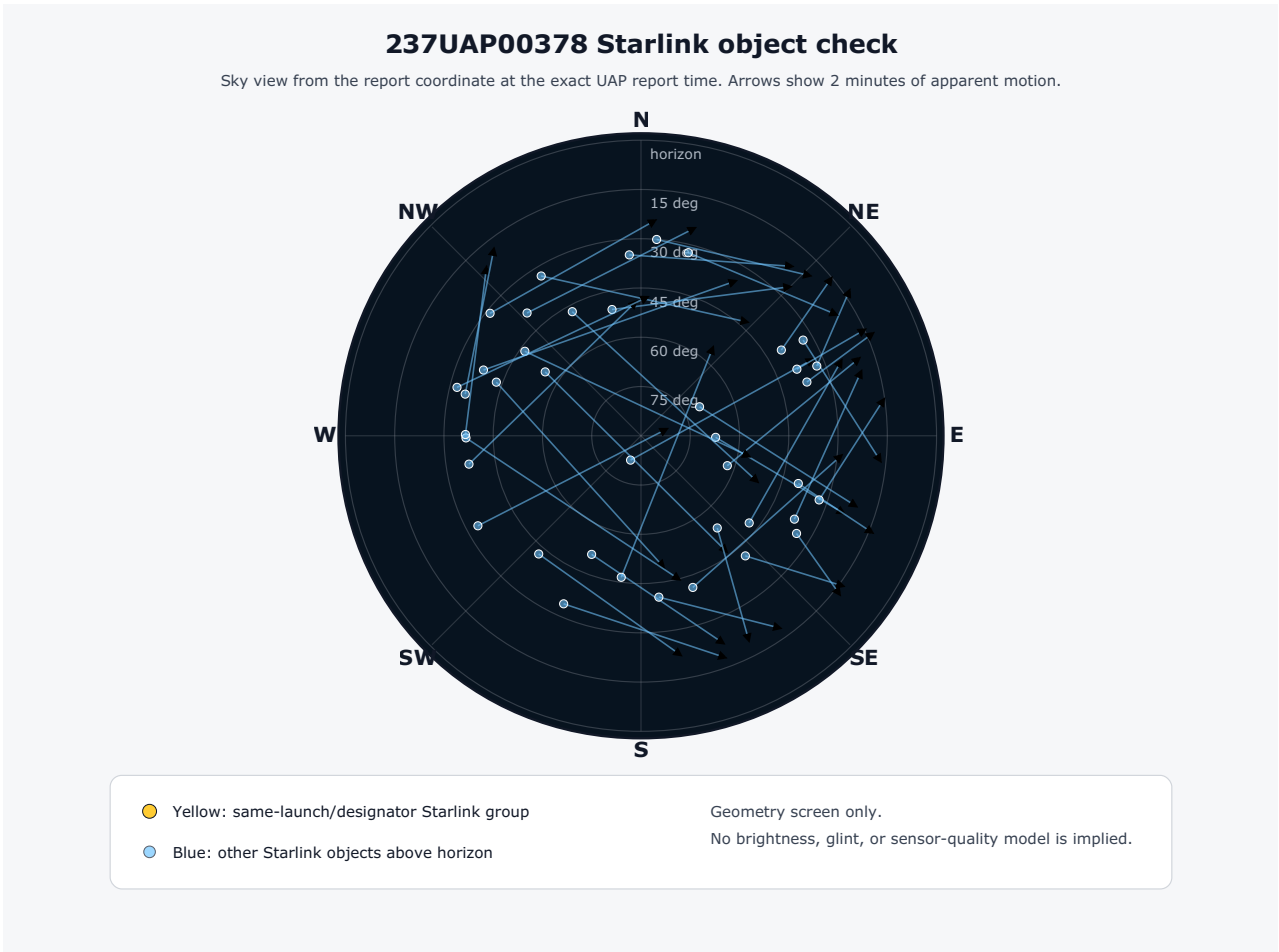
ARCHIVE WINDOW	2024-09-15T06:00:00+00:00 to 2024-09-15T08:30:00+00:00	RADIUS	300.00 nmi
TRACE FILES SCANNED	59403	TRACKS RETAINED	196
SUPPORT STATUS	aircraft plausible candidate present	BEST-CANDIDATE NOTE	ordinary-object favored only if source wording is weak; high-value reports with radar/video/rapid maneuver language remain unresolved residuals.
STRONG CANDIDATES	0	PLAUSIBLE CANDIDATES	9

REPORTING-AIRCRAFT TRACKS EXCLUDED	1	WEAK CANDIDATES	19
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5.19 Top ADS-B Candidate Tracks

AIRCRAFT	STATUS	SCORE	MIN DIST KM	NEAREST DT MIN	ALT FT	AZ	EL
N538QS C68A a6cf94	reporting aircraft track; excluded from support counts	93.82	15.30	0.08	41000	345.90	37.86
F-HUVF A359 39d2a5	plausible aircraft candidate	61.51	105.90	0.01	37000	294.20	5.19
N274AH PC24 a2b560	plausible aircraft candidate	45.02	142.80	0.03	28200	44.20	2.51
N222SH EC30 a1ea07	plausible aircraft candidate	44.59	126.80	0.08	1700	157.40	-0.42
N585QS C68A a789ea	plausible aircraft candidate	40.03	48.80	0.10	16350	222.50	6.79
N200A GLF6 a19203	plausible aircraft candidate	35.90	51.60	0.05	41000	21.10	8.33
N135NK EC35 a08efa	plausible aircraft candidate	30.91	119.40	10.99	1550	178.70	-0.31
N362CM B763 a413f8	plausible aircraft candidate	16.69	62.10	0.03	5350	323.50	3.23

6. Annotated Evidence Figure



Generated figure copied from the local evidence-plot output. It is included as an analytic visualization, not as original sensor imagery.

7. Analytic Comparison

CRITERION	REPORT EVIDENCE	ANALYTIC TREATMENT
TIME CONSTRAINT	2024-09-15T07:15:00+00:00	Directly used in propagation; this is a hard filter, not descriptive context.
LOCATION CONSTRAINT	35.90042, -82.86661	Directly used as observer point for azimuth/elevation/range computation.
COUNT / PATTERN	three-object/light language present	Primary same-launch group contains 4 propagated objects in a compact sky sector.
MOTION LANGUAGE	in trail	Apparent motion labels in the object table provide a plausible but not definitive comparison.
RADAR / OFFICIAL CHECK	not observed on ATC radar	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	normal-object	237UAP00378 is assessed as normal-object favored because the available public evidence gives a case-specific ordinary-object candidate: plausible ADS-B aircraft candidate F-HUVF A359 39d2a5 at 112.8 km, azimuth 294.2 deg, elevation 5.19 deg, 0.01 min from report. Dense satellite presence alone is not treated as causation in this packet.

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.
- Normal-object favored is not the same as a perfect named-object identification; it requires a case-specific ordinary-object candidate stronger than simple object density.

Appendix A. Public Report Text Extracts

237UAP00378

SKYWATCH INCIDENT REPORT

PRIMARY CODE: UNIDENTIFIED AERIAL PHENOMENON
Date: 07:15 09/15/2024
Status: Closed
POD: DEN
Reporting Facility: ZTL

Callsign: EJA538
Aircraft: C68A
Tail Number:
Operator: EJA
Paged: YES

Origin: HOU
Destination: JFK
New Destination:
Operator Type: Commercial
MOR Init: YES
MOR ID: ZTL-M-2024/09/15-0001

REMARKS

Aircraft reported an unidentified aerial phenomenon while NE bound at FL410, 50NM E of VXV. The unknown phenomenon was three white lights in trail of each other at a slightly higher altitude in the distance. The UAP was not observed on ATC facility radar system.

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.

```
{
  "report_time_utc": "2024-09-15T07:15:00+00:00",
  "source_excerpt": "Aircraft reported an unidentified aerial phenomenon while NE bound at FL410, 50NM E of VXV. The unknown phenomenon was three white lights in trail of each other at a slightly higher altitude in the distance. The UAP was not observed on ATC facility radar system.",
  "historical_starlink_element_rows": 6381,
  "observer": {
    "lat": 35.900418918957214,
    "lon": -82.86661425461841,
    "source": "aviation_offset:50NM E of VXV (public text extract 237UAP00378)"
  },
  "case_id": "237UAP00378",
  "starlink_above_horizon_at_report_time": 325,
  "starlink_catalog_ids_considered": 6400,
  "largest_same-sky_cluster_count": 132,
  "starlink_at_or_above_10_deg": 141,
  "same_launch_sky_groups": [
    {
      "azimuth_range_deg": [
        316.83,
        341.49
      ],
      "count": 4,
      "elevation_range_deg": [
        10.86,
        26.02
      ],
      "ground_track_labels": [
        "ENE",
        "ESE",
        "SE"
      ],
      "launch_date": "2021-02-16",
      "members": [
        {
          "azimuth_deg": 341.49,
          "azimuth_plus_2m_deg": 43.61,
          "azimuth_plus_5m_deg": 107.95,
          "element_age_hours": 1.06,
          "element_epoch": "2024-09-15T08:18:34.303968+00:00",
          "elevation_deg": 26.02,
          "elevation_plus_2m_deg": 44.4,
          "elevation_plus_5m_deg": 15.34,
          "epoch_altitude_km": 553.16,
          "ground_track_bearing_deg": 126.17,
          "ground_track_label": "SE",
          "launch_date": "2021-02-16",
          "name": "STARLINK-1992",
          "norad_id": "47632",
          "range_km": 1094.73,
          "sky_motion_label": "eastward, rising",
          "subpoint_lat": 43.6098,
          "subpoint_lon": -86.43
        },
        {
          "azimuth_deg": 327.72,
          "azimuth_plus_2m_deg": 349.84,
          "azimuth_plus_5m_deg": 93.62,
          "element_age_hours": 2.1,
          "element_epoch": "2024-09-15T05:08:53.564640+00:00",
          "elevation_deg": 13.77,
          "elevation_plus_2m_deg": 32.77,
          "elevation_plus_5m_deg": 29.33,
          "epoch_altitude_km": 553.49,
          "ground_track_bearing_deg": 121.44,
          "ground_track_label": "ESE",
          "launch_date": "2021-02-16",
          "name": "STARLINK-2019",
          "norad_id": "47641",
          "range_km": 1586.55,
          "sky_motion_label": "eastward, rising",
          "subpoint_lat": 46.4082,
          "subpoint_lon": -92.7674
        },
        {
          "azimuth_deg": 316.83,
          "azimuth_plus_2m_deg": 347.52,
          "azimuth_plus_5m_deg": 23.36,
          "element_age_hours": 3.46,
          "element_epoch": "2024-09-15T03:47:16.772928+00:00",

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    "elevation_deg": 11.53,
    "elevation_plus_2m_deg": 12.67,
    "elevation_plus_5m_deg": 5.04,
    "epoch_altitude_km": 553.37,
    "ground_track_bearing_deg": 57.52,
    "ground_track_label": "ENE",
    "launch_date": "2021-02-16",
    "name": "STARLINK-2022",
    "norad_id": "47643",
    "range_km": 1717.84,
    "sky_motion_label": "eastward, rising",
    "subpoint_lat": 45.4468,
    "subpoint_lon": -96.5468
  },
  {
    "azimuth_deg": 336.72,
    "azimuth_plus_2m_deg": 4.45,
    "azimuth_plus_5m_deg": 32.28,
    "element_age_hours": 2.87,
    "element_epoch": "2024-09-15T10:07:27.762240+00:00",
    "elevation_deg": 10.86,
    "elevation_plus_2m_deg": 8.97,
    "elevation_plus_5m_deg": 1.03,
    "epoch_altitude_km": 553.37,
    "ground_track_bearing_deg": 65.05,
    "ground_track_label": "ENE",
    "launch_date": "2021-02-16",
    "name": "STARLINK-2057",
    "norad_id": "47666",
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    "name": "STARLINK-32086",
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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: 237UAP00378
TIME AND OBSERVER COORDINATE	extracted	2024-09-15T07:15:00+00:00 at 35.90042, -82.86661
ORBITAL OBJECT PROPAGATION	screened	Starlink
SPACE-TRACK SATCAT METADATA	screened	34 NORAD IDs checked; 34 matched in local SATCAT subset
LAUNCH-OBJECT/SUPGP LAYER	not applicable	not a launch-object case
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	screened	59403 trace files scanned; 196 tracks retained; aircraft plausible candidate present
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	normal-object favored	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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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. *237UAP00378.pdf, FAA UAP report record copied from RG 615 bulk digital objects*. <https://s3.dualstack.us-east-1.amazonaws.com/NARAprdstorage/lz/electronic-records/rg-615/493468575/237UAP00378.pdf>
6. Hugging Face dataset. *oxzoid/space-track-tle-history: historical TLE archive used for Starlink screening*. <https://huggingface.co/datasets/oxzoid/space-track-tle-history>
7. Space-Track.org. *Public source for the underlying U.S. Space Surveillance Network TLE distribution referenced by the historical TLE archive*. <https://www.space-track.org/>
8. Space-Track.org. *API documentation for SATCAT and catalog metadata classes used for local enrichment*. <https://www.space-track.org/documentation#/api>
9. ADSB.lol. *Interactive API documentation and OpenAPI definition*. <https://api.adsb.lol/docs>
10. ADSB.lol. *Historical open-data release documentation*. <https://www.adsb.lol/docs/open-data/historical/>
11. OpenSky Network. *REST API documentation*. <https://openskynetwork.github.io/opensky-api/rest.html>
12. OpenSky Network. *Historical data via Trino documentation*. <https://openskynetwork.github.io/opensky-api/trino.html>
13. NASA GIBS. *Global Imagery Browse Services API documentation*. <https://nasa-gibs.github.io/gibs-api-docs/>
14. NASA Earthdata. *Common Metadata Repository search API documentation*. <https://cmr.earthdata.nasa.gov/search/site/docs/search/api.html>
15. NOAA / AWS Open Data. *GOES public dataset registry*. <https://registry.opendata.aws/noaa-goes/>
16. NOAA / AWS Open Data. *NEXRAD public dataset registry*. <https://registry.opendata.aws/noaa-nexrad/>
17. NOAA NCEI. *Integrated Global Radiosonde Archive*. <https://www.ncei.noaa.gov/products/weather-balloon/integrated-global-radiosonde-archive>
18. Iowa Environmental Mesonet. *ASOS/AWOS/METAR data download service*. <https://mesonet.agron.iastate.edu/request/download.phtml>
19. CelesTrak. *Spacetrack Report No. 3: Models for propagation of NORAD element sets*. <https://celestrak.org/NORAD/documentation/spacetrk.pdf>
20. CelesTrak. *Supplemental GP element sets documentation and current endpoint index*. <https://celestrak.org/NORAD/elements/supplemental/>