

CASE FILE 48 / 237UAP00341

237UAP00341

Radar/correlation-focused public UAP report; score 54

NORMAL-OBJECT FAVORED

REPORT NO.	UAP-OM-48-237UAP00341	DISPOSITION	NORMAL-OBJECT FAVORED
PRIMARY CASE	237UAP00341	GENERATED	2026-05-20 18:32 UTC
REPORT TIME	2024-01-20T02:50:00+00:00	OBSERVER	34.91595, -93.69700
SOURCE CASE IDS	237UAP00341		

Abstract

This case file evaluates a reported UAP sighting against the available orbital-object layer. No compact same-launch group fully identifies the file by itself. The final disposition is assigned under a normal-object favored standard, where ordinary aerospace/orbital explanations are preferred when they reasonably fit the report.

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

237UAP00341 is assessed as normal-object favored because the available public evidence gives a case-specific ordinary-object candidate: strong ADS-B aircraft candidate N954AN B738 ad4390 at 60.9 km, azimuth 317.3 deg, elevation 9.38 deg, 0.02 min from report. Dense satellite presence alone is not treated as causation in this packet.

1.1 Key Findings

- Source score 54 based on: radar/primary-return language, negative official correlation, UAP/UFO language.
- Report time used: 2024-01-20T02:50:00+00:00.
- External object layer used: public LEO catalog objects.
- 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: strong ADS-B aircraft candidate N954AN B738 ad4390 at 60.9 km, azimuth 317.3 deg, elevation 9.38 deg, 0.02 min from report.
- Non-causal context / rejection screens: very dense orbital-object sky background; context only, not causation.
- Remaining hard features: hard maneuver language.
- Objects above horizon: 1034; at/above 10 deg: 469.
- No compact same-launch/designator group survived the report threshold.
- 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
237UAP00341	02:50 01/20/2024 Callsign: DAL2784 Origin: ATL	ZME Operator: DAL Operator Type: Commercial	text extract present	237UAP00341.pdf

3. Original Report Evidence

PRIMARY EXCERPT USED FOR MATCHING	Aircraft reported an unidentified aerial phenomenon off the 12 o'clock while W bound at 32,000 feet, 40 NM SE of FSM. L/L coordinates 3501N/9441W. The unknown phenomenon was multiple lights approximately 80 miles in the distance maneuvering at an unknown altitude above them at the KOMMA Intersection. Observation was visually without utilizing on board equipment. The UAP was not observed on ATC facility radar systems. AWO notified.
REPORT TIME USED	2024-01-20T02:50:00+00:00
OBSERVER COORDINATE USED	34.91595, -93.69700
OBSERVER SOURCE BASIS	aviation_offset:40 NM SE of FSM (public text extract 237UAP00341)

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 public LEO catalog objects element rows. The analytic mode for this case is historical public LEO catalog objects 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.

PUBLIC LEO CATALOG OBJECTS CATALOG IDS CONSIDERED	19370	HISTORICAL ELEMENT ROWS	19370
ABOVE HORIZON AT REPORT MINUTE	1034	AT/ABOVE 10 DEG	469
LARGEST SAME-SKY CLUSTER	468		

No compact same-launch/designator group survived the report threshold. In this condition, satellite density remains context only and cannot by itself resolve a report with hard features.

5.2 Same-Launch / Same-Designator Candidate Groups

#	LAUNCH DATE	COUNT	AZIMUTH SPAN	ELEVATION SPAN	MOTION LABELS	MEMBERS
No same-launch group identified.						

5.3 Primary Group Members

OBJECT	NORAD	LAUNCH	AZ	EL	RANGE KM	APPARENT MOTION	ELEMENT AGE H
No members available.							

5.4 Bright-Sky Context: Top public LEO catalog objects Objects by Elevation

OBJECT	AZ	EL	RANGE KM	APPARENT MOTION	LAUNCH DATE
NORAD 28620	32.39	83.82	1133.78	eastward, setting	66040AK
NORAD 36416	307.68	83.72	1354.16	westward, setting	10009D
NORAD 41220	322.7	82.8	867.01	eastward, setting	00055DZ
NORAD 43521	52.02	82.25	532.14	eastward, setting	18054D
NORAD 22604	112.51	74.52	1118.66	westward, setting	93016N
NORAD 57513	265.45	71.7	588.45	westward, setting	23113U
NORAD 8288	254.13	70.83	1571.08	eastward, setting	75086D
NORAD 51322	298.57	70.62	441.0	eastward, setting	82092BEQ
NORAD 51997	139.09	68.44	578.6	westward, setting	22025AT
NORAD 46333	204.59	67.97	588.41	westward, setting	20062J
NORAD 13017	13.04	66.05	990.02	eastward, setting	81053EP
NORAD 14624	120.02	65.19	1065.41	westward, setting	84003A

5.5 Largest Sky Clusters

#	COUNT	AZIMUTH SPAN	ELEVATION SPAN	MOTION LABELS
1	468	0.66-359.39 deg	10.07-83.82 deg	eastward, level, eastward, rising, eastward, setting, nearly fixed azimuth, setting, westward, level, westward, rising, westward, setting
2	1	204.59-204.59 deg	67.97-67.97 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	30	SATCAT ROWS MATCHED	29
TOP OWNERS	US: 11, CIS: 9, PRC: 5, UK: 2, FIN: 1, GLOB: 1		
OBJECT TYPES	DEBRIS: 14, PAYLOAD: 12, ROCKET BODY: 3		

5.7 Space-Track Metadata for Top Propagated Objects

NORAD	OBJECT NAME	TYPE	OWNER	LAUNCH DATE	DECAY DATE
28620	NIMBUS 2 DEB	DEBRIS	US	1966-05-15	n/a
36416	CZ-4C R/B	ROCKET BODY	PRC	2010-03-05	n/a
41220	NOAA 16 DEB	DEBRIS	US	2000-09-21	n/a
43521	CZ-2C R/B	ROCKET BODY	PRC	2018-06-27	2026-02-28
22604	SL-16 DEB	DEBRIS	CIS	1993-03-26	n/a
57513	STARLINK-30168	PAYLOAD	US	2023-08-07	n/a
8288	COSMOS 764	PAYLOAD	CIS	1975-09-17	n/a
51322	COSMOS 1408 DEB	DEBRIS	CIS	1982-09-16	2024-06-08
51997	STARLINK-3589	PAYLOAD	US	2022-03-09	n/a
46333	STARLINK-1723	PAYLOAD	US	2020-09-03	2026-03-06
13017	COSMOS 1275 DEB	DEBRIS	CIS	1981-06-04	n/a
14624	COSMOS 1531	PAYLOAD	CIS	1984-01-11	n/a

5.9 NASA / NOAA / ADS-B Expansion Layer

This source layer adds free NASA context that was previously missing from most packet cases. It is contextual evidence; it does not replace aircraft, satellite, balloon, or radar causation tests.

HOURLY UTC	2024012002
CLOUD AMOUNT	1.05%
PRECIPITATION	0.0 mm/hr
10 M WIND	2.02 m/s
TEMPERATURE	-7.46 C
RELATIVE HUMIDITY	70.97%
DONKI +/-1 DAY	CME: unavailable; FLR: unavailable; GST: unavailable; HSS: unavailable; IPS: unavailable; MPC: unavailable; RBE: unavailable; SEP: unavailable; WSAEnliSimulations: unavailable

5.10 Horizons Sky Geometry Context

OBJECT	AZ	EL	APP MAG
Sun	272.47	-40.66	-26.78
Moon	232.59	69.59	-11.01
Venus	304.44	-69.83	-3.97
Mars	280.90	-57.75	1.37
Jupiter	241.92	52.39	-2.44

OBJECT	AZ	EL	APP MAG
Saturn	260.97	-6.54	0.98

- Sun elevation was -40.7 deg, so this was a dark-sky/nighttime sighting.
- Moon was above horizon at azimuth 232.6 deg / elevation 69.6 deg.
- Planets above horizon: Jupiter (52.4 deg).
- NASA POWER cloud amount for the hour was 1.05%, with precipitation 0.0 mm/hr.

5.11 Free Source Availability and Remaining Work

LAYER	STATUS	CASE-SPECIFIC NOTE
ADSB.LOL HISTORICAL RELEASE LISTING	screened/present	planes-readsb-staging-0 1486.0 MiB; planes-readsb-prod-0 1486.0 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.
ASOS/METAR WEATHER OBSERVATIONS	screened/present	Nearest station surface observations around report time.

- ADSB.lol historical: extract aircraft traces from adsb-lol/globe_history_2024 for 2024-01-20, then filter +/-60 min and 250 nmi around 34.9160,-93.6970.
- NASA POWER/Horizons/DONKI: batch context for 237UAP00341 at 2024-01-20T02:50:00+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/2024/020/02/
GOES GLM LIGHTNING PREFIX	https://noaa-goes16.s3.amazonaws.com/GLM-L2-LCFA/2024/020/02/

5.13 Nearest Weather-Airport Candidates

STATION	NAME	DISTANCE KM	COORDINATE
KHOT	Memorial Field Airport	73.30	34.48, -93.10
KFSM	Fort Smith Regional Airport	76.80	35.34, -94.37
KSUZ	Saline County Regional Airport	117.00	34.59, -92.48
KFYV	Drake Field	128.50	36.01, -94.17
KLIT	Bill & Hillary Clinton National Airport/ Adams Field	136.10	34.73, -92.22

- KHOT: [IEM ASOS/METAR daily CSV query](#)
- KFSM: [IEM ASOS/METAR daily CSV query](#)
- KSUZ: [IEM ASOS/METAR daily CSV query](#)

5.14 Nearest Radiosonde Stations

STATION	NAME	DISTANCE KM	COORDINATE
USM00072340	LITTLE ROCK/ADAMS FLD; AR.	131.50	34.84, -92.26
USM00072440	SPRINGFIELD/MUN.; MO.	259.20	37.23, -93.40
USM00072248	SHREVEPORT/REG.; LA.	274.40	32.45, -93.84
USM00072357	NORMAN/MAX WESTHEIMER A; OK.	341.80	35.18, -97.44
USM00074646	LAMONT	390.90	36.60, -97.50

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
KHOT	73.30	2024-01-20T02:53:00 +00:00	10.00	CLR, M, M, M	340.00 / 3.00	KHOT 200253Z AUTO 34003KT 10SM CLR M04/M14 A3051 RMK AO2 SLP338 T10391139 51010
KFSM	76.80	2024-01-20T02:53:00 +00:00	10.00	CLR, M, M, M	310.00 / 6.00	KFSM 200253Z 31006KT 10SM CLR M07/M16 A3058 RMK AO2 SLP362 T10671156 51007
KSUZ	117.00	2024-01-20T02:55:00 +00:00	n/a	M, M, M, M	n/a / n/a	KSUZ 200255Z AUTO RMK A01 PNO

5.16 NOAA IGRA Radiosonde Wind Profile

Nearest sounding implies mean 0-12 km wind drift toward 287.2 deg at 19.25 m/s; a passive balloon could drift about 138.6 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
USM00072340	LITTLE ROCK/ ADAMS FLD; AR.	131.50	2024-01-20T00:00 :00+00:00	287.20	19.25	138.60	65.10 at 30862.00 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/2024/020/02/OR_ABI-L2-CMIPF-M6C01_G16_s20240200200208_e20240200209516_c20240200209591.nc](#)
- [ABI-L2-CMIPF/2024/020/02/OR_ABI-L2-CMIPF-M6C01_G16_s20240200210208_e20240200219516_c20240200219590.nc](#)
- [ABI-L2-CMIPF/2024/020/02/OR_ABI-L2-CMIPF-M6C01_G16_s20240200220208_e20240200229516_c20240200229571.nc](#)
- [ABI-L2-CMIPF/2024/020/02/OR_ABI-L2-CMIPF-M6C01_G16_s20240200230208_e20240200239516_c20240200239597.nc](#)

GLM lightning sample objects:

- [GLM-L2-LCFA/2024/020/02/OR_GLM-L2-LCFA_G16_s20240200200000_e20240200200200_c20240200200220.nc](#)
- [GLM-L2-LCFA/2024/020/02/OR_GLM-L2-LCFA_G16_s20240200200200_e20240200200400_c20240200200419.nc](#)
- [GLM-L2-LCFA/2024/020/02/OR_GLM-L2-LCFA_G16_s20240200200400_e20240200201000_c20240200201022.nc](#)
- [GLM-L2-LCFA/2024/020/02/OR_GLM-L2-LCFA_G16_s20240200201000_e20240200201200_c20240200201221.nc](#)

5.18 ADSB.lol Historical Aircraft Track Extraction

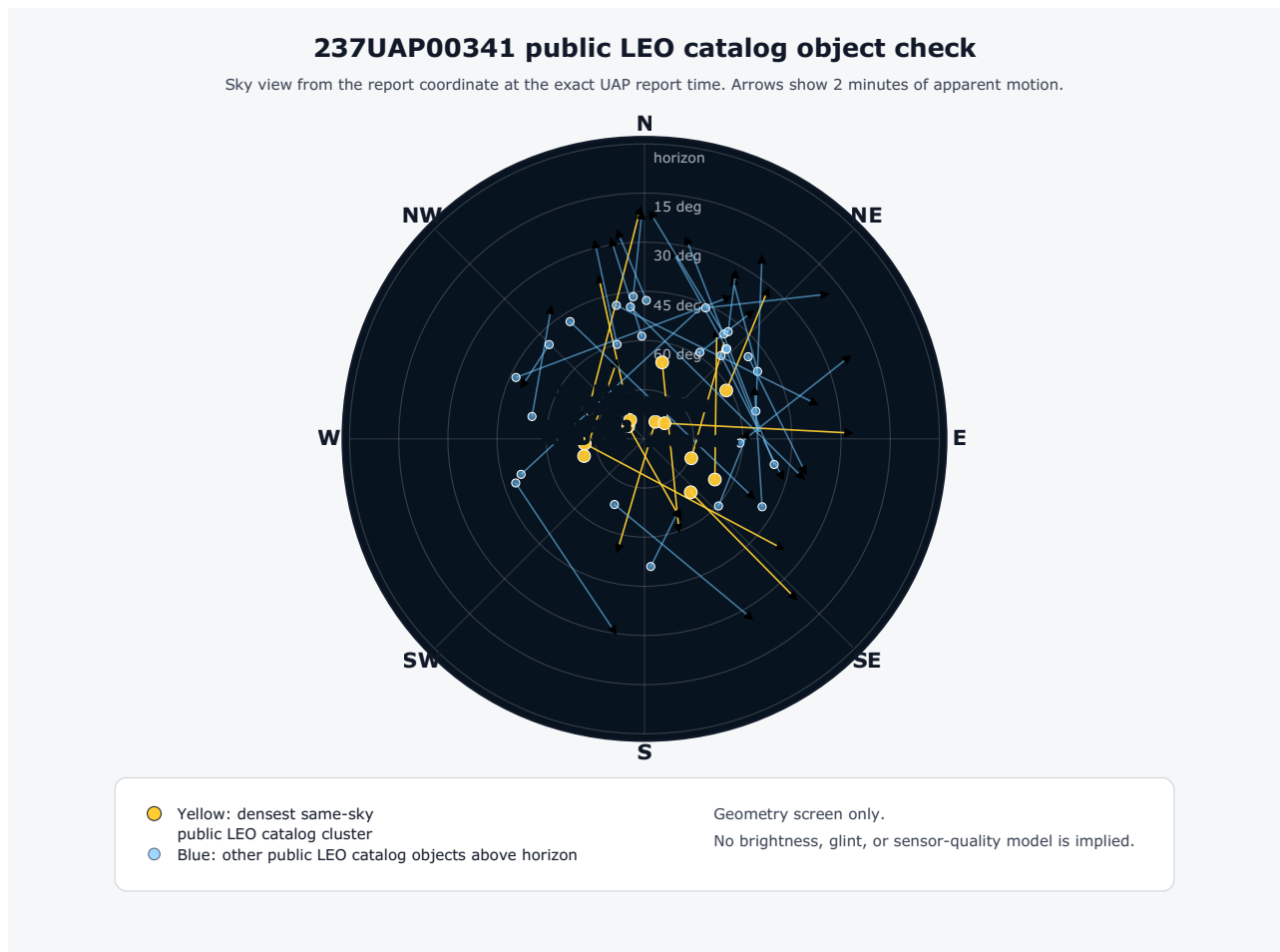
This layer uses the downloaded ADSB.lol daily history archive to test actual aircraft tracks near the report coordinate and minute. It is not treated as a primary-radar substitute; it is a transponder/receiver-derived aircraft screen.

ARCHIVE WINDOW	2024-01-20T01:50:00+00:00 to 2024-01-20T03:50:00+00:00	RADIUS	250.00 nmi
TRACE FILES SCANNED	36806	TRACKS RETAINED	800
SUPPORT STATUS	aircraft strong candidate present	BEST-CANDIDATE NOTE	ordinary-object favored if the report's count, color, direction, and motion can be reconciled with the candidate track(s).
STRONG CANDIDATES	10	PLAUSIBLE CANDIDATES	67
REPORTING-AIRCRAFT TRACKS EXCLUDED	2	WEAK CANDIDATES	107

5.19 Top ADS-B Candidate Tracks

AIRCRAFT	STATUS	SCORE	MIN DIST KM	NEAREST DT MIN	ALT FT	AZ	EL
N954AN B738 ad4390	strong aircraft candidate	75.87	60.80	0.02	34000	317.30	9.38
N706GD GA7C a96b72	strong aircraft candidate	74.52	2.30	0.07	45000	96.30	23.62
N852NN B738 abafff	strong aircraft candidate	66.90	75.50	0.05	35000	157.20	7.29
N612NN CRJ9 a7f765	strong aircraft candidate	66.08	60.80	0.01	28000	171.90	7.18
N208WN B737 a1b1bc	strong aircraft candidate	64.70	28.60	0.05	38000	332.00	11.70
N5153A B738 a676c4	strong aircraft candidate	63.32	68.10	0.11	35925	203.50	7.47
C-FEJC E75S c00b7d	strong aircraft candidate	63.03	76.60	0.11	36000	324.20	7.54
N558WN B737 a71f24	strong aircraft candidate	61.57	63.20	0.07	41000	17.60	10.31

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	2024-01-20T02:50:00+00:00	Directly used in propagation; this is a hard filter, not descriptive context.
LOCATION CONSTRAINT	34.91595, -93.69700	Directly used as observer point for azimuth/elevation/range computation.
COUNT / PATTERN	two-object/light language present	No compact same-launch count match; retained for unresolved report features.
MOTION LANGUAGE	not explicit	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	237UAP00341 is assessed as normal-object favored because the available public evidence gives a case-specific ordinary-object candidate: strong ADS-B aircraft candidate N954AN B738 ad4390 at 60.9 km, azimuth 317.3 deg, elevation 9.38 deg, 0.02 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

237UAP00341

SKYWATCH INCIDENT REPORT

PRIMARY CODE: UNIDENTIFIED AERIAL PHENOMENON

Date: 02:50 01/20/2024
Status: Closed
POD: DEN
Reporting Facility: ZME

Callsign: DAL2784
Aircraft: B717
Tail Number:
Operator: DAL

Origin: ATL
Destination: OKC
New Destination:
Operator Type: Commercial
Paged: YES

REMARKS

Aircraft reported an unidentified aerial phenomenon off the 12 o'clock while W bound at 32,000 feet, 40 NM SE of FSM. L/L coordinates 3501N/9441W. The unknown phenomenon was multiple lights approximately 80 miles in the distance maneuvering at an unknown altitude above them at the KOMMA Intersection. Observation was visually without utilizing on board equipment. The UAP was not observed on ATC facility radar systems. AWO notified.

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": "2024-01-20T02:50:00+00:00",
  "source_excerpt": "Aircraft reported an unidentified aerial phenomenon off the 12 o'clock while W bound at 32,000 feet, 40 NM SE of FSM. L/L coordinates 3501N/9441W. The unknown phenomenon was multiple lights approximately 80 miles in the distance maneuvering at an unknown altitude above them at the KOMMA Intersection. Observation was visually without utilizing on board equipment. The UAP was not observed on ATC facility radar systems. AWO notified.",
  "historical_starlink_element_rows": 19370,
  "observer": {
    "lat": 34.915951729882174,
    "lon": -93.69700158237595,
    "source": "aviation_offset:40 NM SE of FSM (public text extract 237UAP00341)"
  },
  "case_id": "237UAP00341",
  "starlink_above_horizon_at_report_time": 1034,
  "starlink_catalog_ids_considered": 19370,
  "largest_same-sky_cluster_count": 468,
  "starlink_at_or_above_10_deg": 469,
  "top_starlinks": [
    {
      "azimuth_deg": 32.39,
      "azimuth_plus_2m_deg": 193.54,
      "azimuth_plus_5m_deg": 195.55,
      "element_age_hours": 35.05,
      "element_epoch": "2024-01-21T13:53:02.495904+00:00",
      "elevation_deg": 83.82,
      "elevation_plus_2m_deg": 54.75,
      "elevation_plus_5m_deg": 21.88,
      "epoch_altitude_km": 1043.6,
      "ground_track_bearing_deg": 196.38,
      "ground_track_label": "SSW",
      "launch_date": "66040AK",
      "launch_designator": "66040AK",
      "name": "NORAD 28620",
      "norad_id": "28620",
      "range_km": 1133.78,
      "sky_motion_label": "eastward, setting",
      "subpoint_lat": 35.7035,
      "subpoint_lon": -93.0829
    },
    {
      "azimuth_deg": 307.68,
      "azimuth_plus_2m_deg": 155.76,
      "azimuth_plus_5m_deg": 152.99,
      "element_age_hours": 2.41,
      "element_epoch": "2024-01-20T00:25:31.624032+00:00",
      "elevation_deg": 83.72,
      "elevation_plus_2m_deg": 63.33,
      "elevation_plus_5m_deg": 32.33,
      "epoch_altitude_km": 546.45,
      "ground_track_bearing_deg": 150.31,
      "ground_track_label": "SSE",
      "launch_date": "10009D",
      "launch_designator": "10009D",
      "name": "NORAD 36416",
      "norad_id": "36416",
      "range_km": 1354.16,
      "sky_motion_label": "westward, setting",
      "subpoint_lat": 35.5842,
      "subpoint_lon": -94.7645
    },
    {
      "azimuth_deg": 322.7,
      "azimuth_plus_2m_deg": 344.21,
      "azimuth_plus_5m_deg": 346.19,
      "element_age_hours": 0.17,
      "element_epoch": "2024-01-20T02:39:48.489696+00:00",
      "elevation_deg": 82.8,
      "elevation_plus_2m_deg": 38.44,
      "elevation_plus_5m_deg": 11.81,
      "epoch_altitude_km": 838.21,
      "ground_track_bearing_deg": 346.41,
      "ground_track_label": "NNW",
      "launch_date": "00055DZ",
      "launch_designator": "00055DZ",
      "name": "NORAD 41220",
      "norad_id": "41220",
      "range_km": 867.01,
      "sky_motion_label": "eastward, setting",
      "subpoint_lat": 35.6002,
      "subpoint_lon": -94.3372
    }
  ]
}
```

```

},
{
  "azimuth_deg": 52.02,
  "azimuth_plus_2m_deg": 88.39,
  "azimuth_plus_5m_deg": 90.49,
  "element_age_hours": 2.74,
  "element_epoch": "2024-01-20T05:34:26.820768+00:00",
  "elevation_deg": 82.25,
  "elevation_plus_2m_deg": 26.8,
  "elevation_plus_5m_deg": 4.34,
  "epoch_altitude_km": 458.12,
  "ground_track_bearing_deg": 91.55,
  "ground_track_label": "E",
  "launch_date": "18054D",
  "launch_designator": "18054D",
  "name": "NORAD 43521",
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  "launch_designator": "75086D",
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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: 237UAP00341
TIME AND OBSERVER COORDINATE	extracted	2024-01-20T02:50:00+00:00 at 34.91595, -93.69700
ORBITAL OBJECT PROPAGATION	screened	public LEO catalog objects
SPACE-TRACK SATCAT METADATA	screened	30 NORAD IDs checked; 29 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	screened	Hourly weather, sky geometry, and space-weather context where local JSON is present
AIRCRAFT/ADS-B LAYER	screened	36806 trace files scanned; 800 tracks retained; aircraft strong 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

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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. *237UAP00341.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-615/493468575/237UAP00341.pdf>
6. Hugging Face dataset. *oxzoid/space-track-tle-history: historical TLE archive used for public LEO catalog objects 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/>
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9. NASA POWER. *Hourly point API documentation for meteorological context*. <https://power.larc.nasa.gov/docs/services/api/temporal/hourly/>
10. NASA/JPL Solar System Dynamics. *Horizons API documentation for observer geometry and apparent magnitude queries*. <https://ssd-api.jpl.nasa.gov/doc/horizons.html>
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22. Celestrak. *Spacetrack Report No. 3: Models for propagation of NORAD element sets*. <https://celestrak.org/NORAD/documentation/spacetrk.pdf>
23. Celestrak. *Supplemental GP element sets documentation and current endpoint index*. <https://celestrak.org/NORAD/elements/supplemental/>