

CASE FILE 45 / 237UAP00332

# 237UAP00332

Radar/correlation-focused public UAP report; score 54

NORMAL-OBJECT FAVORED

REPORT NO.	UAP-OM-45-237UAP00332	DISPOSITION	NORMAL-OBJECT FAVORED
PRIMARY CASE	237UAP00332	GENERATED	2026-05-20 18:32 UTC
REPORT TIME	2023-12-23T11:35:00+00:00	OBSERVER	39.82677, -91.41278
SOURCE CASE IDS	237UAP00332		

## 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

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237UAP00332 is assessed as normal-object favored because the available public evidence gives a case-specific ordinary-object candidate: strong ADS-B aircraft candidate N472WN B737 a5ca89 at 24.2 km, azimuth 32.8 deg, elevation 25.49 deg, 7.82 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: 2023-12-23T11:35:00+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 N472WN B737 a5ca89 at 24.2 km, azimuth 32.8 deg, elevation 25.49 deg, 7.82 min from report.
- Non-causal context / rejection screens: very dense orbital-object sky background; context only, not causation.
- Objects above horizon: 1129; at/above 10 deg: 558.
- 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

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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
237UAP00332	11:35 12/23/2023 Callsign: UAL1605 Origin: LAX	ZKC Operator: UAL Operator Type: Commercial	text extract present	<a href="#">237UAP00332.pdf</a>

### 3. Original Report Evidence

PRIMARY EXCERPT USED FOR MATCHING	Aircraft reported an unidentified aerial phenomenon off the left side while E bound at FL350, 80 NM W of SPI. The unknown phenomenon was lights that were moving erratically traveling in random directions at approximately unknown altitude. The UAP was not observed on ATC facility radar system.
REPORT TIME USED	2023-12-23T11:35:00+00:00
OBSERVER COORDINATE USED	39.82677, -91.41278
OBSERVER SOURCE BASIS	aviation_offset:80 NM W of SPI (public text extract 237UAP00332)

### 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	18891	HISTORICAL ELEMENT ROWS	18891
ABOVE HORIZON AT REPORT MINUTE	1129	AT/ABOVE 10 DEG	558
LARGEST SAME-SKY CLUSTER	558		

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 44509	315.06	87.27	1394.5	westward, setting	92052G
NORAD 47275	300.49	82.81	1225.8	eastward, setting	20100T
NORAD 7166	237.06	80.06	1515.07	westward, setting	73086EE
NORAD 54455	169.39	78.25	986.35	eastward, setting	22151GF
NORAD 26111	33.49	76.51	1517.62	westward, setting	87020DS
NORAD 31576	111.73	74.32	1461.21	eastward, setting	07020F
NORAD 56029	274.72	74.21	582.48	eastward, setting	23042AV
NORAD 58351	134.41	73.1	371.28	westward, setting	23177A
NORAD 54449	93.89	72.19	999.99	eastward, setting	22151FZ
NORAD 13827	231.69	67.31	748.57	westward, setting	78026FW
NORAD 10623	159.54	66.71	1873.95	westward, setting	76067AX
NORAD 38416	309.55	66.38	1399.19	westward, setting	65027DV

### 5.5 Largest Sky Clusters

#	COUNT	AZIMUTH SPAN	ELEVATION SPAN	MOTION LABELS
1	558	1.2-359.92 deg	10.01-87.27 deg	eastward, level, eastward, rising, eastward, setting, nearly fixed azimuth, rising, nearly fixed azimuth, setting, westward, level, westward, rising, 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	30
TOP OWNERS	US: 12, CIS: 9, PRC: 6, FR: 1, GLOB: 1, UK: 1		
OBJECT TYPES	DEBRIS: 21, PAYLOAD: 8, ROCKET BODY: 1		

5.7 Space-Track Metadata for Top Propagated Objects

NORAD	OBJECT NAME	TYPE	OWNER	LAUNCH DATE	DECAY DATE
44509	ARIANE 42P DEB	DEBRIS	FR	1992-08-10	n/a
47275	ONEWEB-0129	PAYLOAD	UK	2020-12-18	n/a
7166	DELTA 1 DEB	DEBRIS	US	1973-11-06	n/a
54455	CZ-6A DEB	DEBRIS	PRC	2022-11-11	n/a
26111	COSMOS 1823 DEB	DEBRIS	CIS	1987-02-20	n/a
31576	GLOBALSTAR M071	PAYLOAD	GLOB	2007-05-29	n/a
56029	STARLINK-5774	PAYLOAD	US	2023-03-24	n/a
58351	STARLINK-30901	PAYLOAD	US	2023-11-18	2024-05-02
54449	CZ-6A DEB	DEBRIS	PRC	2022-11-11	n/a
13827	DELTA 1 DEB	DEBRIS	US	1978-03-05	n/a
10623	COSMOS 839 DEB	DEBRIS	CIS	1976-07-08	n/a
38416	OPS 4682 DEB	DEBRIS	US	1965-04-03	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	2023122311
CLOUD AMOUNT	97.44%
PRECIPITATION	0.29 mm/hr
10 M WIND	2.75 m/s
TEMPERATURE	7.72 C
RELATIVE HUMIDITY	100.0%
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	104.17	-20.21	-26.78
Moon	310.73	-14.79	-11.62
Venus	124.80	13.24	-4.07
Mars	110.80	-12.04	1.43
Jupiter	315.92	-26.20	-2.66

OBJECT	AZ	EL	APP MAG
Saturn	36.43	-57.60	0.94

- Sun elevation was -20.2 deg, so this was a dark-sky/nighttime sighting.
- Moon was below horizon at elevation -14.8 deg.
- Planets above horizon: Venus (13.2 deg).
- NASA POWER cloud amount for the hour was 97.44%, with precipitation 0.29 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 1430.5 MiB; planes-readsb-prod-0 1431.5 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 2023-12-23, then filter +/-60 min and 250 nmi around 39.8268,-91.4128.
- NASA POWER/Horizons/DONKI: batch context for 237UAP00332 at 2023-12-23T11:35:00+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	<a href="https://noaa-goes16.s3.amazonaws.com/ABI-L2-CMIPF/2023/357/11/">https://noaa-goes16.s3.amazonaws.com/ABI-L2-CMIPF/2023/357/11/</a>
GOES GLM LIGHTNING PREFIX	<a href="https://noaa-goes16.s3.amazonaws.com/GLM-L2-LCFA/2023/357/11/">https://noaa-goes16.s3.amazonaws.com/GLM-L2-LCFA/2023/357/11/</a>

### 5.13 Nearest Weather-Airport Candidates

STATION	NAME	DISTANCE KM	COORDINATE
KUIN	Quincy Regional Airport Baldwin Field	22.60	39.94, -91.19
KIRK	Kirkville Regional Airport	100.90	40.09, -92.54
KBRL	Southeast Iowa Regional Airport	109.10	40.78, -91.13
KCOU	Columbia Regional Airport	131.90	38.82, -92.22
KSUS	Spirit of St Louis Airport	145.10	38.66, -90.65

- KUIN: [IEM ASOS/METAR daily CSV query](#)
- KIRK: [IEM ASOS/METAR daily CSV query](#)
- KBRL: [IEM ASOS/METAR daily CSV query](#)

### 5.14 Nearest Radiosonde Stations

STATION	NAME	DISTANCE KM	COORDINATE
USM00074560	LINCOLN; IL.	180.40	40.15, -89.34
USM00074455	QUAD CITY; IA.	210.40	41.61, -90.58
USM00072440	SPRINGFIELD/MUN.; MO.	336.10	37.23, -93.40
USM00072456	TOPEKA/MUN.; KS.	371.70	39.07, -95.63
USM00072558	VALLEY; NE.	450.10	41.32, -96.37

### 5.15 ASOS/METAR Surface Weather Observations

surface visibility ranged 0.25-4 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
KUIN	22.60	2023-12-23T11:54:00 +00:00	4.00	OVC00500, M, M, M	210.00 / 6.00	KUIN 231154Z AUTO 21006KT 4SM BR OVC005 11/10 A3009 RMK AO2 SLP190 70010 T01060100 10111 20094 53005
KIRK	100.90	2023-12-23T11:55:00 +00:00	2.50	OVC00400, M, M, M	240.00 / 5.00	KIRK 231155Z AUTO 24005KT 2 1/2SM BR OVC004 10/10 A3009 RMK AO2 CIG 003V007 SLP194 60000 70016 T01000100 10106 20100 53005
KBRL	109.10	2023-12-23T11:53:00 +00:00	0.25	VV00100, M, M, M	200.00 / 3.00	KBRL 231153Z AUTO 20003KT 1/4SM FG VV001 10/10 A3007 RMK AO2 SLP186 60001 70019 T01000100 10100 20100 53005

### 5.16 NOAA IGRA Radiosonde Wind Profile

Nearest sounding implies mean 0-12 km wind drift toward 249.7 deg at 13.45 m/s; a passive balloon could drift about 96.8 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
USM00074560	LINCOLN; IL.	180.40	2023-12-23T12:00 :00+00:00	249.70	13.45	96.80	35.60 at 21512.00 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/2023/357/11/OR\\_ABI-L2-CMIPF-M6C01\\_G16\\_s20233571100210\\_e20233571109518\\_c20233571109590.nc](#)

- [ABI-L2-CMIPF/2023/357/11/OR\\_ABI-L2-CMIPF-M6C01\\_G16\\_s20233571110210\\_e20233571119518\\_c20233571119594.nc](#)
- [ABI-L2-CMIPF/2023/357/11/OR\\_ABI-L2-CMIPF-M6C01\\_G16\\_s20233571120210\\_e20233571129518\\_c20233571129587.nc](#)
- [ABI-L2-CMIPF/2023/357/11/OR\\_ABI-L2-CMIPF-M6C01\\_G16\\_s20233571130210\\_e20233571139518\\_c20233571139585.nc](#)

**GLM lightning sample objects:**

- [GLM-L2-LCFA/2023/357/11/OR\\_GLM-L2-LCFA\\_G16\\_s20233571100000\\_e20233571100200\\_c20233571100219.nc](#)
- [GLM-L2-LCFA/2023/357/11/OR\\_GLM-L2-LCFA\\_G16\\_s20233571100200\\_e20233571100400\\_c20233571100423.nc](#)
- [GLM-L2-LCFA/2023/357/11/OR\\_GLM-L2-LCFA\\_G16\\_s20233571100400\\_e20233571101000\\_c20233571101017.nc](#)
- [GLM-L2-LCFA/2023/357/11/OR\\_GLM-L2-LCFA\\_G16\\_s20233571101000\\_e20233571101200\\_c20233571101222.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.

<b>ARCHIVE WINDOW</b>	2023-12-23T10:20:00+00:00 to 2023-12-23T12:50:00+00:00	<b>RADIUS</b>	300.00 nmi
<b>TRACE FILES SCANNED</b>	39960	<b>TRACKS RETAINED</b>	825
<b>SUPPORT STATUS</b>	aircraft strong candidate present	<b>BEST-CANDIDATE NOTE</b>	ordinary-object favored if the report's count, color, direction, and motion can be reconciled with the candidate track(s).
<b>STRONG CANDIDATES</b>	6	<b>PLAUSIBLE CANDIDATES</b>	39
<b>REPORTING-AIRCRAFT TRACKS EXCLUDED</b>	3	<b>WEAK CANDIDATES</b>	64

**5.19 Top ADS-B Candidate Tracks**

AIRCRAFT	STATUS	SCORE	MIN DIST KM	NEAREST DT MIN	ALT FT	AZ	EL
N472WN B737 a5ca89	strong aircraft candidate	76.76	21.90	0.04	38000	32.80	25.49
N989AU A321 adcca6	strong aircraft candidate	73.74	58.60	0.02	33000	19.30	8.67
N408WN B737 a4cc5a	strong aircraft candidate	70.69	67.80	0.07	38000	138.80	8.06
N850GT B748 aba800	strong aircraft candidate	66.19	2.60	0.03	35025	135.70	12.14
N894AT B712 ac5442	strong aircraft candidate	60.66	34.40	0.07	32325	277.10	8.75
N920FD B752 acbeab	strong aircraft candidate	57.82	63.40	0.16	38000	281.80	8.13
N316UP B763 a35eeb	plausible aircraft candidate	66.70	5.30	0.08	34025	342.00	56.77
N961FD B752 ad605e	plausible aircraft candidate	61.09	25.20	0.04	8425	62.50	22.63



## 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	2023-12-23T11:35:00+00:00	Directly used in propagation; this is a hard filter, not descriptive context.
LOCATION CONSTRAINT	39.82677, -91.41278	Directly used as observer point for azimuth/elevation/range computation.
COUNT / PATTERN	not explicit	No compact same-launch count match; retained for unresolved report features.
MOTION LANGUAGE	moving	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	237UAP00332 is assessed as normal-object favored because the available public evidence gives a case-specific ordinary-object candidate: strong ADS-B aircraft candidate N472WN B737 a5ca89 at 24.2 km, azimuth 32.8 deg, elevation 25.49 deg, 7.82 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

237UAP00332

SKYWATCH INCIDENT REPORT

PRIMARY CODE: UNIDENTIFIED AERIAL PHENOMENON		
Date: 11:35 12/23/2023	Callsign: UAL1605	Origin: LAX
Status: Closed	Aircraft: A320	Destination: BWI
POD: DEN	Tail Number:	New Destination:
Reporting Facility: ZKC	Operator: UAL	Operator Type: Commercial
	Paged: YES	MOR Init: YES
		MOR ID: ZKC-M-2023/12/23-0002

Secondary Codes: MOR, NOTIFICATION-NONE

REMARKS

Aircraft reported an unidentified aerial phenomenon off the left side while E bound at FL350, 80 NM W of SPI. The unknown phenomenon was lights that were moving erratically traveling in random directions at approximately unknown altitude. 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": "2023-12-23T11:35:00+00:00",
  "source_excerpt": "Aircraft reported an unidentified aerial phenomenon off the left side while E bound at FL350, 80 NM W of SPI. The unknown phenomenon was lights that were moving erratically traveling in random directions at approximately unknown altitude. The UAP was not observed on ATC facility radar system.",
  "historical_starlink_element_rows": 18891,
  "observer": {
    "lat": 39.82677399949017,
    "lon": -91.41278161638445,
    "source": "aviation_offset:80 NM W of SPI (public text extract 237UAP00332)"
  },
  "case_id": "237UAP00332",
  "starlink_above_horizon_at_report_time": 1129,
  "starlink_catalog_ids_considered": 18891,
  "largest_same-sky_cluster_count": 558,
  "starlink_at_or_above_10_deg": 558,
  "top_starlinks": [
    {
      "azimuth_deg": 315.06,
      "azimuth_plus_2m_deg": 153.1,
      "azimuth_plus_5m_deg": 152.66,
      "element_age_hours": 0.7,
      "element_epoch": "2023-12-23T10:52:47.149536+00:00",
      "elevation_deg": 87.27,
      "elevation_plus_2m_deg": 60.53,
      "elevation_plus_5m_deg": 29.66,
      "epoch_altitude_km": 1288.81,
      "ground_track_bearing_deg": 151.48,
      "ground_track_label": "SSE",
      "launch_date": "92052G",
      "launch_designator": "92052G",
      "name": "NORAD 44509",
      "norad_id": "44509",
      "range_km": 1394.5,
      "sky_motion_label": "westward, setting",
      "subpoint_lat": 40.1734,
      "subpoint_lon": -91.8652
    },
    {
      "azimuth_deg": 300.49,
      "azimuth_plus_2m_deg": 352.63,
      "azimuth_plus_5m_deg": 357.85,
      "element_age_hours": 1.63,
      "element_epoch": "2023-12-23T13:12:30.673728+00:00",
      "elevation_deg": 82.81,
      "elevation_plus_2m_deg": 50.6,
      "elevation_plus_5m_deg": 21.85,
      "epoch_altitude_km": 1218.51,
      "ground_track_bearing_deg": 359.76,
      "ground_track_label": "N",
      "launch_date": "20100T",
      "launch_designator": "20100T",
      "name": "NORAD 47275",
      "norad_id": "47275",
      "range_km": 1225.8,
      "sky_motion_label": "eastward, setting",
      "subpoint_lat": 40.4076,
      "subpoint_lon": -92.7202
    },
    {
      "azimuth_deg": 237.06,
      "azimuth_plus_2m_deg": 208.81,
      "azimuth_plus_5m_deg": 204.66,
      "element_age_hours": 1.85,
      "element_epoch": "2023-12-23T13:25:52.166784+00:00",
      "elevation_deg": 80.06,
      "elevation_plus_2m_deg": 52.5,
      "elevation_plus_5m_deg": 25.66,
      "epoch_altitude_km": 1498.65,
      "ground_track_bearing_deg": 199.32,
      "ground_track_label": "SSW",
      "launch_date": "73086EE",
      "launch_designator": "73086EE",
      "name": "NORAD 7166",
      "norad_id": "7166",
      "range_km": 1515.07,
      "sky_motion_label": "westward, setting",
      "subpoint_lat": 38.7709,
      "subpoint_lon": -93.4602
    }
  ],
}
```

```

{
  "azimuth_deg": 169.39,
  "azimuth_plus_2m_deg": 190.13,
  "azimuth_plus_5m_deg": 193.06,
  "element_age_hours": 1.07,
  "element_epoch": "2023-12-23T12:39:27.807552+00:00",
  "elevation_deg": 78.25,
  "elevation_plus_2m_deg": 40.01,
  "elevation_plus_5m_deg": 14.4,
  "epoch_altitude_km": 828.68,
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## Appendix C. Source Exhaustion Checklist

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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: 237UAP00332
TIME AND OBSERVER COORDINATE	extracted	2023-12-23T11:35:00+00:00 at 39.82677, -91.41278
ORBITAL OBJECT PROPAGATION	screened	public LEO catalog objects
SPACE-TRACK SATCAT METADATA	screened	30 NORAD IDs checked; 30 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	39960 trace files scanned; 825 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. *237UAP00332.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-615/493468575/237UAP00332.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>
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8. Space-Track.org. *API documentation for SATCAT and catalog metadata classes used for local enrichment*. <https://www.space-track.org/documentation#/api>
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>
11. NASA. *DONKI space weather API documentation*. <https://api.nasa.gov/>
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14. OpenSky Network. *REST API documentation*. <https://openskynetwork.github.io/opensky-api/rest.html>
15. OpenSky Network. *Historical data via Trino documentation*. <https://openskynetwork.github.io/opensky-api/trino.html>
16. NASA GIBS. *Global Imagery Browse Services API documentation*. <https://nasa-gibs.github.io/gibs-api-docs/>
17. NASA Earthdata. *Common Metadata Repository search API documentation*. <https://cmr.earthdata.nasa.gov/search/site/docs/search/api.html>
18. NOAA / AWS Open Data. *GOES public dataset registry*. <https://registry.opendata.aws/noaa-goes/>
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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/>