

EXHIBIT B

Orbital Debris Mitigation Plan

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This report is presented in compliance with NASA-STD-8719.14 Revision C

DAS Software Version: v.3.2.6

I. General Description

PlanetiQ is the mission developer and owner and has contracted to Muon Space for a spacecraft with details as follows. The GNOMES system consists of 2 spacecraft compatible with a SpaceX Falcon 9 half-plate volume. GNOMES-10 is expected to launch on the SpaceX Transporter-18 rideshare mission currently scheduled NET 10/1/2026 and is planned to have a six-year total mission life (launch to demise). GNOMES-11 is expected to launch on the SpaceX Bandwagon-5 rideshare mission currently scheduled NET 10/1/2026 and is planned to have a six-year total mission life (launch to demise).

The GNOMES spacecraft has external dimensions of 0.78m x 1.16m x 0.91m in the stowed configuration, and 1.20m x 4.92m x 1.68m in the deployed configuration. The spacecraft mass at launch is estimated to be 155 kg, and a minimum of 150.6 kg at end of life.

II. Debris

PlanetiQ confirms that the GNOMES system will not undergo any planned release of debris during its normal operations. In addition, all separation and deployment mechanisms, and any other potential source of debris will be retained by the spacecraft or launch vehicle. PlanetiQ also has assessed the probability of the space station becoming a source of debris by collision with small debris or meteoroids of less than one centimeter in diameter that could cause loss of control and prevent post-mission disposal. PlanetiQ has taken steps to limit the effects of such collisions through shielding, the placement of components, and the use of redundant systems.

III. Probability Assessments

PlanetiQ has assessed and limited the probability of accidental explosions during and after completion of mission operations through a failure mode verification analysis. As part of the satellite manufacturing process, PlanetiQ has taken steps to ensure that debris generation will not result from the conversion of energy sources on board the satellites into energy that fragments the satellites. The GNOMES system includes eight custom battery packs, each with 2 parallel strings of 8 series cells per pack, for a total of 128 cells, with an average voltage per cell of 3.3V. The cells can vent in the event of high internal pressure, with a cell vent open pressure of 1.8 - 2.4 MPa, which prevents cell explosion. Even if cell rupture was possible, the batteries are mounted on a machined aluminum plate and surrounded by aluminum panels to prevent external release of debris. The propulsion system is a metal propellant Hall-effect thruster system that contains no pressurized vessels. The zinc propellant is leak-proof, non-reactive, and non-toxic. All sources of stored energy onboard the spacecraft will have been depleted or safely contained when no longer required for mission operations or post-mission disposal.

PlanetiQ has assessed and limited the probability of the space station becoming a source of debris by collisions with large debris or other operational spacecraft. PlanetiQ does not intend to place the GNOMES system in an orbit that is identical to or very similar to an orbit used by other space stations, and, in any event, will work closely with the GNOMES launch provider to ensure that the satellites are deployed in such a way as to minimize the potential for collision with any other spacecraft. This specifically includes minimizing the potential for collision with manned spacecraft. To PlanetiQ's understanding, only the International Space Station and China's Tiangong Space Station module are the only inhabited orbiting objects.¹

¹ The Tiangong Space Station is a manned space station that is currently under construction by China in LEO.

IV. Mitigation

PlanetiQ expects to maintain a 100 km minimum orbital separation between the GNOMES system and either the International Space Station (ISS) or the Tiangong Space Station. PlanetiQ also will be proactive to ensure that risk to inhabited orbiting objects is mitigated. This will include coordinating with NASA to ensure protection of the ISS on an ongoing basis, and taking all appropriate measures to coordinate and protect the Tiangong Space Station. PlanetiQ provides NASA with all requested information needed to assess risks and ensure safe flight profiles. NASA is also provided with a 24/7 contact line for PlanetiQ personnel.

Additionally, the GNOMES system is equipped with a propulsion system which will be used to perform collision avoidance maneuvers, as needed. With these measures, PlanetiQ will ensure reliable collision mitigation.²

V. Collision Probability

The Transporter-18 launch will drop off payloads at 510+/-20 km in a Sun Synchronous Orbit. GNOMES-10 is expected to operate at 575km +/- 25km.

Using the NASA DAS 3.2.6 software, the GNOMES-10 Collision Probability at 575 km in a deployed configuration is found to be 4.1768E-05, meeting NASA-STD-8719.14C Requirement 4.5-1. Similarly, in a stowed configuration, the collision probability is found to be 1.8390E-05, meeting the requirement (*see* ActivityLog_G10_Req451).

A. Probability of Collision with Large Objects

GNOMES-10: Compliant

Deployed collision probability 4.1768E-05

Stowed collision probability 1.8390E-05

See ActivityLog_G10_Req451.

² PlanetiQ will take identical proactive measures with respect to any other inhabited orbiting objects that may be introduced during the time when GNOMES spacecraft is in orbit.

B. Probability of Damage from Small Objects

GNOMES-10: Compliant

C. Probability of Failure 9.8369E-03

See ActivityLog_G10_Req452

The Bandwagon-5 launch will drop off payloads at 500-600 km in a 53-degree inclination orbit GNOMES-11 is expected to operate at 575km +/- 25km.

Using the NASA DAS 3.2.6 software, the GNOMES-11 Collision Probability at 575 km in a deployed configuration is found to be 4.1768E-05, meeting NASA-STD-8719.14C Requirement 4.5-1. Similarly, in a stowed configuration, the collision probability is found to be 1.8390E-05, meeting the requirement (see ActivityLog_G11_Req451).

D. Probability of Collision with Large Objects

GNOMES-11:

Deployed collision probability 2.8984E-05

Stowed collision probability 1.2762E-05

See ActivityLog_G11_Req451

E. Probability of Damage from Small Objects

GNOMES-11: Compliant

Probability of Failure 7.494E-03

See ActivityLog_G11_Req452

VI. Tracking

PlanetiQ's disclosure of the above parameters can assist third parties in identifying potential problems that may be the result of proposed operations. This information also lends itself to coordination between PlanetiQ and other operators located in similar orbits. PlanetiQ certifies 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. The GNOMES system is considered trackable, as it is larger than 10cm in its smallest

dimension. Planned tracking of the spacecraft will be passive, via space-track.org. The spacecraft has external dimensions described in the General Description section above. Registration of the spacecraft with the 18th SPCS SpaceTrack will be completed prior to deployment.

VII. Proximity Operations

PlanetiQ notes that no proximity operations are planned during the lifetime of the GNOMES system.

A. Mission Related Debris Passing Through LEO

Compliant: There is no planned release of debris for the GNOMES system

B. Mission Related Debris Passing Through GEO

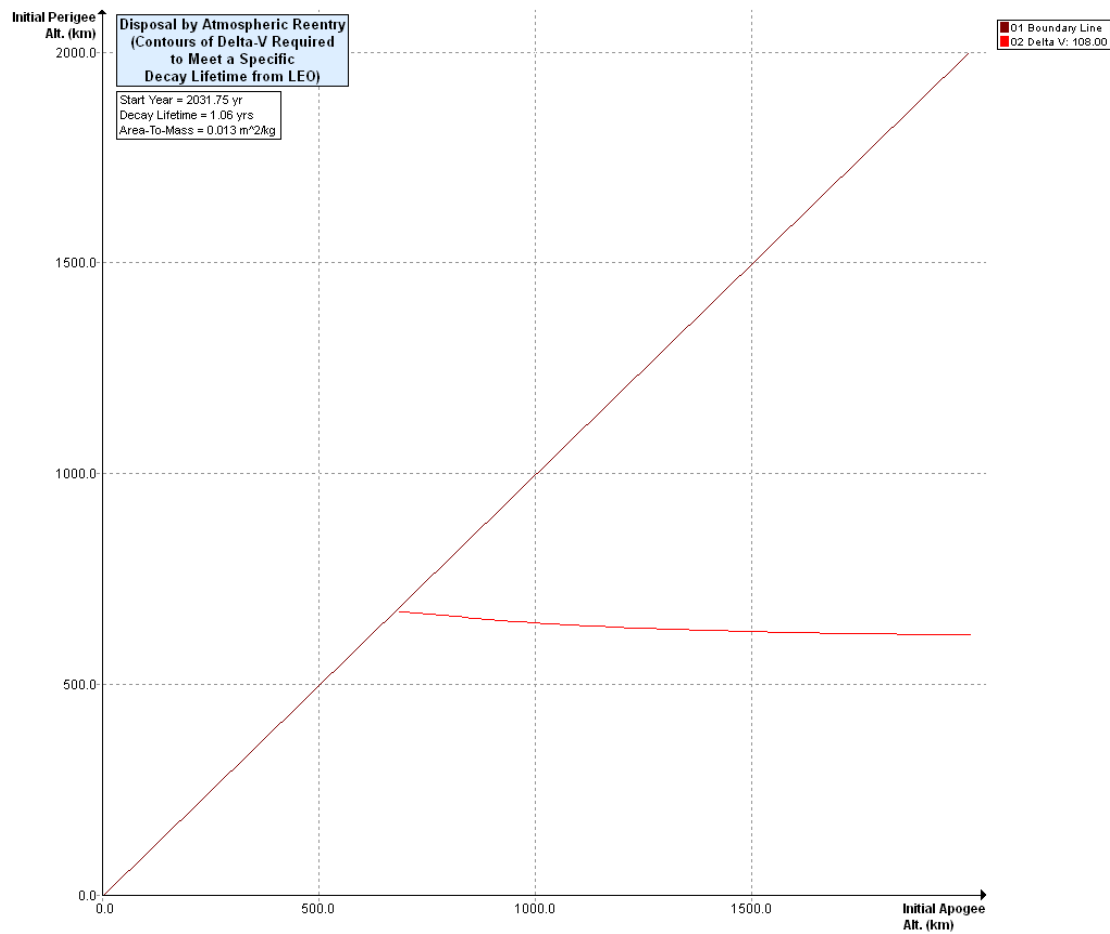
The GNOMES system will operate in LEO

VIII. Natural Reentry, Direct Reentry, or Direct Retrieval

The GNOMES system is equipped with a propulsion system providing a total Delta V capability of 351 m/s, of which 108 m/s is reserved for end-of-life (EOL) disposal. This allocation will be used to lower the spacecraft from its nominal operating altitude of 575 km to a disposal orbit at 380 km. From this altitude, GNOMES-10 is expected to naturally deorbit within approximately 1.06 years due to atmospheric drag for a total lifetime of six years, and GNOMES-11 is expected to naturally deorbit within approximately 1.08 years due to atmospheric drag for a total lifetime of six years.

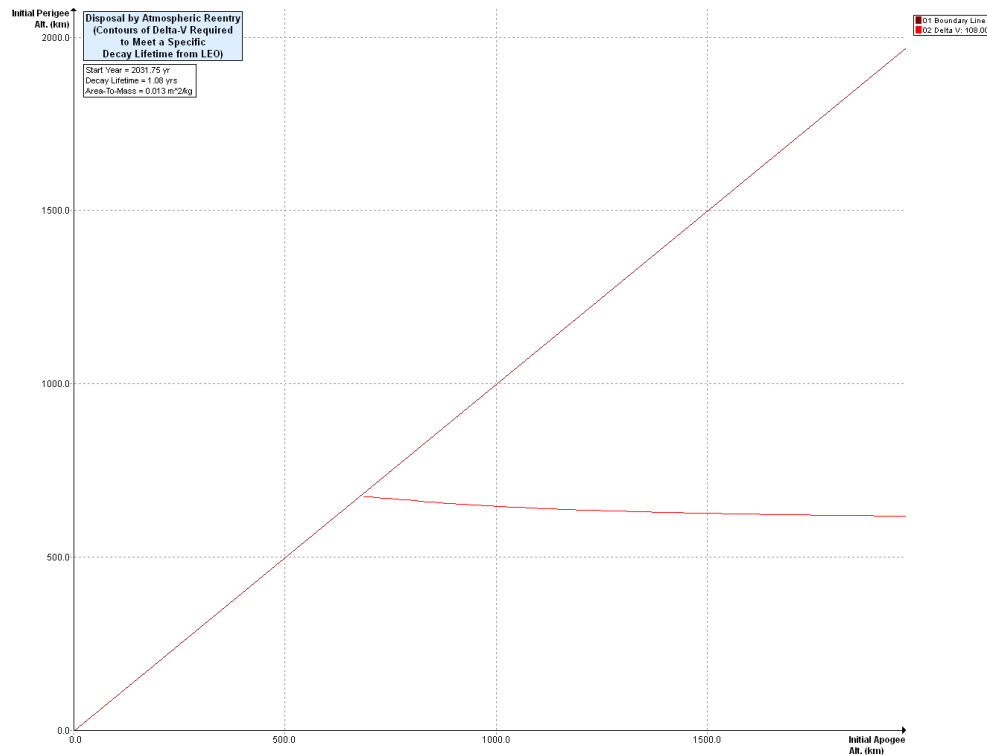
GNOMES-10: Compliant

After moving to 380 km by propulsive maneuvers, the vehicle deorbits in 1.06 years. *See ActivityLog_G10_461.*



GNOMES-11: Compliant

After moving to 380km by propulsive maneuvers, the vehicle deorbits in 1.08 years. *See* ActivityLog_G11_461.



IX. Deorbit Method Reliability

The GNOMES system will utilize its propulsion system to maintain the target mission altitude of 575 km. Prior to 4.94 years after launch, the propulsion system will be used to lower the spacecraft's orbit such that it reaches an altitude of 380 km at 4.94 years, ensuring deorbit occurs within the maximum six-year limit. The propulsion system has been designed to provide high reliability operation and has an extensive qualification and acceptance process. In the unlikely event of propulsion system failure, the estimated natural deorbit from 600 km for GNOMES-10 is 8.76 years in a deployed configuration, and 11.321 years for GNOMES-11 in a deployed configuration. If the propulsion system suffers a failure which would prevent orbit maintenance (and rapid de-orbit at end of life), methods for shortening the deorbit timeline are available. For example, the spacecraft operating in a maximum drag orientation reduces the time to deorbit by a factor of 4 or more.

X. Human Casualty Risk

NASA-STD-8719.14C Requirement 4.7-1 requires a limitation on the risk of potential human casualty in both controlled and uncontrolled reentry. Using NASA DAS 3.2.6 software, it is found that the GNOMES system meets this requirement in all cases. There are only two components that have a likelihood of reentry: Solar Cell Glass, and portions of an antenna. Both are expected to reenter with an energy below the 15-joule limit in all cases (e.g., 4.93 J for Solar Cell Glass and 0.96 J for the antenna). Therefore, the GNOMES system is found to be compliant with this requirement.

GNOMES-10: Compliant

See ActivityLog_G10_Req471

GNOMES-11: Compliant

See ActivityLog_G11_Req471

XI. Appendix

A. ActivityLog_G10_Req451

Run Data

=====

****INPUT****

Space Structure Name = GNOMES-10
Space Structure Type = Payload
Perigee Altitude = 575.000 (km)
Apogee Altitude = 575.000 (km)
Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass Ratio = 0.0134 (m²/kg)
Start Year = 2026.750 (yr)
Initial Mass = 155.000 (kg)
Final Mass = 150.600 (kg)
Duration = 5.000 (yr)

Station-Kept = True
PMD Perigee Altitude = 90.000 (km)
PMD Apogee Altitude = 90.000 (km)
PMD Inclination = 98.000 (deg)
PMD RAAN = 0.000 (deg)
PMD Argument of Perigee = 0.000 (deg)
PMD Mean Anomaly = 0.000 (deg)
Long-Term Reentry = True

****OUTPUT****

Collision Probability = 4.1768E-05
Returned Message: Normal Processing
Date Range Message: Normal Date Range
Status = Pass

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

02 06 2026; 10:27:51AM	Project Data Saved To File
02 06 2026; 10:27:53AM	Mission Editor Changes Applied
02 06 2026; 10:27:53AM	Project Data Saved To File
02 06 2026; 10:27:53AM	Project Data Saved To File
02 06 2026; 10:32:28AM	Processing Requirement 4.5-1: Return Status : Passed

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

****INPUT****

Space Structure Name = GNOMES-10
Space Structure Type = Payload
Perigee Altitude = 575.000 (km)
Apogee Altitude = 575.000 (km)
Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass Ratio = 0.0059 (m²/kg)
Start Year = 2026.750 (yr)
Initial Mass = 155.000 (kg)
Final Mass = 150.600 (kg)
Duration = 5.000 (yr)
Station-Kept = True
PMD Perigee Altitude = 90.000 (km)
PMD Apogee Altitude = 90.000 (km)
PMD Inclination = 98.000 (deg)

PMD RAAN = 0.000 (deg)
PMD Argument of Perigee = 0.000 (deg)
PMD Mean Anomaly = 0.000 (deg)
Long-Term Reentry = True

****OUTPUT****

Collision Probability = 1.8390E-05
Returned Message: Normal Processing
Date Range Message: Normal Date Range
Status = Pass

=====

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

B. ActivityLog_G10_Req452

=====

Spacecraft = GNOMES-10
Critical Surface = PPU+X

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.900 (g/cm²)
CS Surface Area = 0.0016 (m²)
Vector = (0.000000 (u), 1.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.600 (g/cm²) Separation: 2.000 (cm)

****OUTPUT****

Probability of Penetration = 8.5358E-04 (8.5395E-04)
Returned Error Message: Normal Processing

Date Range Error Message: Normal Date Range

```
=====
Spacecraft = GNOMES-10
Critical Surface = Thruster Head +X
=====
```

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 17.750 (g/cm²)
CS Surface Area = 0.0050 (m²)
Vector = (0.000000 (u), 1.000000 (v), 0.000000 (w))
CS Pressurized = No

****OUTPUT****

Probability of Penetration = 1.3454E-06 (1.3454E-06)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

```
=====
Spacecraft = GNOMES-10
Critical Surface = EPS+X
=====
```

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)

Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.900 (g/cm²)
CS Surface Area = 0.0020 (m²)
Vector = (0.000000 (u), 1.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.600 (g/cm²) Separation: 65.100 (cm)

****OUTPUT****

Probability of Penetration = 1.0344E-03 (1.0349E-03)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-10
Critical Surface = ADCS+X

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.900 (g/cm²)
CS Surface Area = 0.0050 (m²)
Vector = (0.000000 (u), 1.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.600 (g/cm²) Separation: 36.000 (cm)

****OUTPUT****

Probability of Penetration = 2.5840E-03 (2.5873E-03)
Returned Error Message: Normal Processing

Date Range Error Message: Normal Date Range

```
=====
Spacecraft = GNOMES-10
Critical Surface = ADCS-X
=====
```

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.850 (g/cm²)
CS Surface Area = 0.0050 (m²)
Vector = (0.000000 (u), -1.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.540 (g/cm²) Separation: 42.200 (cm)

****OUTPUT****

Probability of Penetration = 4.1727E-09 (4.1727E-09)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

```
=====
Spacecraft = GNOMES-10
Critical Surface = PPU-X
=====
```

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)

Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 0.850 (g/cm²)
 CS Surface Area = 0.0010 (m²)
 Vector = (0.000000 (u), -1.000000 (v), 0.000000 (w))
 CS Pressurized = No
 Outer Wall 1 Density: 0.540 (g/cm²) Separation: 84.100 (cm)

****OUTPUT****

Probability of Penetration = 8.3453E-10 (8.3453E-10)
 Returned Error Message: Normal Processing
 Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-10
 Critical Surface = PPU+Y

=====

****INPUT****

Apogee Altitude = 575.000 (km)
 Perigee Altitude = 575.000 (km)
 Orbital Inclination = 98.000 (deg)
 RAAN = 0.000 (deg)
 Argument of Perigee = 0.000 (deg)
 Mean Anomaly = 0.000 (deg)
 Final Area-To-Mass = 0.0134 (m²/kg)
 Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 0.900 (g/cm²)
 CS Surface Area = 0.0400 (m²)
 Vector = (0.000000 (u), 0.000000 (v), -1.000000 (w))
 CS Pressurized = No
 Outer Wall 1 Density: 0.540 (g/cm²) Separation: 3.400 (cm)

****OUTPUT****

Probability of Penetration = 1.5693E-04 (1.5694E-04)

Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-10
Critical Surface = PPU-Y

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.900 (g/cm²)
CS Surface Area = 0.0400 (m²)
Vector = (0.000000 (u), 0.000000 (v), 1.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.500 (g/cm²) Separation: 3.500 (cm)

****OUTPUT****

Probability of Penetration = 2.0118E-04 (2.0120E-04)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-10
Critical Surface = EPS-X

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)

Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.850 (g/cm²)
CS Surface Area = 0.0024 (m²)
Vector = (0.000000 (u), -1.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.540 (g/cm²) Separation: 3.000 (cm)

****OUTPUT****

Probability of Penetration = 2.5029E-09 (2.5029E-09)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-10
Critical Surface = PPU-Z

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.850 (g/cm²)
CS Surface Area = 0.0026 (m²)
Vector = (1.000000 (u), 0.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.810 (g/cm²) Separation: 2.000 (cm)

****OUTPUT****

Probability of Penetration = 8.0896E-09 (8.0896E-09)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-10
Critical Surface = PPU+Z

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.850 (g/cm²)
CS Surface Area = 0.0026 (m²)
Vector = (-1.000000 (u), 0.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.810 (g/cm²) Separation: 29.200 (cm)

****OUTPUT****

Probability of Penetration = 1.5584E-09 (1.5584E-09)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-10
Critical Surface = Thruster Head +Y

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)

Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 1.800 (g/cm²)
CS Surface Area = 0.0020 (m²)
Vector = (0.000000 (u), 0.000000 (v), -1.000000 (w))
CS Pressurized = No

****OUTPUT****

Probability of Penetration = 1.6431E-03 (1.6444E-03)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-10
Critical Surface = Thruster Head-Y

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 1.800 (g/cm²)
CS Surface Area = 0.0020 (m²)
Vector = (0.000000 (u), 0.000000 (v), 1.000000 (w))
CS Pressurized = No

****OUTPUT****

Probability of Penetration = 1.6431E-03 (1.6444E-03)

Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-10
Critical Surface = Thruster Head+Z

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 1.800 (g/cm²)
CS Surface Area = 0.0020 (m²)
Vector = (-1.000000 (u), 0.000000 (v), 0.000000 (w))
CS Pressurized = No

****OUTPUT****

Probability of Penetration = 1.4489E-06 (1.4489E-06)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-10
Critical Surface = Thruster Head-Z

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)

Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 1.800 (g/cm²)
CS Surface Area = 0.0028 (m²)
Vector = (1.000000 (u), 0.000000 (v), 0.000000 (w))
CS Pressurized = No

****OUTPUT****

Probability of Penetration = 2.0284E-06 (2.0284E-06)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-10
Critical Surface = EPS+Y

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.810 (g/cm²)
CS Surface Area = 0.0333 (m²)
Vector = (0.000000 (u), 0.000000 (v), -1.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.540 (g/cm²) Separation: 2.200 (cm)

****OUTPUT****

Probability of Penetration = 4.0924E-04 (4.0933E-04)
Returned Error Message: Normal Processing

Date Range Error Message: Normal Date Range

```
=====
Spacecraft = GNOMES-10
Critical Surface = EPS-Y
=====
```

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.810 (g/cm²)
CS Surface Area = 0.0333 (m²)
Vector = (0.000000 (u), 0.000000 (v), 1.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.405 (g/cm²) Separation: 32.200 (cm)

****OUTPUT****

Probability of Penetration = 5.8026E-04 (5.8042E-04)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

```
=====
Spacecraft = GNOMES-10
Critical Surface = EPS-Z
=====
```

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)

Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 0.810 (g/cm²)
 CS Surface Area = 0.0079 (m²)
 Vector = (1.000000 (u), 0.000000 (v), 0.000000 (w))
 CS Pressurized = No
 Outer Wall 1 Density: 0.810 (g/cm²) Separation: 5.500 (cm)

****OUTPUT****

Probability of Penetration = 7.4232E-09 (7.4232E-09)
 Returned Error Message: Normal Processing
 Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-10
 Critical Surface = EPS+Z

=====

****INPUT****

Apogee Altitude = 575.000 (km)
 Perigee Altitude = 575.000 (km)
 Orbital Inclination = 98.000 (deg)
 RAAN = 0.000 (deg)
 Argument of Perigee = 0.000 (deg)
 Mean Anomaly = 0.000 (deg)
 Final Area-To-Mass = 0.0134 (m²/kg)
 Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 0.810 (g/cm²)
 CS Surface Area = 0.0079 (m²)
 Vector = (-1.000000 (u), 0.000000 (v), 0.000000 (w))
 CS Pressurized = No
 Outer Wall 1 Density: 0.810 (g/cm²) Separation: 14.100 (cm)

****OUTPUT****

Probability of Penetration = 4.9781E-09 (4.9781E-09)

Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-10
Critical Surface = ADCS+Y

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.810 (g/cm²)
CS Surface Area = 0.0317 (m²)
Vector = (0.000000 (u), 0.000000 (v), -1.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.540 (g/cm²) Separation: 30.700 (cm)

****OUTPUT****

Probability of Penetration = 2.1468E-04 (2.1471E-04)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-10
Critical Surface = ADCS-Y

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)

Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.810 (g/cm²)
CS Surface Area = 0.0317 (m²)
Vector = (0.000000 (u), 0.000000 (v), 1.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.405 (g/cm²) Separation: 6.500 (cm)

****OUTPUT****

Probability of Penetration = 5.5282E-04 (5.5297E-04)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-10
Critical Surface = ADCS+Z

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.810 (g/cm²)
CS Surface Area = 0.0095 (m²)
Vector = (-1.000000 (u), 0.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.810 (g/cm²) Separation: 10.900 (cm)

****OUTPUT****

Probability of Penetration = 6.4900E-09 (6.4900E-09)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-10
Critical Surface = ADCS-Z

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 98.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.810 (g/cm²)
CS Surface Area = 0.0095 (m²)
Vector = (1.000000 (u), 0.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.810 (g/cm²) Separation: 6.500 (cm)

****OUTPUT****

Probability of Penetration = 8.1208E-09 (8.1208E-09)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

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

C. ActivityLog_G10_Req461

****INPUT****

Start Year = 2031.250000 (yr)
Perigee Altitude = 380.000000 (km)
Apogee Altitude = 380.000000 (km)
Inclination = 98.000000 (deg)
RAAN = 0.000000 (deg)
Argument of Perigee = 0.000000 (deg)

Area-To-Mass Ratio = 0.013400 (m²/kg)

****OUTPUT****

Orbital Lifetime from Startyr = 1.056832 (yr)
Time Spent in LEO during Lifetime = 1.056832 (yr)
Last year of Propagation = 2032 (yr)
Returned Error Message: Object reentered
02 06 2026; 11:11:45AM Project Data Saved To File
02 06 2026; 11:12:41AM Science and Engineering - Orbit Lifetime/Dwell
Time

****INPUT****

Start Year = 2031.250000 (yr)
Perigee Altitude = 380.000000 (km)
Apogee Altitude = 380.000000 (km)
Inclination = 98.000000 (deg)
RAAN = 0.000000 (deg)
Argument of Perigee = 0.000000 (deg)
Area-To-Mass Ratio = 0.005900 (m²/kg)

****OUTPUT****

Orbital Lifetime from Startyr = 1.771426 (yr)
Time Spent in LEO during Lifetime = 1.771426 (yr)
Last year of Propagation = 2033 (yr)
Returned Error Message: Object reentered
02 06 2026; 11:12:45AM Project Data Saved To File

D. ActivityLog_G10_Req471

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

****INPUT****

Space Structure Name = GNOMES-10
Space Structure Type = Payload
Perigee Altitude = 575.000000 (km)
Apogee Altitude = 575.000000 (km)
Inclination = 98.000000 (deg)
RAAN = 0.000000 (deg)
Argument of Perigee = 0.000000 (deg)
Mean Anomaly = 0.000000 (deg)
Area-To-Mass Ratio = 0.013400 (m²/kg)
Start Year = 2026.750000 (yr)

Initial Mass = 155.000000 (kg)
Final Mass = 150.600000 (kg)
Duration = 5.000000 (yr)
Station Kept = True
Abandoned = False
Long-Term Reentry = True

****OUTPUT****

Suggested Perigee Altitude = 100.000000 (km)
Suggested Apogee Altitude = 575.000000 (km)
Returned Error Message = Passes Long-term reentry orbit criteria
Released Year = 2031 (yr)
Requirement = 63
Compliance Status = Pass

=====

===== End of Requirement 4.6 =====

02 12 2026; 12:42:50PM *****Processing Requirement 4.7-1

Return Status : Passed

*******INPUT*******

Item Number = 1

name = GNOMES-10
quantity = 1
parent = 0
materialID = 8
type = Box
Aero Mass = 150.600006
Thermal Mass = 150.600006
Diameter/Width = 0.600000
Length = 1.100000
Height = 0.300000

name = Solar Face Sheet
quantity = 12
parent = 1
materialID = 27
type = Flat Plate
Aero Mass = 0.532000
Thermal Mass = 0.532000
Diameter/Width = 0.720000
Length = 1.120000

name = Solar Hinge
quantity = 12
parent = 1
materialID = 8
type = Box
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.039000
Length = 0.200000
Height = 0.010000

name = HDRM Inserts
quantity = 12
parent = 1
materialID = 65
type = Flat Plate
Aero Mass = 0.034000
Thermal Mass = 0.034000
Diameter/Width = 0.030000
Length = 0.074000

name = Solar Panel Core
quantity = 6
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.588000
Thermal Mass = 0.588000
Diameter/Width = 0.720000
Length = 1.120000

name = Film Adhesive
quantity = 12
parent = 1
materialID = 27
type = Flat Plate
Aero Mass = 0.128000
Thermal Mass = 0.128000
Diameter/Width = 0.720000
Length = 1.120000

name = Solar Cell Glass
quantity = 24
parent = 1
materialID = -1
type = Flat Plate
Aero Mass = 0.275000

Thermal Mass = 0.275000
Diameter/Width = 0.250000
Length = 0.550000

name = Reaction Wheel and Bracket
quantity = 4
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 1.800000
Thermal Mass = 1.800000
Diameter/Width = 0.090000
Length = 0.110000

name = Battery Pack
quantity = 8
parent = 1
materialID = 8
type = Box
Aero Mass = 1.100000
Thermal Mass = 1.100000
Diameter/Width = 0.075000
Length = 0.200000
Height = 0.060000

name = Torque Rod
quantity = 3
parent = 1
materialID = 38
type = Cylinder
Aero Mass = 0.250000
Thermal Mass = 0.250000
Diameter/Width = 0.020000
Length = 0.150000

name = Star Tracker
quantity = 2
parent = 1
materialID = 8
type = Box
Aero Mass = 0.320000
Thermal Mass = 0.320000
Diameter/Width = 0.050000
Length = 0.119000
Height = 0.044000

name = ADCS

quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.900000
Thermal Mass = 0.900000
Diameter/Width = 0.148000
Length = 0.224000
Height = 0.041000

name = EPS
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 1.500000
Thermal Mass = 1.500000
Diameter/Width = 0.140000
Length = 0.330000
Height = 0.023000

name = MFC
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 1.300000
Thermal Mass = 1.300000
Diameter/Width = 0.150000
Length = 0.337000
Height = 0.040000

name = TTCFE
quantity = 2
parent = 1
materialID = 8
type = Box
Aero Mass = 0.480000
Thermal Mass = 0.480000
Diameter/Width = 0.113000
Length = 0.150000
Height = 0.040000

name = Zenith Antenna
quantity = 1
parent = 1
materialID = 8

type = Flat Plate
Aero Mass = 0.480000
Thermal Mass = 0.480000
Diameter/Width = 0.100000
Length = 0.143000

name = GNSS Antenna
quantity = 2
parent = 1
materialID = 50
type = Flat Plate
Aero Mass = 0.050000
Thermal Mass = 0.050000
Diameter/Width = 0.050000
Length = 0.100000

name = RadioCore
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 1.440000
Thermal Mass = 1.440000
Diameter/Width = 0.170000
Length = 0.250000
Height = 0.023000

name = HSRFE
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.480000
Thermal Mass = 0.480000
Diameter/Width = 0.111000
Length = 0.150000
Height = 0.040000

name = Nadir Antenna
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 4.570000
Thermal Mass = 4.570000
Diameter/Width = 0.414000
Length = 0.488000

Height = 0.025000

name = PayloadCore
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 1.000000
Thermal Mass = 1.000000
Diameter/Width = 0.150000
Length = 0.224000
Height = 0.041000

name = Z+ Panel
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 6.450000
Thermal Mass = 6.450000
Diameter/Width = 0.517000
Length = 1.100000

name = Z- Panel
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 5.410000
Thermal Mass = 5.410000
Diameter/Width = 0.355000
Length = 1.100000

name = Y Panel
quantity = 2
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 4.420000
Thermal Mass = 4.420000
Diameter/Width = 0.320000
Length = 1.020000

name = X Panel / Bulkhead
quantity = 4
parent = 1
materialID = 8

type = Flat Plate
Aero Mass = 1.400000
Thermal Mass = 1.400000
Diameter/Width = 0.300000
Length = 0.420000

name = Bus Cross Member
quantity = 4
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.380000
Thermal Mass = 0.380000
Diameter/Width = 0.075000
Length = 0.517000

name = Generic Fastener
quantity = 250
parent = 1
materialID = 57
type = Cylinder
Aero Mass = 0.007000
Thermal Mass = 0.007000
Diameter/Width = 0.007000
Length = 0.025000

name = Harness Wires
quantity = 3000
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.001000
Thermal Mass = 0.001000
Diameter/Width = 0.001000
Length = 0.250000

name = HDRM
quantity = 4
parent = 1
materialID = 8
type = Box
Aero Mass = 0.480000
Thermal Mass = 0.480000
Diameter/Width = 0.065000
Length = 0.085000
Height = 0.036000

name = PPU Base Plate
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.500000
Thermal Mass = 0.500000
Diameter/Width = 0.160000
Length = 0.260000
Height = 0.006500

name = PPU Cover
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.413000
Thermal Mass = 0.413000
Diameter/Width = 0.160000
Length = 0.260000
Height = 0.030000

name = PPU Xformer
quantity = 1
parent = 1
materialID = -12
type = Box
Aero Mass = 0.251000
Thermal Mass = 0.251000
Diameter/Width = 0.038000
Length = 0.051000
Height = 0.030000

name = Feeder Stepper Motor
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.273000
Thermal Mass = 0.273000
Diameter/Width = 0.050000
Length = 0.050000
Height = 0.040000

name = Feeder Top Cap
quantity = 1
parent = 1

materialID = 5
type = Box
Aero Mass = 0.035800
Thermal Mass = 0.035800
Diameter/Width = 0.062000
Length = 0.113000
Height = 0.015000

name = Feeder Outer Housing
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.074000
Thermal Mass = 0.074000
Diameter/Width = 0.081000
Length = 0.113700
Height = 0.031000

name = Feeder Housing Motor Side
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.074000
Thermal Mass = 0.074000
Diameter/Width = 0.082000
Length = 0.114000
Height = 0.034000

name = Feeder Motor Mount
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.038000
Thermal Mass = 0.038000
Diameter/Width = 0.064000
Length = 0.092000
Height = 0.020000

name = Thruster Outer Screen
quantity = 1
parent = 1
materialID = -8
type = Cylinder
Aero Mass = 0.209740

Thermal Mass = 0.209740
Diameter/Width = 0.083000
Length = 0.034000

name = Thruster Inner Pole
quantity = 1
parent = 1
materialID = -8
type = Cylinder
Aero Mass = 0.868430
Thermal Mass = 0.012660
Diameter/Width = 0.039000
Length = 0.020000

name = Inner Screen
quantity = 1
parent = 39
materialID = -9
type = Cylinder
Aero Mass = 0.091570
Thermal Mass = 0.091570
Diameter/Width = 0.041000
Length = 0.030000

name = Inner Mag
quantity = 1
parent = 39
materialID = -10
type = Cylinder
Aero Mass = 0.764200
Thermal Mass = 0.764200
Diameter/Width = 0.360000
Length = 0.200000

name = Thruster Outer Pole
quantity = 1
parent = 1
materialID = -8
type = Cylinder
Aero Mass = 0.035070
Thermal Mass = 0.035070
Diameter/Width = 0.084000
Length = 0.030000

name = Thruster Frame Connector Half
quantity = 1
parent = 1

materialID = 59
type = Flat Plate
Aero Mass = 0.135440
Thermal Mass = 0.135440
Diameter/Width = 0.070000
Length = 0.090000

name = Thruster Frame Bare Half
quantity = 1
parent = 1
materialID = 59
type = Flat Plate
Aero Mass = 0.135020
Thermal Mass = 0.135020
Diameter/Width = 0.070000
Length = 0.090000

name = Thruster Outer Pole Clamp
quantity = 1
parent = 1
materialID = 59
type = Cylinder
Aero Mass = 0.028630
Thermal Mass = 0.028630
Diameter/Width = 0.036000
Length = 0.020000

name = Outer Mag
quantity = 1
parent = 1
materialID = -10
type = Cylinder
Aero Mass = 0.707200
Thermal Mass = 0.707200
Diameter/Width = 0.072000
Length = 0.030000

name = Outer Mag Align
quantity = 1
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 0.031220
Thermal Mass = 0.031220
Diameter/Width = 0.085000
Length = 0.030000

name = Inner Mag Align
quantity = 1
parent = 1
materialID = 66
type = Cylinder
Aero Mass = 0.021680
Thermal Mass = 0.021680
Diameter/Width = 0.025000
Length = 0.035000

name = Thruster Bottom Cover
quantity = 1
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 0.018360
Thermal Mass = 0.018360
Diameter/Width = 0.085000
Length = 0.030000

name = Harness Strain Relief
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.010530
Thermal Mass = 0.010530
Diameter/Width = 0.029000
Length = 0.029000
Height = 0.016000

name = Thruster Wedge Mount
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.350000
Thermal Mass = 0.350000
Diameter/Width = 0.150000
Length = 0.150000
Height = 0.030000

name = Pyxis Filters (Al)
quantity = 6
parent = 1
materialID = 5
type = Box

Aero Mass = 0.610000
Thermal Mass = 0.610000
Diameter/Width = 0.060000
Length = 0.084000
Height = 0.045000

name = Pyxis Filters (Cu)
quantity = 6
parent = 1
materialID = 19
type = Box
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.051000
Length = 0.084000
Height = 0.045000

name = Pyxis Enclosure (Al)
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 2.500000
Thermal Mass = 2.500000
Diameter/Width = 0.176000
Length = 0.185000
Height = 0.165000

name = Pyxis Enclosure (Cu)
quantity = 1
parent = 1
materialID = 19
type = Box
Aero Mass = 1.000000
Thermal Mass = 1.000000
Diameter/Width = 0.176000
Length = 0.185000
Height = 0.165000

name = Pyxis Enclosure (poly)
quantity = 1
parent = 1
materialID = 50
type = Box
Aero Mass = 1.000000
Thermal Mass = 1.000000
Diameter/Width = 0.176000

Length = 0.185000
Height = 0.165000

name = Pyxis Filter Plates
quantity = 2
parent = 1
materialID = 5
type = Box
Aero Mass = 0.350000
Thermal Mass = 0.350000
Diameter/Width = 0.120000
Length = 0.190000
Height = 0.010000

name = Pyxis RO Antennas (Al)
quantity = 2
parent = 1
materialID = 5
type = Box
Aero Mass = 1.670000
Thermal Mass = 1.670000
Diameter/Width = 0.256000
Length = 0.868000
Height = 0.023000

name = Pyxis RO Antennas (Ni)
quantity = 2
parent = 1
materialID = 46
type = Box
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.256000
Length = 0.868000
Height = 0.023000

name = Pyxis RO Antennas (Duriod)
quantity = 2
parent = 1
materialID = -13
type = Box
Aero Mass = 3.370000
Thermal Mass = 3.370000
Diameter/Width = 0.256000
Length = 0.868000
Height = 0.023000

*****OUTPUT*****

Item Number = 1
name = GNOMES-10
Demise Altitude = 77.996363
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Solar Face Sheet
Demise Altitude = 77.914235
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Solar Hinge
Demise Altitude = 77.623950
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = HDRM Inserts
Demise Altitude = 74.195240
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Solar Panel Core
Demise Altitude = 77.917661
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Film Adhesive
Demise Altitude = 77.977671
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Solar Cell Glass
Demise Altitude = 0.000000
Debris Casualty Area = 22.328029
Impact Kinetic Energy = 4.927941

name = Reaction Wheel and Bracket
Demise Altitude = 73.249603
Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Battery Pack
Demise Altitude = 76.507130
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Torque Rod
Demise Altitude = 70.660970
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Star Tracker
Demise Altitude = 77.118816
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = ADCS
Demise Altitude = 77.014674
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = EPS
Demise Altitude = 76.613844
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = MFC
Demise Altitude = 76.977364
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = TTCFE
Demise Altitude = 77.157997
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Zenith Antenna
Demise Altitude = 76.635225
Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = GNSS Antenna

Demise Altitude = 77.547934

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = RadioCore

Demise Altitude = 76.498505

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = HSRFE

Demise Altitude = 77.152626

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Nadir Antenna

Demise Altitude = 76.244932

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = PayloadCore

Demise Altitude = 76.912606

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Z+ Panel

Demise Altitude = 76.829582

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Z- Panel

Demise Altitude = 76.735150

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Y Panel

Demise Altitude = 76.827113

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = X Panel / Bulkhead

Demise Altitude = 77.215703

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Bus Cross Member

Demise Altitude = 77.511828

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Generic Fastener

Demise Altitude = 76.392253

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Harness Wires

Demise Altitude = 77.915563

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = HDRM

Demise Altitude = 76.269020

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = PPU Base Plate

Demise Altitude = 76.452642

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = PPU Cover

Demise Altitude = 76.924487

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = PPU Xformer

Demise Altitude = 74.711572

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Feeder Stepper Motor

Demise Altitude = 73.936881

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Feeder Top Cap

Demise Altitude = 77.644033

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Feeder Outer Housing

Demise Altitude = 77.469432

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Feeder Housing Motor Side

Demise Altitude = 77.490053

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Feeder Motor Mount

Demise Altitude = 77.582539

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Thruster Outer Screen

Demise Altitude = 73.511668

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Thruster Inner Pole

Demise Altitude = 77.306117

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Inner Screen

Demise Altitude = 75.140778

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Inner Mag

Demise Altitude = 76.673652

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Thruster Outer Pole

Demise Altitude = 77.034877

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Thruster Frame Connector Half

Demise Altitude = 74.392184

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Thruster Frame Bare Half

Demise Altitude = 74.398640

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Thruster Outer Pole Clamp

Demise Altitude = 76.110329

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Outer Mag

Demise Altitude = 71.274858

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Outer Mag Align

Demise Altitude = 77.793719

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Inner Mag Align

Demise Altitude = 75.789644

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Thruster Bottom Cover

Demise Altitude = 77.880144

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Harness Strain Relief

Demise Altitude = 77.803289

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Thruster Wedge Mount

Demise Altitude = 76.434552

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Pyxis Filters (Al)

Demise Altitude = 72.996807

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Pyxis Filters (Cu)

Demise Altitude = 77.261099

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Pyxis Enclosure (Al)

Demise Altitude = 73.482791

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Pyxis Enclosure (Cu)

Demise Altitude = 76.150649

Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

name = Pyxis Enclosure (poly)

Demise Altitude = 77.027959

Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Pyxis Filter Plates
Demise Altitude = 76.377449
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Pyxis RO Antennas (Al)
Demise Altitude = 76.577964
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Pyxis RO Antennas (Ni)
Demise Altitude = 0.000000
Debris Casualty Area = 1.764371
Impact Kinetic Energy = 0.961914

name = Pyxis RO Antennas (Duriod)
Demise Altitude = 77.996363
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

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

02 12 2026; 12:42:50PM Project Data Saved To File

E. ActivityLog_G11_Req451

=====

Run Data

=====

****INPUT****

Space Structure Name = GNOMES-11
Space Structure Type = Payload
Perigee Altitude = 575.000 (km)
Apogee Altitude = 575.000 (km)
Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)

Mean Anomaly = 0.000 (deg)
Final Area-To-Mass Ratio = 0.0134 (m²/kg)
Start Year = 2026.750 (yr)
Initial Mass = 155.000 (kg)
Final Mass = 150.600 (kg)
Duration = 5.000 (yr)
Station-Kept = True
PMD Perigee Altitude = 90.000 (km)
PMD Apogee Altitude = 90.000 (km)
PMD Inclination = 53.000 (deg)
PMD RAAN = 0.000 (deg)
PMD Argument of Perigee = 0.000 (deg)
PMD Mean Anomaly = 0.000 (deg)
Long-Term Reentry = True

****OUTPUT****

Collision Probability = 2.8984E-05
Returned Message: Normal Processing
Date Range Message: Normal Date Range
Status = Pass

=====

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

02 08 2026; 20:19:40PM	Project Data Saved To File
02 08 2026; 20:19:40PM	Mission Editor Changes Applied
02 08 2026; 20:19:40PM	Project Data Saved To File
02 08 2026; 20:19:40PM	Project Data Saved To File

02 08 2026; 20:25:44PM Processing Requirement 4.5-1: Return Status : Passed

=====

Run Data

=====

****INPUT****

Space Structure Name = GNOMES-11
Space Structure Type = Payload
Perigee Altitude = 575.000 (km)
Apogee Altitude = 575.000 (km)
Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass Ratio = 0.0059 (m²/kg)

Start Year = 2026.750 (yr)
 Initial Mass = 155.000 (kg)
 Final Mass = 150.600 (kg)
 Duration = 5.000 (yr)
 Station-Kept = True
 PMD Perigee Altitude = 90.000 (km)
 PMD Apogee Altitude = 90.000 (km)
 PMD Inclination = 53.000 (deg)
 PMD RAAN = 0.000 (deg)
 PMD Argument of Perigee = 0.000 (deg)
 PMD Mean Anomaly = 0.000 (deg)
 Long-Term Reentry = True

****OUTPUT****

Collision Probability = 1.2762E-05
 Returned Message: Normal Processing
 Date Range Message: Normal Date Range
 Status = Pass

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

F. ActivityLog_G11_Req452

=====
 Spacecraft = GNOMES-11
 Critical Surface = PPU+X
 =====

****INPUT****

Apogee Altitude = 575.000 (km)
 Perigee Altitude = 575.000 (km)
 Orbital Inclination = 53.000 (deg)
 RAAN = 0.000 (deg)
 Argument of Perigee = 0.000 (deg)
 Mean Anomaly = 0.000 (deg)
 Final Area-To-Mass = 0.0134 (m²/kg)
 Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 0.900 (g/cm²)
 CS Surface Area = 0.0016 (m²)
 Vector = (0.000000 (u), 1.000000 (v), 0.000000 (w))

CS Pressurized = No
Outer Wall 1 Density: 0.600 (g/cm²) Separation: 2.000 (cm)

****OUTPUT****

Probability of Penetration = 2.7918E-04 (2.7921E-04)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-11
Critical Surface = Thruster Head +X

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 17.750 (g/cm²)
CS Surface Area = 0.0050 (m²)
Vector = (0.000000 (u), 1.000000 (v), 0.000000 (w))
CS Pressurized = No

****OUTPUT****

Probability of Penetration = 6.9234E-07 (6.9234E-07)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-11
Critical Surface = EPS+X

****INPUT****

Apogee Altitude = 575.000 (km)

Perigee Altitude = 575.000 (km)
 Orbital Inclination = 53.000 (deg)
 RAAN = 0.000 (deg)
 Argument of Perigee = 0.000 (deg)
 Mean Anomaly = 0.000 (deg)
 Final Area-To-Mass = 0.0134 (m²/kg)
 Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 0.900 (g/cm²)
 CS Surface Area = 0.0020 (m²)
 Vector = (0.000000 (u), 1.000000 (v), 0.000000 (w))
 CS Pressurized = No
 Outer Wall 1 Density: 0.600 (g/cm²) Separation: 65.100 (cm)

****OUTPUT****

Probability of Penetration = 3.1890E-04 (3.1896E-04)
 Returned Error Message: Normal Processing
 Date Range Error Message: Normal Date Range

=====
 Spacecraft = GNOMES-11
 Critical Surface = ADCS+X
 =====

****INPUT****

Apogee Altitude = 575.000 (km)
 Perigee Altitude = 575.000 (km)
 Orbital Inclination = 53.000 (deg)
 RAAN = 0.000 (deg)
 Argument of Perigee = 0.000 (deg)
 Mean Anomaly = 0.000 (deg)
 Final Area-To-Mass = 0.0134 (m²/kg)
 Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 0.900 (g/cm²)
 CS Surface Area = 0.0050 (m²)
 Vector = (0.000000 (u), 1.000000 (v), 0.000000 (w))

CS Pressurized = No
Outer Wall 1 Density: 0.600 (g/cm²) Separation: 36.000 (cm)

****OUTPUT****

Probability of Penetration = 7.9707E-04 (7.9739E-04)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-11
Critical Surface = ADCS-X

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.850 (g/cm²)
CS Surface Area = 0.0050 (m²)
Vector = (0.000000 (u), -1.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.540 (g/cm²) Separation: 42.200 (cm)

****OUTPUT****

Probability of Penetration = 1.0007E-08 (1.0007E-08)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

Spacecraft = GNOMES-11
Critical Surface = PPU-X

****INPUT****

Apogee Altitude = 575.000 (km)
 Perigee Altitude = 575.000 (km)
 Orbital Inclination = 53.000 (deg)
 RAAN = 0.000 (deg)
 Argument of Perigee = 0.000 (deg)
 Mean Anomaly = 0.000 (deg)
 Final Area-To-Mass = 0.0134 (m²/kg)
 Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 0.850 (g/cm²)
 CS Surface Area = 0.0010 (m²)
 Vector = (0.000000 (u), -1.000000 (v), 0.000000 (w))
 CS Pressurized = No
 Outer Wall 1 Density: 0.540 (g/cm²) Separation: 84.100 (cm)

****OUTPUT****

Probability of Penetration = 2.0015E-09 (2.0015E-09)
 Returned Error Message: Normal Processing
 Date Range Error Message: Normal Date Range

=====
 Spacecraft = GNOMES-11
 Critical Surface = PPU+Y
 =====

****INPUT****

Apogee Altitude = 575.000 (km)
 Perigee Altitude = 575.000 (km)
 Orbital Inclination = 53.000 (deg)
 RAAN = 0.000 (deg)
 Argument of Perigee = 0.000 (deg)
 Mean Anomaly = 0.000 (deg)
 Final Area-To-Mass = 0.0134 (m²/kg)
 Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 0.900 (g/cm²)
 CS Surface Area = 0.0400 (m²)

Vector = (0.000000 (u), 0.000000 (v), -1.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.540 (g/cm²) Separation: 3.400 (cm)

****OUTPUT****

Probability of Penetration = 1.7014E-04 (1.7015E-04)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = PPU-Y

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.900 (g/cm²)
CS Surface Area = 0.0400 (m²)
Vector = (0.000000 (u), 0.000000 (v), 1.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.500 (g/cm²) Separation: 3.500 (cm)

****OUTPUT****

Probability of Penetration = 2.1717E-04 (2.1719E-04)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = EPS-X

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.850 (g/cm²)
CS Surface Area = 0.0024 (m²)
Vector = (0.000000 (u), -1.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.540 (g/cm²) Separation: 3.000 (cm)

****OUTPUT****

Probability of Penetration = 7.1574E-09 (7.1574E-09)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = PPU-Z

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.850 (g/cm²)
CS Surface Area = 0.0026 (m²)

Vector = (1.000000 (u), 0.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.810 (g/cm²) Separation: 2.000 (cm)

****OUTPUT****

Probability of Penetration = 7.8520E-09 (7.8520E-09)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = PPU+Z

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.850 (g/cm²)
CS Surface Area = 0.0026 (m²)
Vector = (-1.000000 (u), 0.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.810 (g/cm²) Separation: 29.200 (cm)

****OUTPUT****

Probability of Penetration = 2.0326E-09 (2.0326E-09)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = Thruster Head +Y

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 1.800 (g/cm²)
CS Surface Area = 0.0020 (m²)
Vector = (0.000000 (u), 0.000000 (v), -1.000000 (w))
CS Pressurized = No

****OUTPUT****

Probability of Penetration = 1.9112E-03 (1.9131E-03)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = Thruster Head-Y

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 1.800 (g/cm²)
CS Surface Area = 0.0020 (m²)
Vector = (0.000000 (u), 0.000000 (v), 1.000000 (w))

CS Pressurized = No

****OUTPUT****

Probability of Penetration = 1.9112E-03 (1.9131E-03)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = Thruster Head+Z

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 1.800 (g/cm²)
CS Surface Area = 0.0020 (m²)
Vector = (-1.000000 (u), 0.000000 (v), 0.000000 (w))
CS Pressurized = No

****OUTPUT****

Probability of Penetration = 3.8365E-07 (3.8365E-07)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = Thruster Head-Z

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)

Orbital Inclination = 53.000 (deg)
 RAAN = 0.000 (deg)
 Argument of Perigee = 0.000 (deg)
 Mean Anomaly = 0.000 (deg)
 Final Area-To-Mass = 0.0134 (m²/kg)
 Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 1.800 (g/cm²)
 CS Surface Area = 0.0028 (m²)
 Vector = (1.000000 (u), 0.000000 (v), 0.000000 (w))
 CS Pressurized = No

****OUTPUT****

Probability of Penetration = 5.3711E-07 (5.3711E-07)
 Returned Error Message: Normal Processing
 Date Range Error Message: Normal Date Range

=====
 Spacecraft = GNOMES-11
 Critical Surface = EPS+Y
 =====

****INPUT****

Apogee Altitude = 575.000 (km)
 Perigee Altitude = 575.000 (km)
 Orbital Inclination = 53.000 (deg)
 RAAN = 0.000 (deg)
 Argument of Perigee = 0.000 (deg)
 Mean Anomaly = 0.000 (deg)
 Final Area-To-Mass = 0.0134 (m²/kg)
 Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 0.810 (g/cm²)
 CS Surface Area = 0.0333 (m²)
 Vector = (0.000000 (u), 0.000000 (v), -1.000000 (w))
 CS Pressurized = No
 Outer Wall 1 Density: 0.540 (g/cm²) Separation: 2.200 (cm)

****OUTPUT****

Probability of Penetration = 4.7062E-04 (4.7073E-04)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = EPS-Y

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.810 (g/cm²)
CS Surface Area = 0.0333 (m²)
Vector = (0.000000 (u), 0.000000 (v), 1.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.405 (g/cm²) Separation: 32.200 (cm)

****OUTPUT****

Probability of Penetration = 6.1896E-04 (6.1915E-04)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = EPS-Z

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)

RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.810 (g/cm²)
CS Surface Area = 0.0079 (m²)
Vector = (1.000000 (u), 0.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.810 (g/cm²) Separation: 5.500 (cm)

****OUTPUT****

Probability of Penetration = 9.5382E-09 (9.5382E-09)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = EPS+Z

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.810 (g/cm²)
CS Surface Area = 0.0079 (m²)
Vector = (-1.000000 (u), 0.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.810 (g/cm²) Separation: 14.100 (cm)

****OUTPUT****

Probability of Penetration = 6.2800E-09 (6.2800E-09)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = ADCS+Y

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.810 (g/cm²)
CS Surface Area = 0.0317 (m²)
Vector = (0.000000 (u), 0.000000 (v), -1.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.540 (g/cm²) Separation: 30.700 (cm)

****OUTPUT****

Probability of Penetration = 2.3176E-04 (2.3179E-04)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = ADCS-Y

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)

RAAN = 0.000 (deg)
 Argument of Perigee = 0.000 (deg)
 Mean Anomaly = 0.000 (deg)
 Final Area-To-Mass = 0.0134 (m²/kg)
 Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 0.810 (g/cm²)
 CS Surface Area = 0.0317 (m²)
 Vector = (0.000000 (u), 0.000000 (v), 1.000000 (w))
 CS Pressurized = No
 Outer Wall 1 Density: 0.405 (g/cm²) Separation: 6.500 (cm)

****OUTPUT****

Probability of Penetration = 5.8971E-04 (5.8988E-04)
 Returned Error Message: Normal Processing
 Date Range Error Message: Normal Date Range

=====
 Spacecraft = GNOMES-11
 Critical Surface = ADCS+Z
 =====

****INPUT****

Apogee Altitude = 575.000 (km)
 Perigee Altitude = 575.000 (km)
 Orbital Inclination = 53.000 (deg)
 RAAN = 0.000 (deg)
 Argument of Perigee = 0.000 (deg)
 Mean Anomaly = 0.000 (deg)
 Final Area-To-Mass = 0.0134 (m²/kg)
 Initial Mass = 150.600 (kg)
 Final Mass = 150.600 (kg)
 Station Kept = Yes
 Start Year = 2026.750 (yr)
 Duration = 5.000 (yr)
 Orientation = Fixed Oriented
 CS Areal Density = 0.810 (g/cm²)
 CS Surface Area = 0.0095 (m²)
 Vector = (-1.000000 (u), 0.000000 (v), 0.000000 (w))
 CS Pressurized = No
 Outer Wall 1 Density: 0.810 (g/cm²) Separation: 10.900 (cm)

****OUTPUT****

Probability of Penetration = 8.0185E-09 (8.0185E-09)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

=====

Spacecraft = GNOMES-11
Critical Surface = ADCS-Z

=====

****INPUT****

Apogee Altitude = 575.000 (km)
Perigee Altitude = 575.000 (km)
Orbital Inclination = 53.000 (deg)
RAAN = 0.000 (deg)
Argument of Perigee = 0.000 (deg)
Mean Anomaly = 0.000 (deg)
Final Area-To-Mass = 0.0134 (m²/kg)
Initial Mass = 150.600 (kg)
Final Mass = 150.600 (kg)
Station Kept = Yes
Start Year = 2026.750 (yr)
Duration = 5.000 (yr)
Orientation = Fixed Oriented
CS Areal Density = 0.810 (g/cm²)
CS Surface Area = 0.0095 (m²)
Vector = (1.000000 (u), 0.000000 (v), 0.000000 (w))
CS Pressurized = No
Outer Wall 1 Density: 0.810 (g/cm²) Separation: 6.500 (cm)

****OUTPUT****

Probability of Penetration = 1.0389E-08 (1.0389E-08)
Returned Error Message: Normal Processing
Date Range Error Message: Normal Date Range

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

G. ActivityLog_G11_Req461

=====

Project Data

=====

****INPUT****

Space Structure Name = GNOMES-11
 Space Structure Type = Payload
 Perigee Altitude = 575.000000 (km)
 Apogee Altitude = 575.000000 (km)
 Inclination = 53.000000 (deg)
 RAAN = 0.000000 (deg)
 Argument of Perigee = 0.000000 (deg)
 Mean Anomaly = 0.000000 (deg)
 Area-To-Mass Ratio = 0.005900 (m²/kg)
 Start Year = 2026.750000 (yr)
 Initial Mass = 155.000000 (kg)
 Final Mass = 150.600000 (kg)
 Duration = 5.000000 (yr)
 Station Kept = True
 Abandoned = False
 Long-Term Reentry = True

****OUTPUT****

Suggested Perigee Altitude = 100.000000 (km)
 Suggested Apogee Altitude = 575.000000 (km)
 Returned Error Message = Passes Long-term reentry orbit criteria
 Released Year = 2031 (yr)
 Requirement = 63
 Compliance Status = Pass

=====

===== End of Requirement 4.6 =====

02 08 2026; 20:28:29PM	Project Data Saved To File
02 08 2026; 20:28:29PM	Mission Editor Changes Applied
02 08 2026; 20:28:29PM	Project Data Saved To File
02 08 2026; 20:28:29PM	Project Data Saved To File
02 08 2026; 20:28:31PM	Mission Editor Changes Applied
02 08 2026; 20:28:31PM	Project Data Saved To File
02 08 2026; 20:28:31PM	Project Data Saved To File
02 08 2026; 20:29:08PM	Science and Engineering - Orbit Lifetime/Dwell Time

****INPUT****

Start Year = 2031.250000 (yr)
 Perigee Altitude = 380.000000 (km)
 Apogee Altitude = 380.000000 (km)
 Inclination = 53.000000 (deg)
 RAAN = 0.000000 (deg)
 Argument of Perigee = 0.000000 (deg)

Area-To-Mass Ratio = 0.013400 (m²/kg)

****OUTPUT****

Orbital Lifetime from Startyr = 1.075997 (yr)
Time Spent in LEO during Lifetime = 1.075997 (yr)
Last year of Propagation = 2032 (yr)
Returned Error Message: Object reentered
02 08 2026; 20:31:01PM Project Data Saved To File

H. ActivityLog_G11_Req471

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

****INPUT****

Space Structure Name = GNOMES-11
Space Structure Type = Payload
Perigee Altitude = 575.000000 (km)
Apogee Altitude = 575.000000 (km)
Inclination = 53.000000 (deg)
RAAN = 0.000000 (deg)
Argument of Perigee = 0.000000 (deg)
Mean Anomaly = 0.000000 (deg)
Area-To-Mass Ratio = 0.013400 (m²/kg)
Start Year = 2026.750000 (yr)
Initial Mass = 155.000000 (kg)
Final Mass = 150.600000 (kg)
Duration = 5.000000 (yr)
Station Kept = True
Abandoned = False
Long-Term Reentry = True

****OUTPUT****

Suggested Perigee Altitude = 100.000000 (km)
Suggested Apogee Altitude = 575.000000 (km)
Returned Error Message = Passes Long-term reentry orbit criteria
Released Year = 2031 (yr)
Requirement = 63
Compliance Status = Pass

=====
===== End of Requirement 4.6 =====
02 12 2026; 12:50:17PM *****Processing Requirement 4.7-1

Return Status : Passed

*****INPUT*****

Item Number = 1

name = GNOMES-11

quantity = 1

parent = 0

materialID = 8

type = Box

Aero Mass = 150.600006

Thermal Mass = 150.600006

Diameter/Width = 0.600000

Length = 1.100000

Height = 0.300000

name = Solar Face Sheet

quantity = 12

parent = 1

materialID = 27

type = Flat Plate

Aero Mass = 0.532000

Thermal Mass = 0.532000

Diameter/Width = 0.720000

Length = 1.120000

name = Solar Hinge

quantity = 12

parent = 1

materialID = 8

type = Box

Aero Mass = 0.100000

Thermal Mass = 0.100000

Diameter/Width = 0.039000

Length = 0.200000

Height = 0.010000

name = HDRM Inserts

quantity = 12

parent = 1

materialID = 65

type = Flat Plate

Aero Mass = 0.034000

Thermal Mass = 0.034000

Diameter/Width = 0.030000

Length = 0.074000

name = Solar Panel Core
quantity = 6
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.588000
Thermal Mass = 0.588000
Diameter/Width = 0.720000
Length = 1.120000

name = Film Adhesive
quantity = 12
parent = 1
materialID = 27
type = Flat Plate
Aero Mass = 0.128000
Thermal Mass = 0.128000
Diameter/Width = 0.720000
Length = 1.120000

name = Solar Cell Glass
quantity = 24
parent = 1
materialID = -1
type = Flat Plate
Aero Mass = 0.275000
Thermal Mass = 0.275000
Diameter/Width = 0.250000
Length = 0.550000

name = Reaction Wheel and Bracket
quantity = 4
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 1.800000
Thermal Mass = 1.800000
Diameter/Width = 0.090000
Length = 0.110000

name = Battery Pack
quantity = 8
parent = 1
materialID = 8
type = Box
Aero Mass = 1.100000
Thermal Mass = 1.100000

Diameter/Width = 0.075000
Length = 0.200000
Height = 0.060000

name = Torque Rod
quantity = 3
parent = 1
materialID = 38
type = Cylinder
Aero Mass = 0.250000
Thermal Mass = 0.250000
Diameter/Width = 0.020000
Length = 0.150000

name = Star Tracker
quantity = 2
parent = 1
materialID = 8
type = Box
Aero Mass = 0.320000
Thermal Mass = 0.320000
Diameter/Width = 0.050000
Length = 0.119000
Height = 0.044000

name = ADCS
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.900000
Thermal Mass = 0.900000
Diameter/Width = 0.148000
Length = 0.224000
Height = 0.041000

name = EPS
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 1.500000
Thermal Mass = 1.500000
Diameter/Width = 0.140000
Length = 0.330000
Height = 0.023000

name = MFC
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 1.300000
Thermal Mass = 1.300000
Diameter/Width = 0.150000
Length = 0.337000
Height = 0.040000

name = TTCFE
quantity = 2
parent = 1
materialID = 8
type = Box
Aero Mass = 0.480000
Thermal Mass = 0.480000
Diameter/Width = 0.113000
Length = 0.150000
Height = 0.040000

name = Zenith Antenna
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.480000
Thermal Mass = 0.480000
Diameter/Width = 0.100000
Length = 0.143000

name = GNSS Antenna
quantity = 2
parent = 1
materialID = 50
type = Flat Plate
Aero Mass = 0.050000
Thermal Mass = 0.050000
Diameter/Width = 0.050000
Length = 0.100000

name = RadioCore
quantity = 1
parent = 1
materialID = 8
type = Box

Aero Mass = 1.440000
Thermal Mass = 1.440000
Diameter/Width = 0.170000
Length = 0.250000
Height = 0.023000

name = HSRFE
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 0.480000
Thermal Mass = 0.480000
Diameter/Width = 0.111000
Length = 0.150000
Height = 0.040000

name = Nadir Antenna
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 4.570000
Thermal Mass = 4.570000
Diameter/Width = 0.414000
Length = 0.488000
Height = 0.025000

name = PayloadCore
quantity = 1
parent = 1
materialID = 8
type = Box
Aero Mass = 1.000000
Thermal Mass = 1.000000
Diameter/Width = 0.150000
Length = 0.224000
Height = 0.041000

name = Z+ Panel
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 6.450000
Thermal Mass = 6.450000
Diameter/Width = 0.517000

Length = 1.100000

name = Z- Panel
quantity = 1
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 5.410000
Thermal Mass = 5.410000
Diameter/Width = 0.355000
Length = 1.100000

name = Y Panel
quantity = 2
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 4.420000
Thermal Mass = 4.420000
Diameter/Width = 0.320000
Length = 1.020000

name = X Panel / Bulkhead
quantity = 4
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 1.400000
Thermal Mass = 1.400000
Diameter/Width = 0.300000
Length = 0.420000

name = Bus Cross Member
quantity = 4
parent = 1
materialID = 8
type = Flat Plate
Aero Mass = 0.380000
Thermal Mass = 0.380000
Diameter/Width = 0.075000
Length = 0.517000

name = Generic Fastener
quantity = 250
parent = 1
materialID = 57
type = Cylinder

Aero Mass = 0.007000
Thermal Mass = 0.007000
Diameter/Width = 0.007000
Length = 0.025000

name = Harness Wires
quantity = 3000
parent = 1
materialID = 19
type = Cylinder
Aero Mass = 0.001000
Thermal Mass = 0.001000
Diameter/Width = 0.001000
Length = 0.250000

name = HDRM
quantity = 4
parent = 1
materialID = 8
type = Box
Aero Mass = 0.480000
Thermal Mass = 0.480000
Diameter/Width = 0.065000
Length = 0.085000
Height = 0.036000

name = PPU Base Plate
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.500000
Thermal Mass = 0.500000
Diameter/Width = 0.160000
Length = 0.260000
Height = 0.006500

name = PPU Cover
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.413000
Thermal Mass = 0.413000
Diameter/Width = 0.160000
Length = 0.260000
Height = 0.030000

name = PPU Xformer
quantity = 1
parent = 1
materialID = -12
type = Box
Aero Mass = 0.251000
Thermal Mass = 0.251000
Diameter/Width = 0.038000
Length = 0.051000
Height = 0.030000

name = Feeder Stepper Motor
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.273000
Thermal Mass = 0.273000
Diameter/Width = 0.050000
Length = 0.050000
Height = 0.040000

name = Feeder Top Cap
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.035800
Thermal Mass = 0.035800
Diameter/Width = 0.062000
Length = 0.113000
Height = 0.015000

name = Feeder Outer Housing
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.074000
Thermal Mass = 0.074000
Diameter/Width = 0.081000
Length = 0.113700
Height = 0.031000

name = Feeder Housing Motor Side
quantity = 1
parent = 1

materialID = 5
type = Box
Aero Mass = 0.074000
Thermal Mass = 0.074000
Diameter/Width = 0.082000
Length = 0.114000
Height = 0.034000

name = Feeder Motor Mount
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.038000
Thermal Mass = 0.038000
Diameter/Width = 0.064000
Length = 0.092000
Height = 0.020000

name = Thruster Outer Screen
quantity = 1
parent = 1
materialID = -8
type = Cylinder
Aero Mass = 0.209740
Thermal Mass = 0.209740
Diameter/Width = 0.083000
Length = 0.034000

name = Thruster Inner Pole
quantity = 1
parent = 1
materialID = -8
type = Cylinder
Aero Mass = 0.868430
Thermal Mass = 0.012660
Diameter/Width = 0.039000
Length = 0.020000

name = Inner Screen
quantity = 1
parent = 39
materialID = -9
type = Cylinder
Aero Mass = 0.091570
Thermal Mass = 0.091570
Diameter/Width = 0.041000

Length = 0.030000

name = Inner Mag
quantity = 1
parent = 39
materialID = -10
type = Cylinder
Aero Mass = 0.764200
Thermal Mass = 0.764200
Diameter/Width = 0.360000
Length = 0.200000

name = Thruster Outer Pole
quantity = 1
parent = 1
materialID = -8
type = Cylinder
Aero Mass = 0.035070
Thermal Mass = 0.035070
Diameter/Width = 0.084000
Length = 0.030000

name = Thruster Frame Connector Half
quantity = 1
parent = 1
materialID = 59
type = Flat Plate
Aero Mass = 0.135440
Thermal Mass = 0.135440
Diameter/Width = 0.070000
Length = 0.090000

name = Thruster Frame Bare Half
quantity = 1
parent = 1
materialID = 59
type = Flat Plate
Aero Mass = 0.135020
Thermal Mass = 0.135020
Diameter/Width = 0.070000
Length = 0.090000

name = Thruster Outer Pole Clamp
quantity = 1
parent = 1
materialID = 59
type = Cylinder

Aero Mass = 0.028630
Thermal Mass = 0.028630
Diameter/Width = 0.036000
Length = 0.020000

name = Outer Mag
quantity = 1
parent = 1
materialID = -10
type = Cylinder
Aero Mass = 0.707200
Thermal Mass = 0.707200
Diameter/Width = 0.072000
Length = 0.030000

name = Outer Mag Align
quantity = 1
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 0.031220
Thermal Mass = 0.031220
Diameter/Width = 0.085000
Length = 0.030000

name = Inner Mag Align
quantity = 1
parent = 1
materialID = 66
type = Cylinder
Aero Mass = 0.021680
Thermal Mass = 0.021680
Diameter/Width = 0.025000
Length = 0.035000

name = Thruster Bottom Cover
quantity = 1
parent = 1
materialID = 8
type = Cylinder
Aero Mass = 0.018360
Thermal Mass = 0.018360
Diameter/Width = 0.085000
Length = 0.030000

name = Harness Strain Relief
quantity = 1

parent = 1
materialID = 8
type = Box
Aero Mass = 0.010530
Thermal Mass = 0.010530
Diameter/Width = 0.029000
Length = 0.029000
Height = 0.016000

name = Thruster Wedge Mount
quantity = 1
parent = 1
materialID = 5
type = Box
Aero Mass = 0.350000
Thermal Mass = 0.350000
Diameter/Width = 0.150000
Length = 0.150000
Height = 0.030000

name = Pyxis Filters (Al)
quantity = 6
parent = 1
materialID = 5
type = Box
Aero Mass = 0.610000
Thermal Mass = 0.610000
Diameter/Width = 0.060000
Length = 0.084000
Height = 0.045000

name = Pyxis Filters (Cu)
quantity = 6
parent = 1
materialID = 19
type = Box
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.051000
Length = 0.084000
Height = 0.045000

name = Pyxis Enclosure (Al)
quantity = 1
parent = 1
materialID = 5
type = Box

Aero Mass = 2.500000
Thermal Mass = 2.500000
Diameter/Width = 0.176000
Length = 0.185000
Height = 0.165000

name = Pyxis Enclosure (Cu)
quantity = 1
parent = 1
materialID = 19
type = Box
Aero Mass = 1.000000
Thermal Mass = 1.000000
Diameter/Width = 0.176000
Length = 0.185000
Height = 0.165000

name = Pyxis Enclosure (poly)
quantity = 1
parent = 1
materialID = 50
type = Box
Aero Mass = 1.000000
Thermal Mass = 1.000000
Diameter/Width = 0.176000
Length = 0.185000
Height = 0.165000

name = Pyxis Filter Plates
quantity = 2
parent = 1
materialID = 5
type = Box
Aero Mass = 0.350000
Thermal Mass = 0.350000
Diameter/Width = 0.120000
Length = 0.190000
Height = 0.010000

name = Pyxis RO Antennas (Al)
quantity = 2
parent = 1
materialID = 5
type = Box
Aero Mass = 1.670000
Thermal Mass = 1.670000
Diameter/Width = 0.256000

Length = 0.868000
Height = 0.023000

name = Pyxis RO Antennas (Ni)
quantity = 2
parent = 1
materialID = 46
type = Box
Aero Mass = 0.100000
Thermal Mass = 0.100000
Diameter/Width = 0.256000
Length = 0.868000
Height = 0.023000

name = Pyxis RO Antennas (Duriod)
quantity = 2
parent = 1
materialID = -13
type = Box
Aero Mass = 3.370000
Thermal Mass = 3.370000
Diameter/Width = 0.256000
Length = 0.868000
Height = 0.023000

*****OUTPUT*****

Item Number = 1
name = GNOMES-11
Demise Altitude = 77.996363
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Solar Face Sheet
Demise Altitude = 77.914235
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = Solar Hinge
Demise Altitude = 77.623950
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

name = HDRM Inserts
Demise Altitude = 74.195240
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

```

*****
name = Solar Panel Core
Demise Altitude = 77.917661
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Film Adhesive
Demise Altitude = 77.977671
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Solar Cell Glass
Demise Altitude = 0.000000
Debris Casualty Area = 22.328029
Impact Kinetic Energy = 4.927941
*****

name = Reaction Wheel and Bracket
Demise Altitude = 73.249603
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Battery Pack
Demise Altitude = 76.507130
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Torque Rod
Demise Altitude = 70.660970
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Star Tracker
Demise Altitude = 77.118816
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = ADCS
Demise Altitude = 77.014674
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = EPS
Demise Altitude = 76.613844
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

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name = MFC
Demise Altitude = 76.977364
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = TTCFE
Demise Altitude = 77.157997
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Zenith Antenna
Demise Altitude = 76.635225
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = GNSS Antenna
Demise Altitude = 77.547934
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = RadioCore
Demise Altitude = 76.498505
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = HSRFE
Demise Altitude = 77.152626
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Nadir Antenna
Demise Altitude = 76.244932
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = PayloadCore
Demise Altitude = 76.912606
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Z+ Panel
Demise Altitude = 76.829582
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Z- Panel

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Demise Altitude = 76.735150
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Y Panel
 Demise Altitude = 76.827113
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = X Panel / Bulkhead
 Demise Altitude = 77.215703
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Bus Cross Member
 Demise Altitude = 77.511828
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Generic Fastener
 Demise Altitude = 76.392253
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Harness Wires
 Demise Altitude = 77.915563
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = HDRM
 Demise Altitude = 76.269020
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = PPU Base Plate
 Demise Altitude = 76.452642
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = PPU Cover
 Demise Altitude = 76.924487
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = PPU Xformer
 Demise Altitude = 74.711572

Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Feeder Stepper Motor
 Demise Altitude = 73.936881
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Feeder Top Cap
 Demise Altitude = 77.644033
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Feeder Outer Housing
 Demise Altitude = 77.469432
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Feeder Housing Motor Side
 Demise Altitude = 77.490053
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Feeder Motor Mount
 Demise Altitude = 77.582539
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Thruster Outer Screen
 Demise Altitude = 73.511668
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Thruster Inner Pole
 Demise Altitude = 77.306117
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Inner Screen
 Demise Altitude = 75.140778
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Inner Mag
 Demise Altitude = 76.673652
 Debris Casualty Area = 0.000000

Impact Kinetic Energy = 0.000000

 name = Thruster Outer Pole
 Demise Altitude = 77.034877
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Thruster Frame Connector Half
 Demise Altitude = 74.392184
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Thruster Frame Bare Half
 Demise Altitude = 74.398640
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Thruster Outer Pole Clamp
 Demise Altitude = 76.110329
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Outer Mag
 Demise Altitude = 71.274858
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Outer Mag Align
 Demise Altitude = 77.793719
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Inner Mag Align
 Demise Altitude = 75.789644
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Thruster Bottom Cover
 Demise Altitude = 77.880144
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

 name = Harness Strain Relief
 Demise Altitude = 77.803289
 Debris Casualty Area = 0.000000
 Impact Kinetic Energy = 0.000000

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*****
name = Thruster Wedge Mount
Demise Altitude = 76.434552
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Pyxis Filters (Al)
Demise Altitude = 72.996807
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Pyxis Filters (Cu)
Demise Altitude = 77.261099
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Pyxis Enclosure (Al)
Demise Altitude = 73.482791
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Pyxis Enclosure (Cu)
Demise Altitude = 76.150649
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Pyxis Enclosure (poly)
Demise Altitude = 77.027959
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Pyxis Filter Plates
Demise Altitude = 76.377449
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Pyxis RO Antennas (Al)
Demise Altitude = 76.577964
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000
*****

name = Pyxis RO Antennas (Ni)
Demise Altitude = 0.000000
Debris Casualty Area = 1.764371
Impact Kinetic Energy = 0.961914
*****

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name = Pyxis RO Antennas (Duriod)
Demise Altitude = 77.996363
Debris Casualty Area = 0.000000
Impact Kinetic Energy = 0.000000

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