

CASE FILE 39 / 237UAP00074

# 237UAP00074

Time/location anchored public UAP report; score 54

HIGH-VALUE UNRESOLVED

REPORT NO.	UAP-OM-39-237UAP00074	DISPOSITION	HIGH-VALUE UNRESOLVED
PRIMARY CASE	237UAP00074	GENERATED	2026-05-20 18:32 UTC
REPORT TIME	2021-11-28T20:10:00+00:00	OBSERVER	39.30232, -76.93549
SOURCE CASE IDS	237UAP00074		

## 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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237UAP00074 was screened against historical public LEO catalog objects orbital elements at the extracted time and observer coordinate. The screen did not produce enough mundane evidence to close the case under the normal-object favored standard. Hard features retained for follow-up: radar/primary evidence.

## 1.1 Key Findings

- Source score 54 based on: radar/primary-return language, NORAD/AMOC/EADS/CONR check, UAP/UFO language.
- Report time used: 2021-11-28T20:10:00+00:00.
- External object layer used: public LEO catalog objects.
- Disposition standard: UNRESOLVED requires case-specific causal fit. Satellite density above the horizon is context only and cannot by itself resolve the report.
- Non-causal context / rejection screens: very dense orbital-object sky background; context only, not causation.
- Remaining hard features: radar/primary evidence.
- Objects above horizon: 956; at/above 10 deg: 462.
- 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

**HIGH-VALUE UNRESOLVED:** Hard report features remain after the normal-object screens, such as primary/radar evidence, multiple witnesses, footage references, or motion language that still conflicts with the available object layer.

# 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
237UAP00074	20:10 11/28/2021 Paged: NO	PCT	text extract present	<a href="#">237UAP00074.pdf</a>

### 3. Original Report Evidence

PRIMARY EXCERPT USED FOR MATCHING	PCT reported a primary target at the DCA0100027, southeast bound, AADS shows np target. AMOC shows primary moving SE at 56 knots. DOD shows target SE at 10 knots. Continuing to observe. 2027 Appears to be 3 miles north of BWI, tower reports no joy. 2037 Primary target exited the SFRA at the DCA090030. No further action.
REPORT TIME USED	2021-11-28T20:10:00+00:00
OBSERVER COORDINATE USED	39.30232, -76.93549
OBSERVER SOURCE BASIS	aviation_radial:DCA0100027 (public text extract 237UAP00074)

### 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	17259	HISTORICAL ELEMENT ROWS	17259
ABOVE HORIZON AT REPORT MINUTE	956	AT/ABOVE 10 DEG	462
LARGEST SAME-SKY CLUSTER	462		

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 41404	218.94	88.2	845.41	westward, setting	00055KH
NORAD 30926	147.71	87.23	756.55	eastward, setting	99025AZQ
NORAD 46958	30.5	85.39	491.42	eastward, setting	20085AF
NORAD 34351	230.54	82.22	671.91	eastward, setting	97051ET
NORAD 48075	222.26	78.54	1234.58	eastward, setting	21025AK
NORAD 24797	89.81	77.89	911.55	eastward, setting	97020F
NORAD 48062	329.78	76.6	1245.74	eastward, setting	21025W
NORAD 37741	112.27	72.9	1469.24	westward, setting	11033C
NORAD 21551	132.49	70.37	1267.65	westward, setting	75052HF
NORAD 16269	224.55	69.34	1499.32	eastward, level	85094N
NORAD 40755	183.93	69.21	1567.46	eastward, rising	76077FY
NORAD 10658	220.69	68.73	1629.19	eastward, setting	76077U

### 5.5 Largest Sky Clusters

#	COUNT	AZIMUTH SPAN	ELEVATION SPAN	MOTION LABELS
1	462	0.45-359.71 deg	10.01-88.2 deg	eastward, level, eastward, rising, eastward, setting, 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	29
TOP OWNERS	US: 16, CIS: 5, PRC: 4, UK: 2, ESA: 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
41404	NOAA 16 DEB	DEBRIS	US	2000-09-21	n/a
30926	FENGYUN 1C DEB	DEBRIS	PRC	1999-05-10	n/a
46958	SPACEBEE-39	PAYLOAD	US	2020-11-20	2022-11-29
34351	IRIDIUM 33 DEB	DEBRIS	US	1997-09-14	2024-01-30
48075	ONEWEB-0178	PAYLOAD	UK	2021-03-25	n/a
24797	DELTA 2 R/B	ROCKET BODY	US	1997-05-05	n/a
48062	ONEWEB-0159	PAYLOAD	UK	2021-03-25	n/a
37741	GLOBALSTAR M091	PAYLOAD	GLOB	2011-07-13	n/a
21551	DELTA 1 DEB	DEBRIS	US	1975-06-12	n/a
16269	COSMOS 1691 DEB	DEBRIS	CIS	1985-10-09	n/a
40755	DELTA 1 DEB	DEBRIS	US	1976-07-29	n/a
10658	DELTA 1 DEB	DEBRIS	US	1976-07-29	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	2021112820
CLOUD AMOUNT	58.62%
PRECIPITATION	0.01 mm/hr
10 M WIND	3.09 m/s
TEMPERATURE	10.26 C
RELATIVE HUMIDITY	61.61%
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	226.01	14.20	-26.77
Moon	294.35	-17.20	-9.53
Venus	182.29	25.49	-4.86
Mars	241.23	6.29	1.52
Jupiter	141.94	27.74	-2.29

OBJECT	AZ	EL	APP MAG
Saturn	160.42	29.48	0.72

- Sun elevation was 14.2 deg, so this was daylight geometry, not a dark-sky sighting.
- Moon was below horizon at elevation -17.2 deg.
- Planets above horizon: Venus (25.5 deg), Mars (6.3 deg), Jupiter (27.7 deg), Saturn (29.5 deg).
- NASA POWER cloud amount for the hour was 58.62%, with precipitation 0.01 mm/hr.

### 5.11 Free Source Availability and Remaining Work

LAYER	STATUS	CASE-SPECIFIC NOTE
ADSB.LOL HISTORICAL RELEASE LISTING	not yet exhausted	v2021-11-28-planes-readsb-prod-0, v2021-11-28-planes-readsb-prod-1, v2021-11-28-planes-readsb-staging-0, v2021-11-28-planes-readsb-mlatonly-0
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 no public ADSB.lol annual repo found for 2021-11-28, then filter +/-60 min and 250 nmi around 39.3023,-76.9355.
- NASA POWER/Horizons/DONKI: batch context for 237UAP00074 at 2021-11-28T20:10:00+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/2021/332/20/">https://noaa-goes16.s3.amazonaws.com/ABI-L2-CMIPF/2021/332/20/</a>
GOES GLM LIGHTNING PREFIX	<a href="https://noaa-goes16.s3.amazonaws.com/GLM-L2-LCFA/2021/332/20/">https://noaa-goes16.s3.amazonaws.com/GLM-L2-LCFA/2021/332/20/</a>

### 5.13 Nearest Weather-Airport Candidates

STATION	NAME	DISTANCE KM	COORDINATE
KBWI	Baltimore/Washington International Thurgood Marshall Airport	27.00	39.18, -76.67
KFME	Fort Meade Executive Airport	28.50	39.09, -76.76
KMTN	Martin State Airport	45.00	39.33, -76.41
KDCA	Ronald Reagan Washington National Airport	50.80	38.85, -77.04
KADW	Joint Base Andrews	55.00	38.81, -76.87

- KBWI: [IEM ASOS/METAR daily CSV query](#)
- KFME: [IEM ASOS/METAR daily CSV query](#)
- KMTN: [IEM ASOS/METAR daily CSV query](#)

### 5.14 Nearest Radiosonde Stations

STATION	NAME	DISTANCE KM	COORDINATE
USM00072403	STERLING; VA.	59.70	38.98, -77.49
USM00072402	WALLOPS ISLAND; VA.	197.70	37.93, -75.48
USM00072520	PITTSBURGH; PA.	311.40	40.53, -80.22
USM00072318	BLACKSBURG; VA.	383.00	37.20, -80.41
USM00072501	UPTON; NY.	387.60	40.87, -72.86

### 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
KBWI	27.00	2021-11-28T19:54:00 +00:00	10.00	SCT06000, SCT25000, M, M	n/a / 3.00	KBWI 281954Z VRB03KT 10SM SCT060 SCT250 13/ M02 A2977 RMK AO2 SLP083 T01331017
KFME	28.50	no retained observation	n/a	n/a	n/a / n/a	
KMTN	45.00	2021-11-28T19:54:00 +00:00	10.00	FEW06000, M, M, M	290.00 / 6.00	KMTN 281954Z 29006G14KT 10SM FEW060 12/01 A2980

### 5.16 NOAA IGRA Radiosonde Wind Profile

Nearest sounding implies mean 0-12 km wind drift toward 77.1 deg at 29.18 m/s; a passive balloon could drift about 210.1 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
USM00072403	STERLING; VA.	59.70	2021-11-29T00:00 :00+00:00	77.10	29.18	210.10	49.40 at 9020.00 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/2021/332/20/OR\\_ABI-L2-CMIPF-M6C01\\_G16\\_s20213322000209\\_e20213322009517\\_c20213322009586.nc](#)
- [ABI-L2-CMIPF/2021/332/20/OR\\_ABI-L2-CMIPF-M6C01\\_G16\\_s20213322010209\\_e20213322019517\\_c20213322019591.nc](#)
- [ABI-L2-CMIPF/2021/332/20/OR\\_ABI-L2-CMIPF-M6C01\\_G16\\_s20213322020209\\_e20213322029517\\_c20213322029594.nc](#)
- [ABI-L2-CMIPF/2021/332/20/OR\\_ABI-L2-CMIPF-M6C01\\_G16\\_s20213322030209\\_e20213322039517\\_c20213322039592.nc](#)

#### GLM lightning sample objects:

- [GLM-L2-LCFA/2021/332/20/OR\\_GLM-L2-LCFA\\_G16\\_s20213322000000\\_e20213322000200\\_c20213322000224.nc](#)
- [GLM-L2-LCFA/2021/332/20/OR\\_GLM-L2-LCFA\\_G16\\_s20213322000200\\_e20213322000400\\_c20213322000423.nc](#)

## 6. Annotated Evidence Figure



## 7. Analytic Comparison

CRITERION	REPORT EVIDENCE	ANALYTIC TREATMENT
TIME CONSTRAINT	2021-11-28T20:10:00+00:00	Directly used in propagation; this is a hard filter, not descriptive context.
LOCATION CONSTRAINT	39.30232, -76.93549	Directly used as observer point for azimuth/elevation/range computation.
COUNT / PATTERN	three-object/light language present	No compact same-launch count match; retained for unresolved report features.
MOTION LANGUAGE	moving	Reported motion remains only partly explained; this is a principal reason for high-value unresolved status.
RADAR / OFFICIAL CHECK	not specified	Radar or hard maneuvering language is treated as a conflict/collection gap, not hand-waved away.
ANALYTIC DISPOSITION	unresolved	237UAP00074 was screened against historical public LEO catalog objects orbital elements at the extracted time and observer coordinate. The screen did not produce enough mundane evidence to close the case under the normal-object favored standard. Hard features retained for follow-up: radar/primary evidence.

## 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.
- This case is retained as high-value unresolved because the hardest reported behavior is not resolved by the current normal-object layers.

# Appendix A. Public Report Text Extracts

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## 237UAP00074

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SKYWATCH INCIDENT REPORT

PRIMARY CODE: UNIDENTIFIED AERIAL PHENOMENON  
Date: 20:10 11/28/2021                      Paged: NO  
Status: Closed  
POD: NCRCC  
Reporting Facility: PCT

REMARKS

PCT reported a primary target at the DCA0100027, southeast bound, AADS shows np target. AMOC shows primary moving SE at 56 knots. DOD shows target SE at 10 knots. Continuing to observe. 2027 Appears to be 3 miles north of BWI, tower reports no joy. 2037 Primary target exited the SFRA at the DCA090030. No further action.

## 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": "2021-11-28T20:10:00+00:00",
  "source_excerpt": "PCT reported a primary target at the DCA0100027, southeast bound, AADS shows np target. AMOC shows primary moving SE at 56 knots. DOD shows target SE at 10 knots. Continuing to observe. 2027 Appears to be 3 miles north of BWI, tower reports no joy. 2037 Primary target exited the SFRA at the DCA090030. No further action.",
  "historical_starlink_element_rows": 17259,
  "observer": {
    "lat": 39.302322446059485,
    "lon": -76.93548643631487,
    "source": "aviation_radial:DCA0100027 (public text extract 237UAP00074)"
  },
  "case_id": "237UAP00074",
  "starlink_above_horizon_at_report_time": 956,
  "starlink_catalog_ids_considered": 17259,
  "largest_same-sky_cluster_count": 462,
  "starlink_at_or_above_10_deg": 462,
  "top_starlinks": [
    {
      "azimuth_deg": 218.94,
      "azimuth_plus_2m_deg": 195.75,
      "azimuth_plus_5m_deg": 195.73,
      "element_age_hours": 5.72,
      "element_epoch": "2021-11-28T14:26:56.568768+00:00",
      "elevation_deg": 88.2,
      "elevation_plus_2m_deg": 40.39,
      "elevation_plus_5m_deg": 12.27,
      "epoch_altitude_km": 792.02,
      "ground_track_bearing_deg": 194.92,
      "ground_track_label": "SSW",
      "launch_date": "00055KH",
      "launch_designator": "00055KH",
      "name": "NORAD 41404",
      "norad_id": "41404",
      "range_km": 845.41,
      "sky_motion_label": "westward, setting",
      "subpoint_lat": 39.1378,
      "subpoint_lon": -77.1061
    },
    {
      "azimuth_deg": 147.71,
      "azimuth_plus_2m_deg": 192.92,
      "azimuth_plus_5m_deg": 194.3,
      "element_age_hours": 0.63,
      "element_epoch": "2021-11-28T19:32:25.730016+00:00",
      "elevation_deg": 87.23,
      "elevation_plus_2m_deg": 37.4,
      "elevation_plus_5m_deg": 10.63,
      "epoch_altitude_km": 509.78,
      "ground_track_bearing_deg": 194.63,
      "ground_track_label": "SSW",
      "launch_date": "99025AZQ",
      "launch_designator": "99025AZQ",
      "name": "NORAD 30926",
      "norad_id": "30926",
      "range_km": 756.55,
      "sky_motion_label": "eastward, setting",
      "subpoint_lat": 39.0531,
      "subpoint_lon": -76.7336
    },
    {
      "azimuth_deg": 30.5,
      "azimuth_plus_2m_deg": 191.83,
      "azimuth_plus_5m_deg": 192.71,
      "element_age_hours": 0.61,
      "element_epoch": "2021-11-28T19:33:22.235616+00:00",
      "elevation_deg": 85.39,
      "elevation_plus_2m_deg": 26.07,
      "elevation_plus_5m_deg": 2.99,
      "epoch_altitude_km": 484.5,
      "ground_track_bearing_deg": 192.7,
      "ground_track_label": "SSW",
      "launch_date": "20085AF",
      "launch_designator": "20085AF",
      "name": "NORAD 46958",
      "norad_id": "46958",
      "range_km": 491.42,
      "sky_motion_label": "eastward, setting",
      "subpoint_lat": 39.5866,
      "subpoint_lon": -76.7189
    }
  ],
}
```

```

{
  "azimuth_deg": 230.54,
  "azimuth_plus_2m_deg": 357.74,
  "azimuth_plus_5m_deg": 1.19,
  "element_age_hours": 5.09,
  "element_epoch": "2021-11-28T15:04:40.221984+00:00",
  "elevation_deg": 82.22,
  "elevation_plus_2m_deg": 36.43,
  "elevation_plus_5m_deg": 8.99,
  "epoch_altitude_km": 649.41,
  "ground_track_bearing_deg": 1.86,
  "ground_track_label": "N",
  "launch_date": "97051ET",
  "launch_designator": "97051ET",
  "name": "NORAD 34351",
  "norad_id": "34351",
  "range_km": 671.91,
  "sky_motion_label": "eastward, setting",
  "subpoint_lat": 38.8289,
  "subpoint_lon": -77.6673
},
{
  "azimuth_deg": 222.26,
  "azimuth_plus_2m_deg": 347.2,
  "azimuth_plus_5m_deg": 356.55,
  "element_age_hours": 5.68,
  "element_epoch": "2021-11-28T14:29:24.455328+00:00",
  "elevation_deg": 78.54,
  "elevation_plus_2m_deg": 59.23,
  "elevation_plus_5m_deg": 25.89,
  "epoch_altitude_km": 1215.65,
  "ground_track_bearing_deg": 359.55,
  "ground_track_label": "N",
  "launch_date": "21025AK",
  "launch_designator": "21025AK",
  "name": "NORAD 48075",
  "norad_id": "48075",
  "range_km": 1234.58,
  "sky_motion_label": "eastward, setting",
  "subpoint_lat": 37.9181,
  "subpoint_lon": -78.5117
},
{
  "azimuth_deg": 89.81,
  "azimuth_plus_2m_deg": 166.13,
  "azimuth_plus_5m_deg": 173.86,
  "element_age_hours": 0.07,
  "element_epoch": "2021-11-28T20:14:06.531360+00:00",
  "elevation_deg": 77.89,
  "elevation_plus_2m_deg": 42.54,
  "elevation_plus_5m_deg": 13.69,
  "epoch_altitude_km": 592.84,
  "ground_track_bearing_deg": 179.51,
  "ground_track_label": "S",
  "launch_date": "97020F",
  "launch_designator": "97020F",
  "name": "NORAD 24797",
  "norad_id": "24797",
  "range_km": 911.55,
  "sky_motion_label": "eastward, setting",
  "subpoint_lat": 39.291,
  "subpoint_lon": -74.9908
},
{
  "azimuth_deg": 329.78,
  "azimuth_plus_2m_deg": 353.23,
  "azimuth_plus_5m_deg": 357.87,
  "element_age_hours": 10.77,
  "element_epoch": "2021-11-29T06:55:58.648800+00:00",
  "elevation_deg": 76.6,
  "elevation_plus_2m_deg": 45.33,
  "elevation_plus_5m_deg": 19.37,
  "epoch_altitude_km": 1218.23,
  "ground_track_bearing_deg": 359.84,
  "ground_track_label": "N",
  "launch_date": "21025W",
  "launch_designator": "21025W",
  "name": "NORAD 48062",
  "norad_id": "48062",
  "range_km": 1245.74,
  "sky_motion_label": "eastward, setting",
  "subpoint_lat": 41.1797,
  "subpoint_lon": -78.3901
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{
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  "azimuth_plus_5m_deg": 57.15,

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"element_age_hours": 6.97,
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"elevation_deg": 72.9,
"elevation_plus_2m_deg": 51.5,
"elevation_plus_5m_deg": 26.12,
"epoch_altitude_km": 1420.28,
"ground_track_bearing_deg": 49.14,
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"name": "NORAD 37741",
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"range_km": 1469.24,
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"subpoint_lat": 38.0352,
"subpoint_lon": -73.2052
},
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  "azimuth_plus_5m_deg": 350.11,
  "element_age_hours": 2.92,
  "element_epoch": "2021-11-28T17:14:55.070016+00:00",
  "elevation_deg": 70.37,
  "elevation_plus_2m_deg": 65.04,
  "elevation_plus_5m_deg": 28.77,
  "epoch_altitude_km": 1096.53,
  "ground_track_bearing_deg": 344.82,
  "ground_track_label": "NNW",
  "launch_date": "75052HF",
  "launch_designator": "75052HF",
  "name": "NORAD 21551",
  "norad_id": "21551",
  "range_km": 1267.65,
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  "subpoint_lat": 37.0838,
  "subpoint_lon": -73.9631
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  "azimuth_plus_2m_deg": 331.46,
  "azimuth_plus_5m_deg": 358.26,
  "element_age_hours": 4.97,
  "element_epoch": "2021-11-28T15:11:33.537120+00:00",
  "elevation_deg": 69.34,
  "elevation_plus_2m_deg": 69.34,
  "elevation_plus_5m_deg": 35.8,
  "epoch_altitude_km": 1412.99,
  "ground_track_bearing_deg": 5.81,
  "ground_track_label": "N",
  "launch_date": "85094N",
  "launch_designator": "85094N",
  "name": "NORAD 16269",
  "norad_id": "16269",
  "range_km": 1499.32,
  "sky_motion_label": "eastward, level",
  "subpoint_lat": 36.4737,
  "subpoint_lon": -80.325
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  "azimuth_plus_2m_deg": 312.44,
  "azimuth_plus_5m_deg": 336.21,
  "element_age_hours": 21.03,
  "element_epoch": "2021-11-29T17:11:41.993664+00:00",
  "elevation_deg": 69.21,
  "elevation_plus_2m_deg": 74.56,
  "elevation_plus_5m_deg": 38.32,
  "epoch_altitude_km": 1481.99,
  "ground_track_bearing_deg": 342.27,
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  "launch_designator": "76077FY",
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  "norad_id": "40755",
  "range_km": 1567.46,
  "sky_motion_label": "eastward, rising",
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  "subpoint_lon": -77.2753
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  "azimuth_plus_2m_deg": 301.58,
  "azimuth_plus_5m_deg": 329.57,
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  "element_epoch": "2021-11-28T20:34:30.262080+00:00",
  "elevation_deg": 68.73,
  "elevation_plus_2m_deg": 63.88,

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"elevation_plus_5m_deg": 34.58,  
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"launch_date": "76077U",  
"launch_designator": "76077U",  
"name": "NORAD 10658",  
"norad_id": "10658",  
"range_km": 1629.19,  
"sky_motion_label": "eastward, setting",  
"subpoint_lat": 35.9964,
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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: 237UAP00074
TIME AND OBSERVER COORDINATE	extracted	2021-11-28T20:10:00+00:00 at 39.30232, -76.93549
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	not exhausted	ADSB.lol 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	high-value unresolved	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. *237UAP00074.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-615/493468575/237UAP00074.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/>
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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20. NOAA NCEI. *Integrated Global Radiosonde Archive*. <https://www.ncei.noaa.gov/products/weather-balloon/integrated-global-radiosonde-archive>
21. Iowa Environmental Mesonet. *ASOS/AWOS/METAR data download service*. <https://mesonet.agron.iastate.edu/request/download.phtml>
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/>