ORBITAL DEBRIS ASSESSMENT REPORT (ODAR)

TRISoC 8U CubeSat Mission

Prepared for FCC Part 25 License Application

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Revision History:

Rev A – July 26, 2026 – Initial Release

Rev B – July 28, 2026 – Updated with revised mass 13.600 kg replacing 14.000 kg; Updated DAS log July 28, 2026

Rev C Revised mission duration to 2.0 years consistent with mission design goal; Updated July 28,2026

Debris Assessment Software (DAS) version used in analysis: v3.2.7

1. Mission

Mission overview:

The Prodigy satellite is an 8U cubesat, and will be deployed by the Transporter-19 launch vehicle at an altitude of approximately 510 km into a nominally Sun-Synchronous Orbit (SSO). Prodigy will conduct operations to demonstrate how on-orbit edge computing can facilitate the efficient processing of large volumes of collected RF data and extract the pertinent information delivering only that information to the ground users thereby achieving extremely high efficiency in terms of utilization of communications bandwidth since large volumes of raw operational data is not brought to ground only actionable information. Prodigy does not have propulsion.

The below analysis is conducted from an injection orbit of 510 km altitude to represent a worst-case scenario for deployment.

1.1 Satellite Identification

Satellite Name: Prodigy 8U

Operator: Science Applications International Corporation (“SAIC”)

Mission Type: Technology Demonstration

Platform: GomSpace 8U CubeSat

Total Mass: 13.600 kg

Stowed Dimensions: 226.3 x 454.0 x 100.6 mm

FCC Call Sign: [TO BE ASSIGNED]

1.2 Orbital Parameters

Orbit Type:

Sun Synchronous Orbit (SSO); Perigee Altitude: 510.0 km; Apogee Altitude: 510.0 km; Inclination: 97.4 degrees; RAAN: 0.000 degrees; Argument of Perigee: 0.000 degrees; Mean Anomaly: 0.000 degrees;

Area to Mass Ratio: 0.0154 m^2/kg;

Mission Start: 2027.200 (approximately March 2027);

Mission Duration: 2.0 years.

Mission Success Threshold: 0.250 years (3 months minimum operations)

Mission Goal: 2.000 years continuous operations

Bus Design Life: 5 years

Projected Mission End: 2029.200 (approximately March 2029).

1.3 Launch Information

Launch Vehicle: SpaceX Transporter 19 Launch Date: Window opens 1 Feb 2027, approximately Q1 2027

Launch Site: Vandenberg Space Force Base

Deployment Method: CubeSat deployer

2. SPACECRAFT DESCRIPTION

2.1 Physical Characteristics

The Prodigy 8U is a CubeSat built on the GomSpace 8U reference platform. The spacecraft is designed to operate in a Sun Synchronous Orbit at 510 km altitude with the following physical characteristics:

Total Mass: 13.600 kg

Stowed Dimensions: 226.3 x 454.0 x 100.6 mm

Configuration: 8U CubeSat

Structure Material: Aluminum 6061-T6

Exterior Panels: ThermAvant OHP Aluminum Heat Pipe Radiators, 1.5 mm thickness

2.2 Subsystem Summary

2.2.1 Power System

The spacecraft power system consists of the following components:

- EPS: GomSpace NanoPower P80, 0.480 kg, Aluminum 6061 housing, 95 x 96 x 40 mm
- Solar Arrays: 2x GomSpace TSP-45 Sun Tracking Solar Panel wings, 3 panels per wing, CESI CTJ-LC/SCA-8040 triple junction GaAs cells with cerium-doped borosilicate coverglass

- Batteries: 2x GomSpace NanoPower BP8 battery packs, each containing 8x LG HG2 18650 lithium-ion cells, 3000 mAh per cell, 45 grams per cell, nickel-plated steel enclosure with 0.15 mm wall thickness
- Solar Array Drive: 2x SADA-50 drive motors for sun tracking, 80 grams each

2.2.2 Attitude Determination and Control System

The ADCS consists of the following components:

- OBC/ADCS Processor: GomSpace NanoMind A3200, 24 grams
- Reaction Wheels: 4x reaction wheels in pyramid configuration mounted on aluminum pyramid structure. Aluminum 6061 flywheels 52 grams each, stainless steel shafts 4 grams each, stainless steel bearings 0.15 grams each
- Magnetorquers: 3x magnetorquer rods, copper windings, 50 grams each
- Sensors: 4x fine sun sensors, GPS receiver, magnetometer
- Note: No star tracker is included in this configuration

2.2.3 Communications

- TMTC: GomSpace NanoCom AX2150 S-band transceiver, 100 grams
- High Speed Downlink: Link SX Software Defined Radio X/S-band SDR, 315 grams
- Antennas: ANT2150 S-band omni antenna 50 grams; L3-Harris tuna can antenna 270 grams mounted on -Z face

2.2.4 Onboard Computing

- Platform OBC: GomSpace NanoMind A3200, 24 grams
- Payload Computer: GomSpace NanoMind HP-MK3, 240 grams

2.2.5 Thermal System

- Radiator Panels: ThermAvant Oscillating Heat Pipe panels on +X face (340 g), -X face (340 g), and +Y face (150 g), all Aluminum 6061, 1.5 mm thickness
- Thermal Strap: ThermAvant aluminum heat pipe assembly, 420 g thermal mass
- Thermal Telemetry: SAIC thermal monitoring electronics 350 g and distributed sensor harness 400 g

2.2.6 Propulsion

The Prodigy 8U does NOT carry any propulsion system. The spacecraft has no orbit raising capability and no collision avoidance maneuver capability. Orbital decay is entirely passive via atmospheric drag.

2.2.7 Payloads

The spacecraft carries two science payloads:

Payload 1 – AQUAMOD:

- Housing: Aluminum 6061, dimensions 200 x 233 x 100 mm, 1.295 kg aero mass
- Contains optical glass element 15 g and FR4 PCBs 80 g
- Associated harnesses: 100 g copper
- Total AQUAMOD mass: 1.930 kg as built

Payload 2 – L3-Harris Instrument:

- L3H Computer Housing: 800 g aluminum assembly, 100 x 150 x 50 mm
- L3H Auxiliary Assembly: 430 g aluminum assembly, 80 x 100 x 50 mm
- L3H Antenna: 270 g “tuna can” antenna on -Z face, 100 mm diameter x 50 mm length
- Associated harnesses: 50 g copper
- Total L3H payload mass: approximately 1.550 kg

2.2.8 The trackability of the spacecraft

The smallest dimension of the Prodigy 8U satellite is greater than 10 cm and is, therefore, trackable. The tracking of the Prodigy 8u satellite will be passive.

Prior to deployment, the spacecraft will be registered with the 18th Space Defense Squadron via their Satellite Registration Form and Space Situational Awareness (SSA) Sharing Agreement.

SAIC intends to provide the 18th Space Defense Squadron information regarding initial deployment and owner/operator (O/O) ephemeris. This sharing is intended to provide better SSA and improve the accuracy of conjunction analysis (CA). The higher accuracy O/O ephemeris will improve the quality of the CA and reduce the frequency of Conjunction Data Messages.

3. ORBITAL DEBRIS MITIGATION PLAN

3.1 Debris Released During Normal Operations

The following assessment confirms that no debris will be intentionally released during normal mission operations:

- Deployment mechanism covers: NONE retained on orbit
- Separation bolts/nuts: NONE
- Antenna deployment: Passive spring, no debris released
- Solar array deployment: Motorized SADA, no debris released

- Payload operations: No debris released
- Explosive devices: NONE
- Pyrotechnic devices: NONE
- Pressurized vessels: NONE

DAS Requirement 4.3-1 returns a status of "Not Run" with message "No Project Data Available" in the DAS log file. This is consistent with DAS software behavior when no explosive or pyrotechnic devices are present on the spacecraft. The DAS graphical interface confirms a COMPLIANT status for this requirement. The Prodigy satellite carries no explosive devices, pyrotechnic devices, solid rocket motors, or pressurized vessels other than batteries, consistent with the GomSpace 8U reference platform design in this non-propulsive configuration.

Battery Explosion Risk Assessment:

The Prodigy 8U spacecraft carries sixteen LG HG2 18650 lithium-ion cells in two GomSpace NanoPower BP8 battery packs. While lithium-ion batteries are recognized as a potential source of thermal runaway and pressure buildup under certain conditions, the LG HG2 cells are not classified as explosive devices, pyrotechnic devices, or pressurized vessels under NASA DAS methodology and do not trigger DAS Requirement 4.3-1. The following design features collectively demonstrate that the battery system presents no credible explosion risk during either normal operations or reentry.

First, each LG HG2 cell incorporates a two-stage internal pressure protection system. A Current Interrupt Device (CID) activates at an internal pressure of 1.017 MPa, electrically isolating the cell and terminating any further electrochemical reaction before pressure can reach a dangerous level. Should pressure continue to rise beyond this threshold, a secondary pressure vent activates at 1.906 MPa, releasing accumulated internal gases in a controlled manner specifically designed to prevent rupture or explosion. This two-stage architecture ensures that even under worst-case conditions the cells will relieve pressure in a controlled manner rather than fail catastrophically.

Second, cell quality is assured through a rigorous two-tier testing program conducted by GomSpace. Samples from every production lot are tested in accordance with JSC 66548, Requirements for Flight Certification and Acceptance of Commercial Off the Shelf Lithium-Ion Batteries, including overcharge testing and external short circuit testing specifically designed to characterize explosion and rupture risk. Additionally every individual cell undergoes a Flight Acceptance Test based on NASA document RP-08-75, NASA Aerospace Flight Battery Program, verifying physical integrity and electrical characteristics prior to integration.

Third, at end of mission the batteries will be discharged to 30-60% state of charge per the GomSpace manufacturer recommendation as part of the passivation procedure described in Section 3.3. This substantially reduces the stored electrochemical energy available during the post-mission decay phase, further minimizing any risk of pressure buildup during the eventual atmospheric reentry. At this reduced state of charge the cell

voltage will be approximately 3.6-3.9V, significantly below the maximum charge voltage of 4.2V.

Finally, NASA DAS reentry analysis confirms complete demise of all battery cell material at approximately 73.6 km altitude. The thin nickel-plated steel cell wall of 0.15 mm thickness and small cell diameter of 18.5 mm result in rapid and complete ablation well above the ground. No battery material survives to ground impact and the casualty area contribution of the battery system is zero. The complete demise of the cells during reentry means that even in the unlikely event that any residual pressure remained within a cell at the time of reentry, the cell would fully ablate before reaching the ground. The detailed reentry analysis is provided in Section 5.2.

DAS Requirement 4.3-2: PASSED.

3.2 Collision Avoidance

As the Prodigy 8U carries no propulsion system, active collision avoidance maneuvers are not possible. The following passive measures and coordination procedures will be implemented:

Pre-Launch:

- Conjunction assessment will be performed prior to launch using the current TLE catalog
- Launch window selection will account for known conjunction risks
- Coordination with launch provider for deployment timing

On-Orbit:

- Regular conjunction screening via NASA/JSC Space Debris Avoidance Conjunction Assessment (CARA) program
- Coordination with LeoLabs commercial space situational awareness service
- SpaceTrack monitoring via space-track.org
- Operator will maintain awareness of conjunction warnings throughout the mission
- The satellite has no maneuvering capabilities.

Quantitative Basis: ***The collision probability for the Prodigy 8U mission has been calculated by DAS Requirement 4.5-1 as 1.6199 x 10^{-5}, which is approximately 62 times below the 1.0 x 10^{-3} threshold***. This provides high confidence that the passive collision avoidance approach is adequate for this mission.

3.3 Safe Passivation at End of Life

The following passivation procedures will be executed at end of mission:

Step 1 – Payload Shutdown: Command all payload instruments to safe mode. Confirm AQUAMOD power off. Confirm L3H instrument power off.

Step 2 – RF Transmitter Shutdown: Disable all RF transmitters. NanoCom AX2150 transmitter off. Link SX SDR transmitter off. L3H antenna system off.

Step 3 – Battery Discharge: Discharge BP8 battery packs to safe storage level per GomSpace NanoPower battery datasheet Document No. 1022248 Revision 2.0. Target 30–60% state of charge per manufacturer recommendation. Monitor via SAIC thermal telemetry system during discharge.

Step 4 – ADCS Safe Mode: Reaction wheels spun down to zero. Magnetorquers disabled. Spacecraft placed in minimum power tumble mode.

Step 5 – OBC Shutdown: Final telemetry beacon transmitted. NanoMind A3200 placed in minimum power state. NanoMind HP-MK3 powered off.

4. POST MISSION DISPOSAL

4.1 Disposal Method

The Prodigy 8U will rely on natural atmospheric drag for orbital decay and reentry. No propulsive disposal maneuver is available or required given the orbital altitude and spacecraft characteristics.

4.2 Disposal Timeline – DAS Requirement 4.6 Results

The following results were obtained directly from NASA DAS 3.1 Requirement 4.6 analysis run on July 28, 2026:

Input Parameters:

- Perigee Altitude: 510.000 km
- Apogee Altitude: 510.000 km
- Inclination: 98.310 degrees
- Area to Mass Ratio: 0.0154 m²/kg
- Initial Mass: 13.600 kg
- Final Mass: 13.600 kg
- Mission Start: 2027.200 yr
- Mission Duration: 2.0 yr
- Station Kept: False
- Propulsion Available: False (Abandoned = True)

Output Results:

- PMD Perigee Altitude: 482.117 km
- PMD Apogee Altitude: 482.401 km
- PMD Inclination: 98.357 degrees
- PMD RAAN: 89.902 degrees
- PMD Argument of Perigee: 160.260 degrees
- Reentry Message: Passes LEO reentry orbit criteria
- Predicted Release Year: 2033
- Compliance Requirement: 61 years maximum
- Years to Reentry: approximately 3.8 years from end of mission (March 2029 to 2033).

Compliance Status: PASS

4.3 Compliance with Disposal Rules

NASA 25-Year Rule:

- Mission end: approximately March 2029
- Predicted reentry: 2033
- Time to reentry: approximately 3.8 years
- 25-year limit: 2054
- ***Status: PASS – well within the 25-year rule***

FCC 5-Year Guideline (FCC 22-74):

Orbital altitude: 510 km Below 600 km: Yes – 5-year guideline applies

Mission end date: approximately March 2029 (2029.200)

Predicted reentry: 2033 Time from mission end to reentry: approximately 3.8 years FCC 5-year limit from mission end: approximately March 2034 (2034.200)

Status: PASS – predicted reentry of 2033 is within 5 years of the projected mission end date of March 2029

The spacecraft orbital decay profile is entirely passive and driven by atmospheric drag at 510 km altitude. At end of mission in March 2029 the spacecraft will be at a PMD perigee altitude of approximately 482.117 km, having decayed naturally from the initial 510 km orbit. From this lower altitude the predicted reentry in 2033 represents approximately 3.8 years, which is comfortably within the FCC 5-year guideline. No FCC Space Bureau consultation is required

The simulation does not account for the drag created by Prodigy's solar panels once oriented at the end-of-mission. The DAS orbital lifetime analysis uses a fixed area-to-mass ratio of 0.0154 m^2/kg representing a tumbling average of the stowed spacecraft configuration. This analysis does not account for the aerodynamic behavior of the deployed solar array configuration at end of mission.

At end of mission the two GomSpace TSP-45 solar array wings will be locked in their deployed position co-planar with the Z face of the spacecraft by the SADA-50 drive motors. The deployed arrays are located at one extreme end of the spacecraft long axis and are symmetric about the body. As atmospheric drag increases during orbital decay the spacecraft will naturally adopt a stable aerodynamic orientation in which the high-mass body leads and the large-area solar arrays trail in the spacecraft wake. This shuttlecock-type stability is a well-understood aerodynamic phenomenon in which the center of pressure trails the center of mass creating a restoring torque for any perturbation from the stable attitude.

In this stable trailing configuration, the solar array panels will be oriented approximately normal to the velocity vector, maximizing their drag contribution. This stable high-drag orientation will persist throughout the decay phase and will result in a higher effective drag than the tumbling average assumed by DAS. The DAS analysis therefore represents a conservative upper bound on the orbital lifetime, and the actual reentry is expected to occur earlier than the predicted 2033 date. This further supports compliance with the FCC 5-year post-mission deorbit guideline.

5. REENTRY CASUALTY RISK ASSESSMENT

5.1 Analysis Methodology

The reentry casualty risk assessment was performed using NASA Debris Assessment Software (DAS) version 3.1 in accordance with NASA Technical Standard NASA-STD-8719.14B and the NASA Handbook for Limiting Orbital Debris NASA-HDBK-8719.14.

Tool: NASA DAS 3.1 Standard: NASA-STD-8719.14B Handbook: NASA-HDBK-8719.14 Analysis Date: July 28, 2026 Analyst: Roy Kampfer DAS Log File: See Attachment A

5.2 Spacecraft Breakup Model

The spacecraft breakup model was constructed in DAS using the object tree methodology. All components were modeled as geometric primitives with appropriate materials selected from the DAS material library.

Key modeling assumptions and justifications are as follows:

Structure and Exterior Panels: The Aluminum 6061 frame was modeled as a Box primitive. ThermAvant OHP panels were modeled as Flat Plates in Aluminum 6061 at 1.5 mm thickness. All aluminum structural components are expected to fully ablate during reentry, confirmed by DAS demise altitudes of 77–78 km for all structural items.

Batteries: LG HG2 18650 cells were modeled per confirmed manufacturer specifications. The nickel-plated steel enclosure with 0.15 mm confirmed wall thickness was modeled as Stainless Steel cylinders at 18.5 mm diameter x 65 mm length. Steel cores were modeled separately at 3 mm diameter x 65 mm length. DAS confirms

complete demise at approximately 73–74 km altitude despite the steel material, due to the thin wall and small diameter of the cells.

Reaction Wheels: Flywheels were confirmed as Aluminum 6061 per GomSpace specification, modeled at 60 mm diameter x 50 mm length. Shafts were confirmed as Stainless Steel at 4 mm diameter x 65 mm length. Bearings were confirmed as Stainless Steel modeled as 5 mm diameter spheres. All reaction wheel components fully demise at 74–76 km altitude.

Solar Cells: CESI CTJ-LC/SCA-8040 triple junction GaAs cells with cerium-doped borosilicate cover glass were assessed. As no Glass material exists in the DAS material library, cover glass was initially modeled using a Fiberglass proxy material. Having passed we also modeled by increasing the solar array panel aluminum thickness by 2mm as a proxy. This also passed and was deemed to be the more conservative scenario, so this is the one recorded in this log file. All solar cell materials are confirmed to ablate with no casualty risk from the solar array assembly.

Fasteners: 50x M3 stainless steel fasteners were modeled individually as 4 mm diameter spheres at 0.1 grams each. DAS confirms complete demise at 77.7 km altitude, confirming that individual modeling of small fasteners was the correct approach.

Mass Accountability: Total modeled component mass exceeds 90% of the total spacecraft mass of 13.600 kg, per NASA-STD-8719.14B requirements.

5.3 DAS Requirement 4.7-1 Component Demise Results

The following table presents the complete DAS output for all modeled components from the July 28, 2026 analysis run. All components show complete demise with zero casualty area and zero impact kinetic energy.

Component	Qty	Demise Alt (km)	Casualty Area (m²)	KE (J)
Prodigy 8U (root)	1	78.002	0.000	0.000
-Y Closeout Panel	1	77.262	0.000	0.000
NanoDock Adapter	4	77.381	0.000	0.000
ThermAvant OHP +X Panel	1	77.377	0.000	0.000
ThermAvant OHP -X Panel	1	77.377	0.000	0.000
ThermAvant OHP +Y Panel	1	77.472	0.000	0.000
ThermAvant Strap	1	77.178	0.000	0.000
L3H Computer Housing	1	73.116	0.000	0.000
SAIC TLM Electronics	1	74.076	0.000	0.000
SAIC TLM Harnesses	1	75.838	0.000	0.000
NanoPower P80 EPS	1	74.242	0.000	0.000
BP8 Battery Housing 1	1	76.394	0.000	0.000
LG HG2 Cell Pack 1	8	73.824	0.000	0.000

Component	Qty	Demise Alt (km)	Casualty Area (m²)	KE (J)
LG HG2 Steel Core 1	8	73.598	0.000	0.000
BP8 Battery Housing 2	1	76.394	0.000	0.000
LG HG2 Cell Pack 2	8	73.824	0.000	0.000
LG HG2 Steel Core 2	8	73.598	0.000	0.000
TSP Solar Wing 1 Assembly	1	76.898	0.000	0.000
TSP-45 Solar Panel W1	3	76.549	0.000	0.000
SADA-50 Drive Motor 1	1	75.209	0.000	0.000
TSP Solar Wing 2 Assembly	1	76.898	0.000	0.000
TSP-45 Solar Panel W2	3	76.549	0.000	0.000
SADA-50 Drive Motor 2	1	75.209	0.000	0.000
NanoMind A3200 OBC	1	77.682	0.000	0.000
NanoMind HP-MK3	1	74.947	0.000	0.000
NanoCom AX2150 TMTC	1	76.670	0.000	0.000
Link SX SDR	1	74.877	0.000	0.000
ANT2150 S-band Antenna	1	77.010	0.000	0.000
L3H Antenna Tuna Can	1	74.809	0.000	0.000
RW Pyramid Structure	1	76.693	0.000	0.000
RW Assembly 1 Housing	1	76.007	0.000	0.000
RW Flywheel 1	1	74.783	0.000	0.000
RW Shaft 1	1	75.334	0.000	0.000
RW Bearing 1	2	75.700	0.000	0.000
RW Flywheel 4	1	74.783	0.000	0.000
RW Shaft 4	1	75.334	0.000	0.000
RW Bearing 4	2	75.700	0.000	0.000
RW Assembly 2 Housing	1	76.002	0.000	0.000
RW Flywheel 2	1	74.735	0.000	0.000
RW Shaft 2	1	75.310	0.000	0.000
RW Bearing 2	2	75.684	0.000	0.000
RW Assembly 3 Housing	1	76.002	0.000	0.000
RW Flywheel 3	1	74.735	0.000	0.000
RW Shaft 3	1	75.310	0.000	0.000
RW Bearing 3	2	75.684	0.000	0.000
RW Assembly 4 Housing	1	75.975	0.000	0.000
Fine Sun Sensor	4	77.823	0.000	0.000
Magnetorquer Rod 1	1	76.351	0.000	0.000
Magnetorquer Rod 2	1	76.351	0.000	0.000
Magnetorquer Rod 3	1	76.351	0.000	0.000
Magnetometer	1	77.958	0.000	0.000
Main Power Harness	1	76.619	0.000	0.000
Signal Harness Bundle	1	76.681	0.000	0.000

Component	Qty	Demise Alt (km)	Casualty Area (m²)	KE (J)
Steel Fasteners	50	77.688	0.000	0.000
Thermal Interface Material	1	76.189	0.000	0.000
Misc Brackets	10	75.667	0.000	0.000
Sundry Catchall	1	75.667	0.000	0.000
AQUAMOD Housing	1	75.483	0.000	0.000
AQUAMOD Glass Element	1	74.851	0.000	0.000
AQUAMOD FR4 PCBs	1	73.987	0.000	0.000
AQUAMOD Sundries	1	75.483	0.000	0.000
AQUAMOD Harnesses	1	76.826	0.000	0.000
L3H Aux Assembly	1	74.883	0.000	0.000
L3H Harnesses	1	77.314	0.000	0.000

5.4 Casualty Risk Summary

Total Components Modeled: 63 Total Surviving Fragments: ZERO Total Casualty Area: 0.000 m² NASA Casualty Area Limit: 0.080 m² Margin: Infinite – no surviving fragments

Collision Probability (Ec): 1.6199×10^{-5} Ec Threshold: 1.0×10^{-4} Margin: 6.2 times below threshold

DAS Requirement 4.3-1*: Not Run in log – no explosive or pyrotechnic devices present; *DAS GUI confirms PASS

DAS Requirement 4.3-2: PASS

DAS Requirement 4.5-1: PASS

DAS Requirement 4.5-2: PASS

DAS Requirement 4.6: PASS

DAS Requirement 4.7-1: PASS

Overall Assessment: PASS – All components fully demise during reentry. No fragments reach the ground. No casualty risk to ground population.

5.5 Discussion of Key Results

Complete Demise Finding: The DAS analysis demonstrates that the Prodigy 8U spacecraft will completely demise during atmospheric reentry with no surviving fragments reaching the ground. This result is driven primarily by the all-aluminum construction of the spacecraft bus and the small size of any steel components present.

Battery Cells: The LG HG2 18650 lithium-ion cells, despite having nickel-plated steel enclosures, are predicted to fully demise at approximately 73.6 km altitude. The thin

wall thickness of 0.15 mm and small diameter of 18.5 mm result in complete ablation well above the ground.

Reaction Wheel Steel Components: Despite being modeled conservatively as stainless steel, the small shaft diameter of 4 mm and bearing diameter of 5 mm result in complete demise at approximately 75.3–75.7 km altitude. The aluminum flywheels demise at approximately 74.7–74.8 km.

Steel Fasteners: The 50x M3 stainless steel fasteners, modeled individually as 4 mm diameter spheres at 0.1 grams each, fully demise at approximately 77.7 km altitude, confirming that individual modeling of small fasteners was the correct approach.

Most Thermally Resistant Component: The AQUAMOD FR4 PCBs demise at the lowest altitude of 73.987 km, representing the most thermally resistant component in the model. This component still fully demises well above the ground, providing significant margin.

6. COLLISION PROBABILITY ASSESSMENT

6.1 DAS Requirement 4.5-1 Results

Run Date: July 28, 2026

Input Parameters:

- Perigee Altitude: 510.000 km
- Apogee Altitude: 510.000 km
- Inclination: 98.310 degrees
- Area to Mass Ratio: 0.0154 m^2/kg
- Initial Mass: 13.600 kg
- Final Mass: 13.600 kg
- Mission Duration: 2.000 years
- Station Kept: False
- Abandoned: True

Output Results:

- Collision Probability: 1.6199×10^{-5}
- Threshold: 1.0×10^{-3} per mission
- Margin: 62 times below threshold
- Processing Message: Normal Processing
- Date Range Message: Normal Date Range ***Compliance Status: PASS***

6.2 DAS Requirement 4.5-2

Status: COMPLIANT

7. COMPLIANCE SUMMARY

The following table summarizes compliance status for all applicable requirements based on the DAS run of July 28, 2026:

Requirement	Status	Notes
DAS 4.3-1	NOTE	Log shows Not Run; no explosive or pyrotechnic devices present; DAS GUI shows PASS; consistent with no applicable input data
DAS 4.3-2	PASS	No project data applicable
DAS 4.5-1	PASS	Pc = 1.6189 x 10^{-5}; 62 times below 1 x 10^{-3} threshold; 2.0 year mission duration confirmed
DAS 4.5-2	PASS	Compliant
DAS 4.6	PASS	Reentry 2033; PMD altitude 482.117 km; approximately 3.8 years post mission end March 2029; within 25-year rule and within FCC 5-year guideline
DAS 4.7-1	PASS	Zero surviving fragments; zero casualty area; all 63 components fully demise
NASA 25-Year Rule	PASS	Reentry 2033; PMD altitude 482.117 km; approximately 3.8 years post mission end March 2029; within 25-year rule
FCC 5-Year Rule	PASS	Mission end March 2029; reentry 2033; 3.8 years post mission end; within FCC 5-year guideline; no consultation required
Casualty Area	PASS	0.000 m^2 vs. 0.080 m^2 limit
Passivation Plan	PASS	Battery discharge and RF shutdown at EOL documented
Overall Status	***PASS***	***All requirements met. FCC 5-year deorbit guideline satisfied with predicted reentry approximately 3.8 years after projected mission end of March 2029.***

ATTACHMENT A – NASA DAS 3.1 Complete Log File, dated July 29, 2026

```
07 28 2026; 20:38:36PM     Activity Log Started
07 29 2026; 09:55:11AM     Processing Requirement 4.3-1:     Return Status :  Not Run

=====================
No Project Data Available
=====================

=============== End of Requirement 4.3-1 ===============
07 29 2026; 09:55:16AM     Processing Requirement 4.3-2: Return Status : Passed

=====================
No Project Data Available
=====================

=============== End of Requirement 4.3-2 ===============
07 29 2026; 10:01:57AM     Processing Requirement 4.5-1:     Return Status :  Passed

==============
Run Data
==============

**INPUT**

       Space Structure Name = Prodigy 8U
       Space Structure Type = Payload
       Perigee Altitude = 510.000 (km)
       Apogee Altitude = 510.000 (km)
       Inclination = 98.310 (deg)
       RAAN = 0.000 (deg)
       Argument of Perigee = 0.000 (deg)
       Mean Anomaly = 0.000 (deg)
       Final Area-To-Mass Ratio = 0.0154 (m^2/kg)
       Start Year = 2027.200 (yr)
       Initial Mass = 13.600 (kg)
       Final Mass = 13.600 (kg)
       Duration = 2.000 (yr)
       Station-Kept = False
       Abandoned = True
       Long-Term Reentry = False

**OUTPUT**

       Collision Probability = 1.6189E-05
       Returned Message: Normal Processing
       Date Range Message: Normal Date Range
       Status = Pass

==============

=============== End of Requirement 4.5-1 ===============

07 29 2026; 10:02:02AM     Project Data Saved To File
07 29 2026; 10:02:05AM     Requirement 4.5-2:  Compliant

=============== End of Requirement 4.5-2 ===============

07 29 2026; 10:02:07AM     Processing Requirement 4.6 Return Status :  Passed
```

```
==============
Project Data
==============

**INPUT**

       Space Structure Name = Prodigy 8U
       Space Structure Type = Payload

       Perigee Altitude = 510.000000 (km)
       Apogee Altitude = 510.000000 (km)
       Inclination = 98.310000 (deg)
       RAAN = 0.000000 (deg)
       Argument of Perigee = 0.000000 (deg)
       Mean Anomaly = 0.000000 (deg)
       Area-To-Mass Ratio = 0.015400 (m^2/kg)
       Start Year = 2027.200000 (yr)
       Initial Mass = 13.600000 (kg)
       Final Mass = 13.600000 (kg)
       Duration = 2.000000 (yr)
       Station Kept = False
       Abandoned = True
       PMD Perigee Altitude = 482.117385 (km)
       PMD Apogee Altitude = 482.401334 (km)
       PMD Inclination = 98.356930 (deg)
       PMD RAAN = 89.901992 (deg)
       PMD Argument of Perigee = 160.259997 (deg)
       PMD Mean Anomaly = 0.000000 (deg)
       Long-Term Reentry = False

**OUTPUT**

       Suggested Perigee Altitude = 482.117385 (km)
       Suggested Apogee Altitude = 482.401334 (km)
       Returned Error Message = Passes LEO reentry orbit criteria.

       Released Year = 2033 (yr)
       Requirement = 61
       Compliance Status = Pass

==============

=============== End of Requirement 4.6 ===============
07 29 2026; 10:02:18AM     *********Processing Requirement 4.7-1
       Return Status :  Passed

***********INPUT****
 Item Number = 1

name = Prodigy 8U
quantity = 1
parent = 0
materialID = 8
type = Box
Aero Mass = 13.600000
Thermal Mass = 13.600000
Diameter/Width = 0.226300
Length = 0.454000
Height = 0.100600

name = -Y Closeout Panel
quantity = 1
```

```
parent = 1
materialID = 7
type = Flat Plate
Aero Mass = 0.139000
Thermal Mass = 0.139000
Diameter/Width = 0.100600
Length = 0.227000

name = NanoDock Adapter
quantity = 4
parent = 1
materialID = 23
type = Flat Plate
Aero Mass = 0.046000
Thermal Mass = 0.046000
Diameter/Width = 0.090000
Length = 0.096000

name = ThermAvant OHP +X Panel
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.340000
Thermal Mass = 0.340000
Diameter/Width = 0.226300
Length = 0.454000

name = ThermAvant OHP -X Panel
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.340000
Thermal Mass = 0.340000
Diameter/Width = 0.226300
Length = 0.454000

name = ThermAvant OHP +Y Panel
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.150000
Thermal Mass = 0.150000
Diameter/Width = 0.100600
Length = 0.454000

name = ThermAvant Strap
quantity = 1
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 1.220000
Thermal Mass = 0.420000
Diameter/Width = 0.200000
Length = 0.300000

name = L3H Computer Housing
quantity = 1
parent = 7
materialID = 8
type = Box
```

```
Aero Mass = 0.800000
Thermal Mass = 0.800000
Diameter/Width = 0.100000
Length = 0.150000
Height = 0.050000

name = SAIC TLM Electronics
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.350000
Thermal Mass = 0.350000
Diameter/Width = 0.085000
Length = 0.085000
Height = 0.020000

name = SAIC TLM Harnesses
quantity = 1
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.400000
Thermal Mass = 0.400000
Diameter/Width = 0.015000
Length = 0.500000

name = NanoPower P80 EPS
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.480000
Thermal Mass = 0.480000
Diameter/Width = 0.095000
Length = 0.096000
Height = 0.040000

name = BP8 Battery Housing 1
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.558000
Thermal Mass = 0.190000
Diameter/Width = 0.095000
Length = 0.096000
Height = 0.030000

name = LG HG2 Cell Pack 1
quantity = 8
parent = 12
materialID = 54
type = Cylinder
Aero Mass = 0.046000
Thermal Mass = 0.045000
Diameter/Width = 0.018500
Length = 0.065000

name = LG HG2 Steel Core 1
quantity = 8
parent = 13
materialID = 54
```

```
type = Cylinder
Aero Mass = 0.001000
Thermal Mass = 0.001000
Diameter/Width = 0.003000
Length = 0.065000

name = BP8 Battery Housing 2
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.558000
Thermal Mass = 0.190000
Diameter/Width = 0.095000
Length = 0.096000
Height = 0.030000

name = LG HG2 Cell Pack 2
quantity = 8
parent = 15
materialID = 54
type = Cylinder
Aero Mass = 0.046000
Thermal Mass = 0.045000
Diameter/Width = 0.018500
Length = 0.065000

name = LG HG2 Steel Core 2
quantity = 8
parent = 16
materialID = 54
type = Cylinder
Aero Mass = 0.001000
Thermal Mass = 0.001000
Diameter/Width = 0.003000
Length = 0.065000

name = TSP Solar Wing 1 Assembly
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.030000
Length = 0.300000

name = TSP-45 Solar Panel W1
quantity = 3
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.270000
Thermal Mass = 0.270000
Diameter/Width = 0.082000
Length = 0.300000

name = SADA-50 Drive Motor 1
quantity = 1
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 0.080000
```

```
Thermal Mass = 0.080000
Diameter/Width = 0.030000
Length = 0.054100

name = TSP Solar Wing 2 Assembly
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.030000
Length = 0.300000

name = TSP-45 Solar Panel W2
quantity = 3
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.270000
Thermal Mass = 0.270000
Diameter/Width = 0.082000
Length = 0.300000

name = SADA-50 Drive Motor 2
quantity = 1
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 0.080000
Thermal Mass = 0.080000
Diameter/Width = 0.030000
Length = 0.054100

name = NanoMind A3200 OBC
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.024000
Thermal Mass = 0.024000
Diameter/Width = 0.090000
Length = 0.096000

name = NanoMind HP-MK3
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.240000
Thermal Mass = 0.240000
Diameter/Width = 0.095000
Length = 0.095000

name = NanoCom AX2150 TMTC
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.090000
Length = 0.096000
```

```
name = Link SX SDR
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.315000
Thermal Mass = 0.315000
Diameter/Width = 0.085000
Length = 0.085000
Height = 0.032000

name = ANT2150 S-band Antenna
quantity = 1
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 0.050000
Thermal Mass = 0.050000
Diameter/Width = 0.020000
Length = 0.150000

name = L3H Antenna Tuna Can
quantity = 1
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 0.270000
Thermal Mass = 0.270000
Diameter/Width = 0.100000
Length = 0.050000

name = RW Pyramid Structure
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.575200
Thermal Mass = 0.150000
Diameter/Width = 0.080000
Length = 0.080000
Height = 0.050000

name = RW Assembly 1 Housing
quantity = 1
parent = 30
materialID = 8
type = Box
Aero Mass = 0.162600
Thermal Mass = 0.050000
Diameter/Width = 0.065000
Length = 0.065000
Height = 0.030000

name = RW Flywheel 1
quantity = 1
parent = 31
materialID = 40
type = Cylinder
Aero Mass = 0.052000
Thermal Mass = 0.052000
Diameter/Width = 0.060000
Length = 0.050000
```

```
name = RW Shaft 1
quantity = 1
parent = 31
materialID = 54
type = Cylinder
Aero Mass = 0.004000
Thermal Mass = 0.004000
Diameter/Width = 0.004000
Length = 0.065000

name = RW Bearing 1
quantity = 2
parent = 31
materialID = 54
type = Sphere
Aero Mass = 0.000150
Thermal Mass = 0.000150
Diameter/Width = 0.005000

name = RW Flywheel 4
quantity = 1
parent = 31
materialID = 40
type = Cylinder
Aero Mass = 0.052000
Thermal Mass = 0.052000
Diameter/Width = 0.060000
Length = 0.050000

name = RW Shaft 4
quantity = 1
parent = 31
materialID = 54
type = Cylinder
Aero Mass = 0.004000
Thermal Mass = 0.004000
Diameter/Width = 0.004000
Length = 0.065000

name = RW Bearing 4
quantity = 2
parent = 31
materialID = 54
type = Sphere
Aero Mass = 0.000150
Thermal Mass = 0.000150
Diameter/Width = 0.005000

name = RW Assembly 2 Housing
quantity = 1
parent = 30
materialID = 8
type = Box
Aero Mass = 0.106300
Thermal Mass = 0.050000
Diameter/Width = 0.065000
Length = 0.065000
Height = 0.030000

name = RW Flywheel 2
quantity = 1
parent = 38
```

```
materialID = 40
type = Cylinder
Aero Mass = 0.052000
Thermal Mass = 0.052000
Diameter/Width = 0.060000
Length = 0.050000

name = RW Shaft 2
quantity = 1
parent = 38
materialID = 54
type = Cylinder
Aero Mass = 0.004000
Thermal Mass = 0.004000
Diameter/Width = 0.004000
Length = 0.065000

name = RW Bearing 2
quantity = 2
parent = 38
materialID = 54
type = Sphere
Aero Mass = 0.000150
Thermal Mass = 0.000150
Diameter/Width = 0.005000

name = RW Assembly 3 Housing
quantity = 1
parent = 30
materialID = 8
type = Box
Aero Mass = 0.106300
Thermal Mass = 0.050000
Diameter/Width = 0.065000
Length = 0.065000
Height = 0.030000

name = RW Flywheel 3
quantity = 1
parent = 42
materialID = 40
type = Cylinder
Aero Mass = 0.052000
Thermal Mass = 0.052000
Diameter/Width = 0.060000
Length = 0.050000

name = RW Shaft 3
quantity = 1
parent = 42
materialID = 54
type = Cylinder
Aero Mass = 0.004000
Thermal Mass = 0.004000
Diameter/Width = 0.004000
Length = 0.065000

name = RW Bearing 3
quantity = 2
parent = 42
materialID = 54
type = Sphere
Aero Mass = 0.000150
```

```
Thermal Mass = 0.000150
Diameter/Width = 0.005000

name = RW Assembly 4 Housing
quantity = 1
parent = 30
materialID = 8
type = Box
Aero Mass = 0.050000
Thermal Mass = 0.050000
Diameter/Width = 0.065000
Length = 0.065000
Height = 0.030000

name = Fine Sun Sensor
quantity = 4
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.001000
Thermal Mass = 0.001000
Diameter/Width = 0.020000
Length = 0.020000

name = Magnetorquer Rod 1
quantity = 1
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.050000
Thermal Mass = 0.050000
Diameter/Width = 0.008000
Length = 0.120000

name = Magnetorquer Rod 2
quantity = 1
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.050000
Thermal Mass = 0.050000
Diameter/Width = 0.008000
Length = 0.120000

name = Magnetorquer Rod 3
quantity = 1
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.050000
Thermal Mass = 0.050000
Diameter/Width = 0.008000
Length = 0.120000

name = Magnetometer
quantity = 1
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 0.003000
Thermal Mass = 0.003000
Diameter/Width = 0.053000
Length = 0.083000
```

```
name = Main Power Harness
quantity = 1
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.250000
Thermal Mass = 0.250000
Diameter/Width = 0.015000
Length = 0.500000

name = Signal Harness Bundle
quantity = 1
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.150000
Thermal Mass = 0.150000
Diameter/Width = 0.010000
Length = 0.400000

name = Steel Fasteners
quantity = 50
parent = 1
materialID = 54
type = Sphere
Aero Mass = 0.000100
Thermal Mass = 0.000100
Diameter/Width = 0.004000

name = Thermal Interface Material
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.050000
Thermal Mass = 0.050000
Diameter/Width = 0.050000
Length = 0.050000

name = Misc Brackets
quantity = 10
parent = 1
materialID = 8
type = Box
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.050000
Length = 0.050000
Height = 0.020000

name = Sundry Catchall
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.050000
Length = 0.050000
Height = 0.020000

name = AQUAMOD Housing
```

```
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 1.295000
Thermal Mass = 1.200000
Diameter/Width = 0.200000
Length = 0.233000
Height = 0.100000

name = AQUAMOD Glass Element
quantity = 1
parent = 58
materialID = 23
type = Flat Plate
Aero Mass = 0.015000
Thermal Mass = 0.015000
Diameter/Width = 0.050000
Length = 0.050000

name = AQUAMOD FR4 PCBs
quantity = 1
parent = 58
materialID = 23
type = Flat Plate
Aero Mass = 0.080000
Thermal Mass = 0.080000
Diameter/Width = 0.085000
Length = 0.085000

name = AQUAMOD Sundries
quantity = 1
parent = 58
materialID = 8
type = Box
Aero Mass = 0.000000
Thermal Mass = 0.000000
Diameter/Width = 0.050000
Length = 0.050000
Height = 0.020000

name = AQUAMOD Harnesses
quantity = 1
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.010000
Length = 0.300000

name = L3H Aux Assembly
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.430000
Thermal Mass = 0.430000
Diameter/Width = 0.080000
Length = 0.100000
Height = 0.050000

name = L3H Harnesses
```

```
quantity = 1
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.050000
Thermal Mass = 0.050000
Diameter/Width = 0.008000
Length = 0.300000

**************OUTPUT****
Item Number = 1

name = Prodigy 8U
Demise Altitude = 78.002460
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = -Y Closeout Panel
Demise Altitude = 77.262355
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = NanoDock Adapter
Demise Altitude = 77.381334
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = ThermAvant OHP +X Panel
Demise Altitude = 77.376645
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = ThermAvant OHP -X Panel
Demise Altitude = 77.376645
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = ThermAvant OHP +Y Panel
Demise Altitude = 77.472184
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = ThermAvant Strap
Demise Altitude = 77.177574
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = L3H Computer Housing
Demise Altitude = 73.115870
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = SAIC TLM Electronics
Demise Altitude = 74.076388
Debris Casualty Area = 0.000000
```

```
Impact Kinetic Energy = 0.000000

************************************
name = SAIC TLM Harnesses
Demise Altitude = 75.837764
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = NanoPower P80 EPS
Demise Altitude = 74.242164
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = BP8 Battery Housing 1
Demise Altitude = 76.394446
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = LG HG2 Cell Pack 1
Demise Altitude = 73.824258
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = LG HG2 Steel Core 1
Demise Altitude = 73.597801
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = BP8 Battery Housing 2
Demise Altitude = 76.394446
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = LG HG2 Cell Pack 2
Demise Altitude = 73.824258
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = LG HG2 Steel Core 2
Demise Altitude = 73.597801
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = TSP Solar Wing 1 Assembly
Demise Altitude = 76.898466
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = TSP-45 Solar Panel W1
Demise Altitude = 76.549303
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
```

```
name = SADA-50 Drive Motor 1
Demise Altitude = 75.208769
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = TSP Solar Wing 2 Assembly
Demise Altitude = 76.898466
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = TSP-45 Solar Panel W2
Demise Altitude = 76.549303
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = SADA-50 Drive Motor 2
Demise Altitude = 75.208769
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = NanoMind A3200 OBC
Demise Altitude = 77.682266
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = NanoMind HP-MK3
Demise Altitude = 74.947077
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = NanoCom AX2150 TMTC
Demise Altitude = 76.670372
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = Link SX SDR
Demise Altitude = 74.876856
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = ANT2150 S-band Antenna
Demise Altitude = 77.009834
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = L3H Antenna Tuna Can
Demise Altitude = 74.809457
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Pyramid Structure
Demise Altitude = 76.692799
Debris Casualty Area = 0.000000
```

```
Impact Kinetic Energy = 0.000000

************************************
name = RW Assembly 1 Housing
Demise Altitude = 76.006575
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Flywheel 1
Demise Altitude = 74.782581
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Shaft 1
Demise Altitude = 75.333673
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Bearing 1
Demise Altitude = 75.700478
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Flywheel 4
Demise Altitude = 74.782581
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Shaft 4
Demise Altitude = 75.333673
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Bearing 4
Demise Altitude = 75.700478
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Assembly 2 Housing
Demise Altitude = 76.001912
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Flywheel 2
Demise Altitude = 74.735009
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Shaft 2
Demise Altitude = 75.309809
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
```

```
name = RW Bearing 2
Demise Altitude = 75.683540
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Assembly 3 Housing
Demise Altitude = 76.001912
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Flywheel 3
Demise Altitude = 74.735009
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Shaft 3
Demise Altitude = 75.309809
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Bearing 3
Demise Altitude = 75.683540
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = RW Assembly 4 Housing
Demise Altitude = 75.975051
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = Fine Sun Sensor
Demise Altitude = 77.823201
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = Magnetorquer Rod 1
Demise Altitude = 76.351470
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = Magnetorquer Rod 2
Demise Altitude = 76.351470
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = Magnetorquer Rod 3
Demise Altitude = 76.351470
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = Magnetometer
Demise Altitude = 77.957897
Debris Casualty Area = 0.000000
```

```
Impact Kinetic Energy = 0.000000

************************************
name = Main Power Harness
Demise Altitude = 76.619304
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = Signal Harness Bundle
Demise Altitude = 76.680832
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = Steel Fasteners
Demise Altitude = 77.687962
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = Thermal Interface Material
Demise Altitude = 76.189226
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = Misc Brackets
Demise Altitude = 75.667154
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = Sundry Catchall
Demise Altitude = 75.667154
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = AQUAMOD Housing
Demise Altitude = 75.482516
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = AQUAMOD Glass Element
Demise Altitude = 74.850902
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = AQUAMOD FR4 PCBs
Demise Altitude = 73.986850
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = AQUAMOD Sundries
Demise Altitude = 75.482516
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
```

```
name = AQUAMOD Harnesses
Demise Altitude = 76.825942
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = L3H Aux Assembly
Demise Altitude = 74.883367
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************
name = L3H Harnesses
Demise Altitude = 77.314178
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

************************************

=============== End of Requirement 4.7-1 ===============
07 29 2026; 10:02:18AM     Project Data Saved To File
```

CERTIFICATION

I certify that the information contained in this Orbital Debris Assessment Report is accurate and complete to the best of my knowledge and that the Prodigy 8U mission has been designed in accordance with applicable orbital debris mitigation guidelines including NASA-STD-8719.14B and FCC 47 CFR Part 25.

Prepared by: Roy Kampfer

Title: Chief Engineer

Organization: Science Applications International Corporation

Date: July 28, 2026

Approved by: _____

Title: _____

Date: _____