Exhibit C

YAM-5 Orbital Debris Assessment Report (ODAR)

YAM-5-ODAR-1.0

This report is presented in compliance with NASA-STD-8719.14C, APPENDIX A.

Loft Orbital Solutions Inc. (Loft Orbital)

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Debris Assessment Software (DAS) version used in analysis: v3.2.1

Revision Record				
Revision:	Date:	Affected Pages:	Changes:	Author(s):
1.0	5/23/2022	All – Initial	DAS Software Results Orbit Lifetime Analysis	D. Morse

TABLE OF CONTENTS

ODAR Self-Assessment Evaluation:

A self-assessment is provided below in accordance with the assessment format provided in Appendix A.2 of NASA-STD-8719.14C.

ODAR Requirement	Compliant or N/A	Not Compliant	Incomplete
4.3-1.a	x		
4.3-1.b	x		
4.3-2	x		
4.4-1	x		
4.4-2	x		
4.4-3	x		
4.4-4	x		
4.5-1	x		
4.5-2	x		
4.6-1(a)-c	x		
4.6-2	x		
4.6-3	x		
4.6-4	x		
4.7-1	x		
4.8-1	x		

Assessment Report Format:

This ODAR follows the format recommended in NASA-STD-8719.14C, Appendix A.1, sections 1 through 8 for the Loft Orbital satellite ("YAM-5"). Sections 9 through 14 apply to the launch vehicle ODAR and are not covered here.

1. Program Management and Mission Overview

Loft Orbital is a U.S. company headquartered in San Francisco, California.

Program Manager

- Peter van Duijn

Senior Management

- Alexander B. Greenberg (Co-founder & Chief Operating Officer)

Foreign Government or Space Agency Participation

- None

Mission Overview

The YAM-5 satellite will launch into a sun-synchronous circular orbit at an orbit altitude of approximately 525 km. Loft Orbital, however, has assumed a 550 km worst-case deployment orbital altitude for purposes of this orbital debris analysis. The orbital decay of the YAM-5 satellite is provided at both 525 km and 550 km for completeness. The satellite bus will use reaction wheels, magnetic torque coils, a star tracker, magnetometers, sun sensors, and an inertial measurement unit to enable precision 3-axis pointing without the use of propellant.

Launch

The YAM-5 will be launched aboard a Falcon-9 launch vehicle. The launch site is Cape Canaveral, FL. The Falcon-9 launch vehicle will transport multiple mission payloads to orbit as part of the SpaceX Rideshare program.

YAM-5 will be deployed into an approximately sun synchronous circular LEO. YAM-5 will be separated from the Falcon-9 launch vehicle using a deployer with debris free actuation. The spacecraft is expected to be deployed with the following orbital parameters:[1]

- Apogee: 525 km nominal ± 25 km
- Perigee: 525 km nominal ± 25 km
- Target Inclination: 97.6° ± 0.1°
- LTDN: ~9:30 +60 minutes

YAM-5 has no on-board propulsion and therefore does not actively change its orbit. There is no parking or transfer orbit.

Mission Duration

The anticipated lifetime of YAM-5 is 3 years in LEO.

2. Spacecraft Description

Physical description of the spacecraft

Physical description of the constellation: The YAM-5 satellite is based on the LeoStella bus used for the BlackSky Global satellites. Basic physical dimensions are 678 mm x 875 mm x 665 mm with a mass of approximately 87.0 kg. The satellite is composed of the LeoStella bus and the Loft Payload Hub. The solar panels generate up to 130W of electric power which is stored in a 250Wh COTS Li-Ion unpressurized battery assembly. The bus is 3-axis stabilized, employing star trackers, magnetometers, IMU, GPS and sun sensors for attitude knowledge and reaction wheels and torque rods for attitude control.

The YAM-5 satellite will be separated from the Falcon-9 launch vehicle using a deployer with debris free actuation.

[1] As a worst-case scenario, Loft Orbital has assumed a 550-km deployment orbital altitude for purposes of this orbital debris analysis.

The YAM-5 spacecraft is depicted in Figure 1.

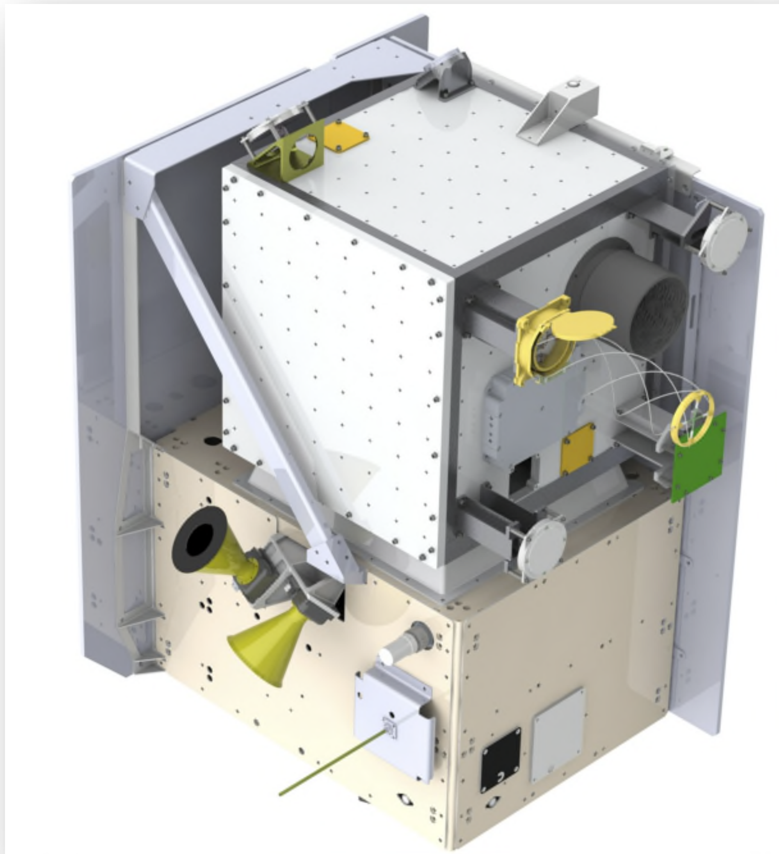

Figure 1. YAM-5 Spacecraft Configuration

Spacecraft Mass

- Wet Mass: 87.0 kg
- Dry Mass: 87.0 kg (no propellants on board)

Description of propulsion system

None

Fluids Planned to be On-board

440mL of methonal in sealed heat pipes

Fluids in Pressurized Batteries: None

The YAM-5 satellite uses two unpressurized standard COTS Lithium-Ion batteries. Each battery has a height of 98mm, a width of 96mm, a length of 176mm, and a mass of 1.6 kg.

Attitude Control System:

The long axis of the YAM-5 spacecraft can be oriented parallel to the nadir vector during imaging or other payload operations, but the satellite will typically be oriented in a sun-pointing attitude.

The YAM-5 spacecraft attitude will be controlled initially by torque rods, which will allow the satellite to be aligned relative to the Earth's magnetic field. These will allow the satellite to detumble and align with the magnetic field.

- A *safe mode* is optimized for solar power generation from the satellite. The spacecraft's deployable panel will be oriented towards the sun. This mode will make use of magnetometers, sun sensors, reaction wheels, and magnetic torquers to orient the spacecraft correctly.
- A *targeted tracking mode* will allow the satellite Nadir panel to be directed at any location on the Earth's surface. This mode will make use of reaction wheels and a star tracker to orient the spacecraft.
- An *LVLH mode* keeps the Nadir panel pointed towards the Earth's surface. This mode will make use of reaction wheels and a star tracker to orient the spacecraft.

Description of any range safety or other pyrotechnic devices

None.

The YAM-5 satellite will be separated from the Falcon-9 launch vehicle using a deployer with debris free actuation.

Description of the electrical generation and storage system

Standard COTS Li-Ion battery cells are charged before payload integration and provide 161Wh of electrical energy during the eclipse portion of the satellite's orbit. A series of triple junction solar cells generate an average on-orbit power of approximately 70 W. The charge/discharge cycle is managed by the electronic power system which is monitored by the flight computer.

Identification of any other sources of stored energy not noted above

Reaction wheels store kinetic energy but can be disconnected from power at end of the operational lifetime.

Identification of any radioactive material on board

None

Address the trackability of the spacecraft. Spacecraft operating in low-Earth orbit will be presumed trackable if each individual spacecraft is 10 cm or larger in its smallest dimension, excluding deployable components:

The spacecraft is in low-Earth orbit and has a smallest dimension measuring at least 10 cm. Thus, it is trackable.

The statement shall also disclose the following:

How the operator plans to identify the spacecraft following deployment and whether spacecraft tracking will be active or passive:

Spacecraft tracking will be active. Prior to deployment an initial ephemeris is produced by the launch service that will be used to schedule a contact time window with the ground station. The accuracy of the ephemeris will depend on the launch vehicle's performance, delays, and deployment times. A more accurate ephemeris will be made available shortly after deployment. After deployment when the satellite establishes contact with the nearest available Loft Orbital contracted ground station, active satellite tracking will be employed to enhance and maintain satellite ephemeris data. The collected data will be used to identify the spacecraft from two-line element sets once they become available by the 18th Space Control Squadron.

Whether, prior to deployment, the spacecraft will be registered with the 18th Space Control Squadron or successor entity:
Prior to deployment, the spacecraft will be registered with the 18th Space Control Squadron via their Satellite Registration Form and Space Situational Awareness (SSA) Sharing Agreement.

The extent to which the spacecraft operator plans to share information regarding initial deployment, ephemeris, and/or planned maneuvers with the 18th Space Control Squadron or successor entity, other entities that engage in space situational awareness or space traffic management functions, and/or other operators:
Loft intends to provide the 18th Space Control Squadron information regarding initial deployment, owner/operator (O/O) ephemeris, and planned maneuvers. This is intended to provide better space situational awareness 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 (CDMs). Loft Orbital intends to share ephemeris with other operators on an as-needed basis.

Planned Proximity Operations
None

3. Spacecraft Debris Released During Normal Operations

Assessment of Spacecraft Compliance with Requirements 4.3-1 and 4.3-2

Requirement 4.3-1: Mission Related Debris Passing Through LEO

- **Compliance statement:** No release of debris will occur during the lifetime of YAM-5. Additionally, there is no probable scenario for unintentional debris generation.

Requirement 4.3-2: Mission Related Debris Passing Near GEO

- **Compliance statement:** This requirement is not applicable to this mission profile.

4. Spacecraft Intentional Breakups and Potential for Explosions

Potential causes of spacecraft breakup during deployment and mission operations

There is no credible scenario that would result in spacecraft breakup during normal deployment operations.

Summary of failure modes and effects analyses of all credible failure modes which may lead to an accidental explosion

In-mission failure of a battery cell protection circuit could lead to a short circuit resulting in overheating and a very remote possibility of battery cell explosion. The battery safety systems discussed in the FMEA (see requirement 4.4-1 below) describe the combined faults that must occur for any of seven (7) independent, mutually exclusive failure modes to lead to explosion. In addition to the battery protection mentioned about, the YAM-5 battery unit features two temperature sensors which monitor battery cells for high temperatures.

Plan for any designed spacecraft breakup

There are no planned breakups.

List of components which shall be passivated at End of Mission (EOM) including method of passivation and amount which cannot be passivated

- **Reaction Wheels** – reaction wheels will be spun down and the spacecraft will be controlled via toque rods
- **Sealed Heat Pipes** – no passivation is planned or required
- **Batteries** – batteries will not be passivated due to the low risk and low impact of a cell or cells rupturing and the extremely short lifetime at EOM.

Rationale for Non-Passivation

YAM-5's satellite battery charge circuits include overcharge protection and a parallel design to limit the risk of battery failure. However, in the unlikely event that a battery cell does explosively rupture, the small size, mass, and potential energy, of these small batteries is such that while the spacecraft could be expected to vent gases, most debris from the battery rupture should be contained within the vessel due to the lack of penetration energy.

Assessment of Spacecraft Compliance with Requirements 4.4-1 through 4.4-4

Requirement 4.4-1: Limiting the risk to other space systems from accidental explosions during deployment and mission operations while in orbit about Earth or the Moon

- *For each spacecraft and launch vehicle orbital stage employed for a mission, the program or project shall demonstrate, via failure mode and effects analyses or equivalent analyses, that the integrated probability of explosion for all credible failure modes of each spacecraft and launch vehicle is less than 0.001 (excluding small particle impacts) (Requirement 56449).*

Compliance statement:

Required Probability: 0.001
Expected probability: 0.000; COMPLIANT.

Supporting Rationale and FMEA details:

Battery explosion:

Effect: All failure modes below might theoretically result in battery explosion with the possibility of orbital debris generation. However, in the unlikely event that a battery cell does explosively rupture, the small size, mass, and potential energy, of the selected COTS batteries is such that while the spacecraft could be expected to vent gases, most debris from the battery rupture should be contained within the vessel due to the lack of penetration energy.

Probability: Extremely Low. It is believed to be a much less than 0.1% probability that multiple independent (not common mode) faults must occur for each failure mode to cause the ultimate effect (explosion).

Failure mode 1: Internal short circuit.

Mitigation 1: Qualification and acceptance shock, vibration, thermal cycling, and vacuum tests followed by maximum system rate-limited charge and discharge to prove that no internal short circuit sensitivity exists.

Combined faults required for realized failure: Environmental testing AND functional charge/discharge tests must both be ineffective in discovery of the failure mode.

Failure Mode 2: Internal thermal rise due to high load discharge rate.

Combined faults required for realized failure: Spacecraft thermal design must be incorrect AND external over-current detection and disconnect function must fail to enable this failure mode.

Failure Mode 3: Excessive discharge rate or short circuit due to external device failure or terminal contact with conductors not at battery voltage levels (due to abrasion or inadequate proximity separation).

Mitigation 3: This failure mode is negated by a) qualification-tested short circuit protection on each external circuit, b) design of battery packs and insulators such that no contact with nearby board traces is possible without being caused by some other mechanical failure, c) obviation of such other mechanical failures by protoqualification and acceptance environmental tests (shock, vibration, thermal cycling, and thermal-vacuum tests).

Combined faults required for realized failure: An external load must fail/shortcircuit AND external over-current detection and disconnect function failure must all occur to enable this failure mode.

Failure Mode 4: Inoperable vents.

Mitigation 4: Battery vents are not inhibited by the battery holder design or the spacecraft.

Combined effects required for realized failure: The final assembler fails to install proper venting.

Failure Mode 5: Crushing

Mitigation 5: This mode is negated by spacecraft design. There are no moving parts in the proximity of the batteries.

Combined faults required for realized failure: A catastrophic failure must occur in an external system AND the failure must cause a collision sufficient to crush the batteries leading to an internal short circuit AND the satellite must be in a naturally sustained orbit at the time the crushing occurs.

Failure Mode 6: Low level current leakage or short-circuit through battery pack case or due to moisture-based degradation of insulators.

Mitigation 6: These modes are negated by a) battery holder/case design made of non-conductive plastic, and b) operation in vacuum such that no moisture can affect insulators.

Combined faults required for realized failure: Abrasion or piercing failure of circuit board coating or wire insulators AND dislocation of battery packs AND failure of battery terminal insulators AND failure to detect such failure modes in environmental tests must occur to result in this failure mode.

Failure Mode 7: Excess temperatures due to orbital environment and high discharge combined.

Mitigation 7: The spacecraft thermal design will negate this possibility. Thermal rise has been analyzed in combination with space environment temperatures showing that batteries do not exceed normal allowable operating temperatures which are well below temperatures of concern for explosions.

Combined faults required for realized failure: Thermal analysis AND thermal design AND mission simulations in thermal-vacuum chamber testing AND overcurrent monitoring and control must all fail for this failure mode to occur

Requirement 4.4-2: Design for passivation after completion of mission operations while in orbit about Earth or the Moon

- *Design of all spacecraft and launch vehicle orbital stages shall include the ability to deplete all onboard sources of stored energy and disconnect all energy generation sources when they are no longer required for mission operations or post-mission disposal or control to a level which cannot cause an explosion or deflagration large enough to release orbital debris or break up the spacecraft (Requirement 56450).*
- **Compliance statement:** YAM-5's battery charge circuits include overcharge protection and a parallel design to limit the risk of battery failure. However, in the unlikely event that battery cell does explosively rupture, the small size, mass, and potential energy, of these small batteries is such that while the spacecraft could be expected to vent gases, most debris from the battery rupture should be contained within the vessel due to the lack of penetration energy.

Requirement 4.4-3: Limiting the long-term risk to other space systems from planned breakups

- **Compliance statement:** This requirement is not applicable. There are no planned breakups.

Requirement 4.4-4: Limiting the short-term risk to other space systems from planned breakups

- **Compliance statement:** This requirement is not applicable. There are no planned breakups.

5. Spacecraft Potential for On-Orbit Collisions

Requirement 4.5-1: Limiting debris generated by collisions with large objects when operating in Earth orbit

- *For each spacecraft and launch vehicle orbital stage in or passing through LEO, the program or project shall demonstrate that, during the orbital lifetime of each spacecraft and orbital stage, the probability of accidental collision with space objects larger than 10 cm in diameter is less than 0.001 (Requirement 56506).*
- **Compliance statement:** Large object impact and debris generation probability: 0.00001698

Requirement 4.5-2: Limiting the probability of damage from small objects when operating in Earth or lunar orbit

- *For each spacecraft, the program or project shall demonstrate that, during the mission of the spacecraft, the probability of accidental collision with orbital debris and meteoroids sufficient to prevent compliance with the applicable post-mission disposal requirements is less than 0.01 (Requirement 56507).*
- **Compliance Statement:**

Small Object Impact and Debris Generation Probability: Not applicable; the spacecraft will be disposed of by atmospheric entry and does not require a specific spacecraft orientation and drag state to meet the disposal requirements. Therefore, no element or component of the spacecraft system is required to complete post-mission operations.

Detailed description and assessment of efficacy of any planned debris avoidance capability intended to help in meeting requirement 4.5-1

Not applicable.

If at any time during the spacecraft's mission or de-orbit phase the spacecraft will operate in or transit through the orbits used by any planned or inhabitable spacecraft, including the International Space Station, describe the design and operational strategies, such as

coordination, that will be used to minimize the risk of collision and avoid posing any operational constraints to the spacecraft

After the end of its operational life the YAM-5 spacecraft will passively deorbit. This passive deorbit stage will pass through the orbital altitude of the ISS. As can be seen in Figure 3 and Figure 4 below, the orbit stays nearly circular, thus limiting the period of time when conjunctions with the ISS may occur.

Certify that upon receipt of a space situational awareness conjunction warning, the operator will review and take all possible steps to assess the collision risk, and will mitigate the collision risk if necessary

Upon receipt of a space situational awareness conjunction warning, Loft certifies that it will attempt to contact the operator of any active spacecraft involved in such a warning, share ephemeris data and other appropriate operational information with any such operator in order to avoid a collision. The YAM-5 spacecraft does not have maneuvering capabilities and therefore cannot adjust its orbit to address potential conjunctions.

6. Spacecraft Post-mission Disposal Plans and Procedures

Description of spacecraft disposal option selected

Consistent with NASA-STD 8719.4C, YAM-5 will be disposed of via atmospheric reentry. The operational altitude in low-Earth orbit lends to natural forces that will quickly lead to atmospheric reentry once the operations, including station-keeping with maneuvers, are ceased.

Systems or Components Required to Accomplish Post-mission Disposal Maneuvers

None.

Post-mission Disposal Maneuver Plan

Not applicable. YAM-5 does not have any propulsion capability.

Calculation of area-to-mass ratio after post-mission disposal

The final area-to-mass ratio is calculated using the dry mass of the vehicle and the average cross-sectional area. Average cross-sectional area is calculated using the equation for estimated average cross-sectional area for non-convex shapes from NASA-STD-8179.14C: $A_{avg} = (A_{max} + A_1 + A_2)/2$, where A_{max} is the maximum cross-sectional area, and A_1 and A_2 are the cross-sectional areas for the two viewing directions orthogonal to the maximum cross sectional area viewing direction.

YAM-5 area-to-mass ratio calculation:

- Spacecraft mass: 87.0 kg (wet/dry mass)
- Cross-sectional area: 1.282 m^2 (average)
- Area-to-mass ratio: 0.014731 m^2/kg (final)

Assessment of spacecraft compliance with ODAR requirements 4.6-1 to 4.6-4

Requirement 4.6-1(a): Disposal for space structures in or passing through LEO

- **Compliance statement:** The YAM-5 satellite reentry is COMPLIANT. From the target insertion orbit of 525 x 525km, the YAM-5 spacecraft will passively deorbit in 3.483 years with orbit history as shown in Figure 3. From the worst-case insertion orbit of 550 x 550 km, the YAM-5 spacecraft will passively deorbit in 5.185 years with orbit history as shown in Figure 4.

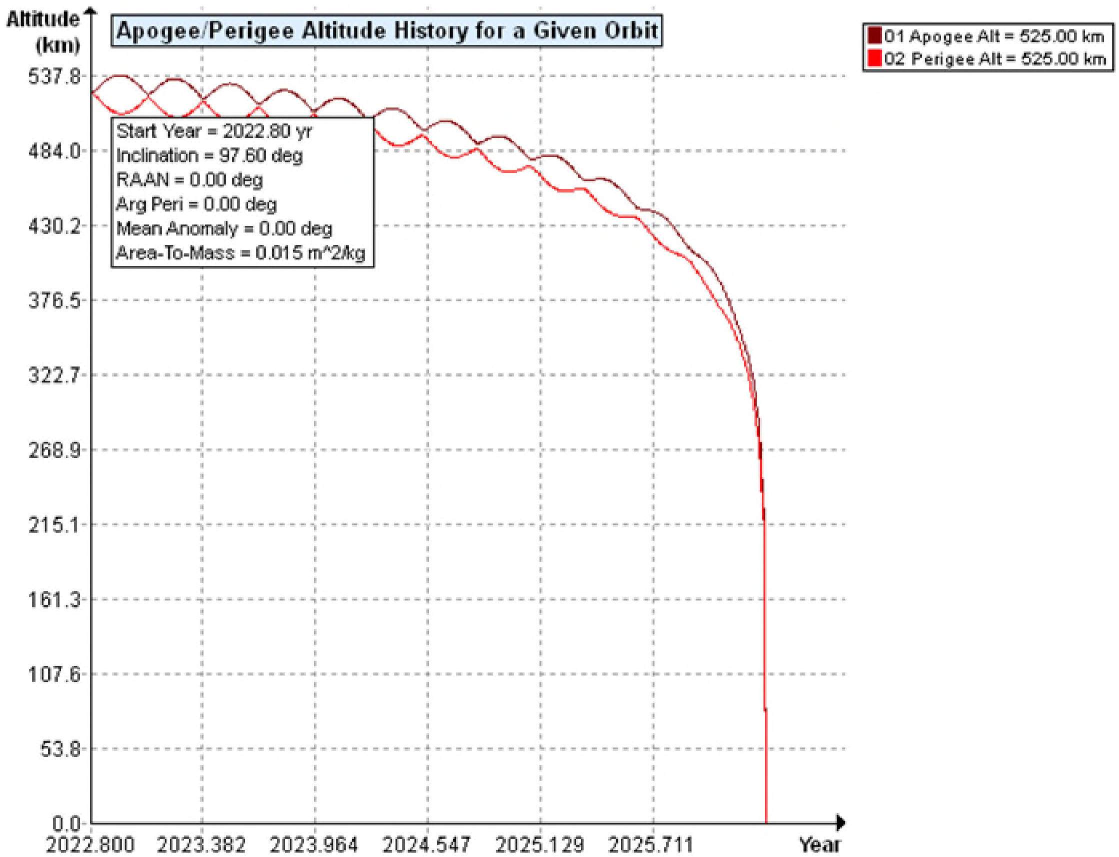

Figure 3. Orbital Decay Profile for Nominal Insertion Orbit

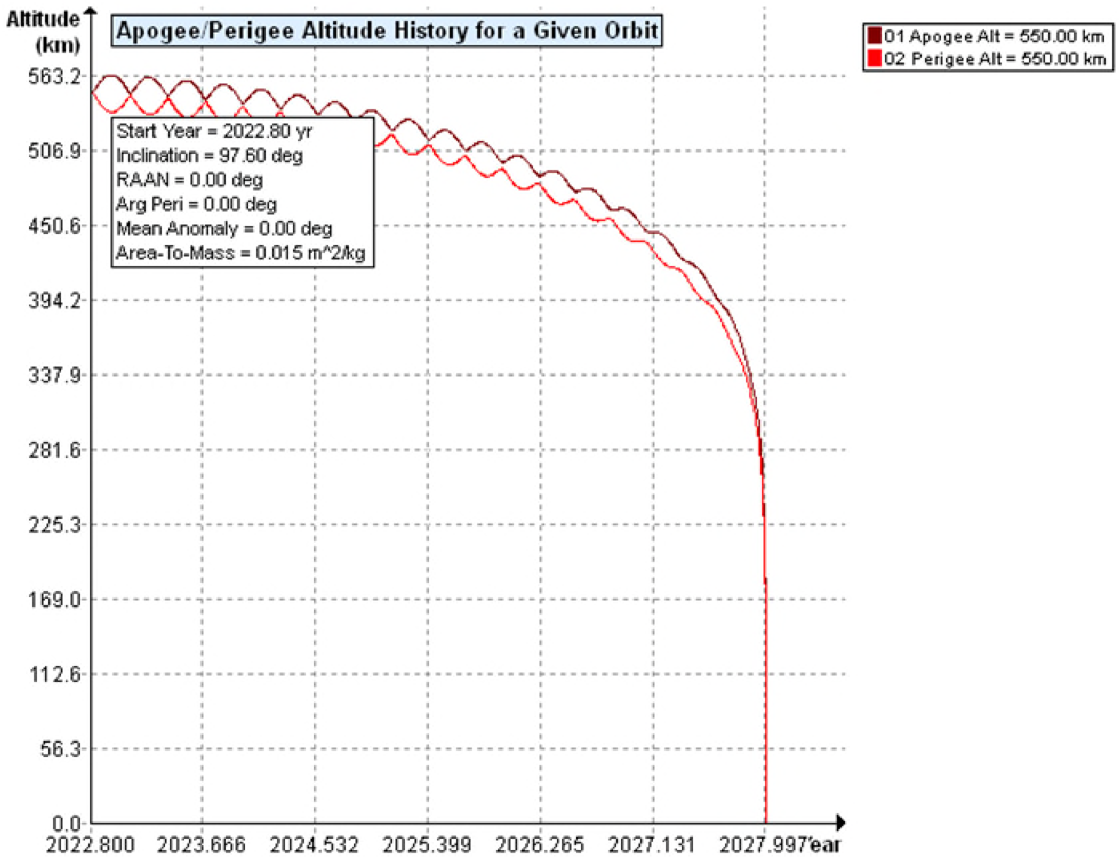

Figure 4. Orbital Decay Profile for Worst-Case Insertion Orbit

Requirement 4.6-2: Disposal for space structure near GEO

- **Compliance statement:** Not applicable

Requirement 4.6-3: Disposal for space structures between LEO and GEO

- **Compliance statement:** Not applicable

Requirement 4.6-4: Reliability of post-mission disposal operations

- **Compliance statement:** An EOM maneuver is not required to ensure deorbit within 25 years

7. Spacecraft Reentry Hazards

Summary of objects expected to survive uncontrolled reentry

For YAM-5, a few larger spacecraft components are expected to survive uncontrolled reentry with an impact energy of greater than 15J, per the DAS v3.2.1 Casualty Risk from Reentry Debris requirement assessment. Those four components are as follows: P5-QHA Antenna, Payload Deck, Solar Array, and Prop Deck. This corresponds to a 1:11,200 risk of human casualty and a total debris casualty area of 5.62 m^2 and falls within the 1:10,000 risk permitted by administrations, such as the United States.

Compliance Assessment for Requirement 4.7-1

Limit the risk of human casualty.

Requirement 4.7-1(a):

- *The potential for human casualty is assumed for any object with an impacting kinetic energy in excess of 15 joules. For uncontrolled reentry, the risk of human casualty from surviving debris shall not exceed 0.0001 (1:10,000) (Requirement 56626).*
- **Compliance statement:** The calculated risk of human casualty is 1:11,200

Requirement 4.7-1(b):

- **Compliance statement:** Not applicable since controlled reentry is not an element of the end of mission disposal plan

Requirement 4.7-1(c):

- **Compliance statement:** Not applicable since controlled reentry is not an element of the end of mission disposal plan

Analysis using DAS v3.2.1

05 16 2022; 13:35:27PM Project Data Saved To File
05 16 2022; 13:35:37PM Processing Requirement 4.3-1: Return Status : Not Run

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No Project Data Available
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=============== End of Requirement 4.3-1 ===============
05 16 2022; 13:35:41PM Processing Requirement 4.3-2: Return Status : Passed

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No Project Data Available
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=============== End of Requirement 4.3-2 ===============
05 16 2022; 13:46:24PM Processing Requirement 4.5-1: Return Status : Passed

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

INPUT

Space Structure Name = YAM-5
Space Structure Type = Payload
Perigee Altitude = 550.000 (km)
Apogee Altitude = 550.000 (km)
Inclination = 97.600 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass Ratio = 0.0147 (m^2/kg)
Start Year = 2022.800 (yr)
Initial Mass = 87.000 (kg)
Final Mass = 87.000 (kg)
Duration = 5.000 (yr)
Station-Kept = False
Abandoned = True
Long-Term Reentry = False

OUTPUT

Collision Probability = 1.6980E-05
Returned Message: Normal Processing
Date Range Message: Normal Date Range
Status = Pass

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

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

05 16 2022; 13:46:56PM Project Data Saved To File
05 16 2022; 13:47:01PM Requirement 4.5-2: Compliant

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

05 16 2022; 13:47:04PM Processing Requirement 4.6 Return Status : Passed

==============
Project Data
==============

INPUT

Space Structure Name = YAM-5
Space Structure Type = Payload

Perigee Altitude = 550.000000 (km)
Apogee Altitude = 550.000000 (km)
Inclination = 97.600000 (deg)
RAAN = 0.000000 (deg)
Argument of Perigee = 0.000000 (deg)
Mean Anomaly = 0.000000 (deg)
Area-To-Mass Ratio = 0.014731 (m^2/kg)
Start Year = 2022.800000 (yr)
Initial Mass = 87.000000 (kg)
Final Mass = 87.000000 (kg)
Duration = 5.000000 (yr)
Station Kept = False
Abandoned = True
PMD Perigee Altitude = 345.645155 (km)
PMD Apogee Altitude = 361.250652 (km)
PMD Inclination = 97.404361 (deg)
PMD RAAN = 18.679631 (deg)
PMD Argument of Perigee = 81.517385 (deg)
PMD Mean Anomaly = 0.000000 (deg)
Long-Term Reentry = False

OUTPUT

Suggested Perigee Altitude = 345.645155 (km)
Suggested Apogee Altitude = 361.250652 (km)
Returned Error Message = Passes LEO reentry orbit criteria.

Released Year = 2027 (yr)
Requirement = 61
Compliance Status = Pass

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

=============== End of Requirement 4.6 ===============
05 16 2022; 13:47:18PM *********Processing Requirement 4.7-1
Return Status : Passed

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

name = YAM-5
quantity = 1
parent = 0
materialID = 8
type = Box
Aero Mass = 87.000000
Thermal Mass = 87.000000
Diameter/Width = 0.776300
Length = 0.875140
Height = 0.665000

name = Y-Panels
quantity = 2
parent = 1
materialID = 5
type = Flat Plate
Aero Mass = 2.030000
Thermal Mass = 2.030000
Diameter/Width = 0.390000
Length = 0.422000

name = X-Panels
quantity = 2
parent = 1
materialID = 5
type = Flat Plate
Aero Mass = 1.840000
Thermal Mass = 1.840000
Diameter/Width = 0.394000
Length = 0.394000

name = Z-Panels
quantity = 2
parent = 1
materialID = 5
type = Flat Plate
Aero Mass = 1.840000
Thermal Mass = 1.840000
Diameter/Width = 0.394000
Length = 0.394000

name = Shelf-Panel
quantity = 1
parent = 1

materialID = 5
type = Flat Plate
Aero Mass = 0.135000
Thermal Mass = 0.135000
Diameter/Width = 0.361000
Length = 0.394000

name = Shelf-Brackets
quantity = 2
parent = 1
materialID = 9
type = Flat Plate
Aero Mass = 0.170000
Thermal Mass = 0.170000
Diameter/Width = 0.100000
Length = 0.394000

name = Mezzanine-Panel
quantity = 1
parent = 1
materialID = 5
type = Flat Plate
Aero Mass = 1.250000
Thermal Mass = 1.250000
Diameter/Width = 0.394000
Length = 0.394000

name = Mezzanine-Brackets
quantity = 4
parent = 1
materialID = 8
type = Box
Aero Mass = 0.080000
Thermal Mass = 0.080000
Diameter/Width = 0.045000
Length = 0.081000
Height = 0.045000

name = Interface Ring
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.860000
Thermal Mass = 0.860000
Diameter/Width = 0.457000
Length = 0.457000
Height = 0.025400

name = Spacer
quantity = 1

parent = 1
materialID = 23
type = Flat Plate
Aero Mass = 0.140000
Thermal Mass = 0.140000
Diameter/Width = 0.360000
Length = 0.360000

name = PAM-Fasteners
quantity = 100
parent = 1
materialID = 57
type = Cylinder
Aero Mass = 0.001000
Thermal Mass = 0.001000
Diameter/Width = 0.007000
Length = 0.020000

name = PICU
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.840000
Thermal Mass = 0.840000
Diameter/Width = 0.096000
Length = 0.132000
Height = 0.092000

name = PICU Adapter Plate
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.240000
Thermal Mass = 0.240000
Diameter/Width = 0.096000
Length = 0.132000

name = PCDU
quantity = 1
parent = 1
materialID = 9
type = Box
Aero Mass = 2.500000
Thermal Mass = 2.500000
Diameter/Width = 0.150000
Length = 0.160000
Height = 0.076000

name = Harness

quantity = 1
parent = 1
materialID = 19
type = Box
Aero Mass = 1.070000
Thermal Mass = 1.070000
Diameter/Width = 0.120000
Length = 0.120000
Height = 0.050000

name = MLI
quantity = 5
parent = 1
materialID = 44
type = Flat Plate
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.400000
Length = 0.400000

name = P2-Electronics Box
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.900000
Thermal Mass = 0.900000
Diameter/Width = 0.132000
Length = 0.149000
Height = 0.052000

name = P2-Adapter Plate
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.670000
Thermal Mass = 0.670000
Diameter/Width = 0.161000
Length = 0.211000

name = P3-Electronics Box
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.870000
Thermal Mass = 0.870000
Diameter/Width = 0.100000
Length = 0.100000
Height = 0.100000

name = P3-Antenna
quantity = 2
parent = 1
materialID = 19
type = Flat Plate
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.100000
Length = 0.100000

name = P3-Adapter Plate
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.340000
Thermal Mass = 0.340000
Diameter/Width = 0.150000
Length = 0.150000

name = P3-Antenna mount
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.200000
Thermal Mass = 0.200000
Diameter/Width = 0.100000
Length = 0.100000
Height = 0.100000

name = P4-GNSS Splitter + Adapter plate
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.324000
Thermal Mass = 0.324000
Diameter/Width = 0.110000
Length = 0.110000
Height = 0.040000

name = P4-Electronic Boxes
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 1.650000
Thermal Mass = 1.650000
Diameter/Width = 0.110000

Length = 0.210000
Height = 0.080000

name = P4-Antenna (Zenith and Nadir)
quantity = 1
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.132000
Thermal Mass = 0.132000
Diameter/Width = 0.080000
Length = 0.030000

name = P4-Nadir Antenna Mount
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.171000
Thermal Mass = 0.171000
Diameter/Width = 0.060000
Length = 0.100000
Height = 0.060000

name = P4-Zenith Mount
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.108000
Thermal Mass = 0.108000
Diameter/Width = 0.060000
Length = 0.060000
Height = 0.060000

name = P4-Misc. Hardware
quantity = 100
parent = 1
materialID = 57
type = Cylinder
Aero Mass = 0.001600
Thermal Mass = 0.001600
Diameter/Width = 0.007000
Length = 0.020000

name = P4-GNSS Antenna
quantity = 1
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.135000

Thermal Mass = 0.135000
Diameter/Width = 0.060000
Length = 0.020000

name = P4-GNSS Antenna Bracket
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.131000
Thermal Mass = 0.131000
Diameter/Width = 0.060000
Length = 0.060000
Height = 0.060000

name = P4-Electronic Box 1
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 1.070000
Thermal Mass = 1.070000
Diameter/Width = 0.110000
Length = 0.130000
Height = 0.090000

name = P4-Electronic Box 2
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.600000
Thermal Mass = 0.600000
Diameter/Width = 0.120000
Length = 0.130000
Height = 0.016000

name = P4-Electronic Box 3
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.500000
Thermal Mass = 0.500000
Diameter/Width = 0.090000
Length = 0.096000
Height = 0.030000

name = P5-Electroncics Box
quantity = 1
parent = 1

materialID = 8
type = Box
Aero Mass = 0.620000
Thermal Mass = 0.620000
Diameter/Width = 0.130000
Length = 0.165000
Height = 0.030000

name = P5-Antenna
quantity = 1
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.132000
Thermal Mass = 0.132000
Diameter/Width = 0.080000
Length = 0.030000

name = P5-Antenna Mount
quantity = 2
parent = 1
materialID = 8
type = Box
Aero Mass = 0.171000
Thermal Mass = 0.171000
Diameter/Width = 0.060000
Length = 0.100000
Height = 0.060000

name = P5-QHA Antenna
quantity = 1
parent = 1
materialID = 57
type = Cylinder
Aero Mass = 0.183000
Thermal Mass = 0.183000
Diameter/Width = 0.090000
Length = 0.250000

name = P5-QHA Antenna Mount
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.150000
Thermal Mass = 0.150000
Diameter/Width = 0.090000
Length = 0.100000
Height = 0.090000

name = P5-RF Diplexer + Adapter plate

quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.300000
Thermal Mass = 0.300000
Diameter/Width = 0.090000
Length = 0.090000
Height = 0.030000

name = P5-S-Band Splitter + Adapter plate
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.150000
Thermal Mass = 0.150000
Diameter/Width = 0.110000
Length = 0.110000
Height = 0.040000

name = Payload Deck
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 6.890000
Thermal Mass = 6.890000
Diameter/Width = 0.446000
Length = 0.586000

name = Star Tracker
quantity = 2
parent = 1
materialID = 5
type = Cylinder
Aero Mass = 0.158000
Thermal Mass = 0.158000
Diameter/Width = 0.100000
Length = 0.120000

name = IMU
quantity = 2
parent = 1
materialID = 8
type = Box
Aero Mass = 0.055000
Thermal Mass = 0.055000
Diameter/Width = 0.038600
Length = 0.044800
Height = 0.021500

name = Magnetometer
quantity = 2
parent = 1
materialID = 8
type = Box
Aero Mass = 0.080000
Thermal Mass = 0.080000
Diameter/Width = 0.043000
Length = 0.099170
Height = 0.017000

name = DC-DC Converter-1
quantity = 8
parent = 1
materialID = 8
type = Box
Aero Mass = 0.137000
Thermal Mass = 0.137000
Diameter/Width = 0.077500
Length = 0.083000
Height = 0.018230

name = Antenna Deck
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.648090
Thermal Mass = 0.648090
Diameter/Width = 0.450000
Length = 0.500000

name = X-Band Antenna
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.300000
Thermal Mass = 0.300000
Diameter/Width = 0.103400
Length = 0.150000

name = S-Band Antenna
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.120000
Thermal Mass = 0.120000
Diameter/Width = 0.083800

Length = 0.083800

name = Coarse Sun Sensor
quantity = 6
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 0.005000
Thermal Mass = 0.005000
Diameter/Width = 0.015300
Length = 0.064000

name = Fine Sun Sensor
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.035000
Thermal Mass = 0.035000
Diameter/Width = 0.032000
Length = 0.034000
Height = 0.021000

name = UHF Whip Antenna
quantity = 1
parent = 1
materialID = 14
type = Cylinder
Aero Mass = 0.000460
Thermal Mass = 0.000460
Diameter/Width = 0.006450
Length = 0.158750

name = UHF Whip Antenna Cover
quantity = 1
parent = 1
materialID = 23
type = Cylinder
Aero Mass = 0.006477
Thermal Mass = 0.006477
Diameter/Width = 0.004750
Length = 0.203200

name = MLB Upper Half
quantity = 1
parent = 1
materialID = 9
type = Box
Aero Mass = 0.521600
Thermal Mass = 0.521600
Diameter/Width = 0.344340

Length = 0.344340
Height = 0.026100

name = Avionics Deck
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 6.400000
Thermal Mass = 5.400000
Diameter/Width = 0.450000
Length = 0.500000

name = Solar cells
quantity = 100
parent = 54
materialID = 24
type = Box
Aero Mass = 0.010000
Thermal Mass = 0.010000
Diameter/Width = 0.067000
Length = 0.085000
Height = 0.005000

name = PCU
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.990000
Thermal Mass = 0.990000
Diameter/Width = 0.147000
Length = 0.202000
Height = 0.050000

name = Battery
quantity = 2
parent = 1
materialID = 8
type = Box
Aero Mass = 1.600000
Thermal Mass = 1.600000
Diameter/Width = 0.098000
Length = 0.176000
Height = 0.096000

name = X-band radio
quantity = 1
parent = 1
materialID = 8
type = Box

Aero Mass = 1.000000
Thermal Mass = 1.000000
Diameter/Width = 0.115000
Length = 0.160000
Height = 0.046000

name = S-band Radio
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.200000
Thermal Mass = 0.200000
Diameter/Width = 0.050000
Length = 0.135000
Height = 0.025000

name = UHF Radio
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.141700
Thermal Mass = 0.141700
Diameter/Width = 0.057150
Length = 0.082550
Height = 0.015748

name = FC
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 3.980000
Thermal Mass = 3.980000
Diameter/Width = 0.121920
Length = 0.219600
Height = 0.116000

name = Reaction wheels
quantity = 4
parent = 1
materialID = 8
type = Box
Aero Mass = 0.226000
Thermal Mass = 0.226000
Diameter/Width = 0.140000
Length = 0.140000
Height = 0.041900

name = Torque Rods

quantity = 3
parent = 1
materialID = 54
type = Cylinder
Aero Mass = 0.420000
Thermal Mass = 0.420000
Diameter/Width = 0.022220
Length = 0.227000

name = GPS Receiver
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.240700
Thermal Mass = 0.240700
Diameter/Width = 0.079400
Length = 0.092100
Height = 0.025100

name = Solar Array
quantity = 2
parent = 1
materialID = 8
type = Box
Aero Mass = 1.855000
Thermal Mass = 1.855000
Diameter/Width = 0.665000
Length = 0.845000
Height = 0.020000

name = Radiating Side Panel
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 1.170000
Thermal Mass = 1.170000
Diameter/Width = 0.400000
Length = 0.431000

name = Support Strut
quantity = 2
parent = 1
materialID = 8
type = Box
Aero Mass = 0.144000
Thermal Mass = 0.144000
Diameter/Width = 0.150000
Length = 0.582000
Height = 0.020000

name = Front Side Panel
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 1.440000
Thermal Mass = 1.440000
Diameter/Width = 0.380000
Length = 0.567000

name = Prop Deck
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 8.500000
Thermal Mass = 8.500000
Diameter/Width = 0.446000
Length = 0.586000

name = Cabling
quantity = 100
parent = 1
materialID = 20
type = Cylinder
Aero Mass = 0.060000
Thermal Mass = 0.060000
Diameter/Width = 0.005000
Length = 0.500000

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

name = YAM-5
Demise Altitude = 77.994774
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Y-Panels
Demise Altitude = 67.362297
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = X-Panels
Demise Altitude = 67.683128
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Z-Panels
Demise Altitude = 67.683128
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Shelf-Panel
Demise Altitude = 77.380249
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Shelf-Brackets
Demise Altitude = 76.677696
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Mezzanine-Panel
Demise Altitude = 71.252045
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Mezzanine-Brackets
Demise Altitude = 76.171272
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Interface Ring
Demise Altitude = 74.725594
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Spacer
Demise Altitude = 0.000000
Debris Casualty Area = 0.921600
Impact Kinetic Energy = 2.468811

****
name = PAM-Fasteners
Demise Altitude = 77.268074
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = PICU
Demise Altitude = 71.118126

Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = PICU Adapter Plate
Demise Altitude = 73.329681
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = PCDU
Demise Altitude = 62.460793
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Harness
Demise Altitude = 67.991753
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = MLI
Demise Altitude = 77.933624
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P2-Electronics Box
Demise Altitude = 69.546288
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P2-Adapter Plate
Demise Altitude = 71.437531
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P3-Electronics Box
Demise Altitude = 69.401825
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P3-Antenna
Demise Altitude = 75.644241
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P3-Adapter Plate
Demise Altitude = 73.143456
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P3-Antenna mount
Demise Altitude = 75.805573
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P4-GNSS Splitter + Adapter plate
Demise Altitude = 73.217209
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P4-Electronic Boxes
Demise Altitude = 68.626785
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P4-Antenna (Zenith and Nadir)
Demise Altitude = 74.904808
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P4-Nadir Antenna Mount
Demise Altitude = 75.424538
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P4-Zenith Mount
Demise Altitude = 75.389534
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P4-Misc. Hardware
Demise Altitude = 76.873352
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P4-GNSS Antenna
Demise Altitude = 73.161224

Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P4-GNSS Antenna Bracket
Demise Altitude = 74.870491
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P4-Electronic Box 1
Demise Altitude = 69.205345
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P4-Electronic Box 2
Demise Altitude = 69.147995
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P4-Electronic Box 3
Demise Altitude = 69.062767
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P5-Electroncics Box
Demise Altitude = 71.549110
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P5-Antenna
Demise Altitude = 74.904808
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P5-Antenna Mount
Demise Altitude = 75.424538
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P5-QHA Antenna
Demise Altitude = 0.000000
Debris Casualty Area = 0.562500
Impact Kinetic Energy = 15.391614

****
name = P5-QHA Antenna Mount
Demise Altitude = 76.242455
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P5-RF Diplexer + Adapter plate
Demise Altitude = 72.014694
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = P5-S-Band Splitter + Adapter plate
Demise Altitude = 75.729103
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Payload Deck
Demise Altitude = 0.000000
Debris Casualty Area = 1.234832
Impact Kinetic Energy = 2973.704346

****
name = Star Tracker
Demise Altitude = 75.988960
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = IMU
Demise Altitude = 74.868500
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Magnetometer
Demise Altitude = 75.612991
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = DC-DC Converter-1
Demise Altitude = 74.337021
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Antenna Deck
Demise Altitude = 75.614944

Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = X-Band Antenna
Demise Altitude = 73.046608
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = S-Band Antenna
Demise Altitude = 74.027802
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Coarse Sun Sensor
Demise Altitude = 77.582672
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Fine Sun Sensor
Demise Altitude = 75.001762
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = UHF Whip Antenna
Demise Altitude = 77.980545
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = UHF Whip Antenna Cover
Demise Altitude = 77.648682
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = MLB Upper Half
Demise Altitude = 75.944771
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Avionics Deck
Demise Altitude = 59.792881
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Solar cells
Demise Altitude = 0.000000
Debris Casualty Area = 42.944077
Impact Kinetic Energy = 0.353748

****
name = PCU
Demise Altitude = 70.283356
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Battery
Demise Altitude = 68.480042
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = X-band radio
Demise Altitude = 68.872711
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = S-band Radio
Demise Altitude = 74.280396
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = UHF Radio
Demise Altitude = 73.706070
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = FC
Demise Altitude = 62.157337
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Reaction wheels
Demise Altitude = 75.437271
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Torque Rods
Demise Altitude = 64.545364

Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = GPS Receiver
Demise Altitude = 72.832901
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Solar Array
Demise Altitude = 0.000000
Debris Casualty Area = 2.589955
Impact Kinetic Energy = 131.691147

****
name = Radiating Side Panel
Demise Altitude = 72.945610
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Support Strut
Demise Altitude = 77.379791
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Front Side Panel
Demise Altitude = 73.345894
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****
name = Prop Deck
Demise Altitude = 0.000000
Debris Casualty Area = 1.234832
Impact Kinetic Energy = 4529.818848

****
name = Cabling
Demise Altitude = 76.942528
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

****

=============== End of Requirement 4.7-1 ===============

8. Special Classes of Space Missions

Not applicable.

END OF ODAR