The table below includes a list of information that may be helpful to gather during the design of a mission to ensure compliance with the FCC’s orbital debris rules. This worksheet can be used to gather information useful in completing an ODM Plan.

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| **1: Mission Overview** |
| 1.1: Company Name |  |
| 1.2: Mission Name |  |
| 1.3: Mission Description |  |
| 1.4: Number of Satellites |  |
| 1.5: Launch Date |  |
| 1.6: Launch Vehicle and Launch Site |  |
| 1.7: Deployment Apogee (km) |  |
| 1.8: Deployment Perigee (km) |  |
| 1.9: Deployment Inclination (deg.) |  |
| 1.10: Operational Apogee (km) |  |
| 1.11: Operational Perigee (km) |  |
| 1.12: Operational Inclination (deg.) |  |
| 1.13: Reason for Selecting Orbit |  |
| **2: Spacecraft Information** |
| 2.1: Provide a physical description of the spacecraft, including spacecraft bus, payload instrumentation, and all appendages, such as solar arrays, antennas, and instrument or attitude control booms.  |  |
| 2.2: What is the effective Area-to-Mass ratio of the space station? Does the calculated Area-to-Mass depend on the successful deployment of appendages. If so, what is the Area-to-Mass ratio in a failed configuration. Does the Area-to-Mass ratio assume a tumbling orientation? [See NASA’s Debris Assessment Software (DAS) User Guide for resources on computing Area-to-Mass Ratio] |  |
| 2.3: Explain all systems related to satellite maneuverability, and whether or not the space station design includes a propulsion system. |  |
| **3: Launch and Deployment**  |
| 3.1: Prior to deployment, will the space station(s) be registered with the 18th Space Control Squadron or successor entity? | Yes/No |
| 3.2: The extent to which the space station 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. |  |
| 3.3: Provide a statement addressing the trackability of the space station(s). Will the space station tracking be active or passive? | *Space station(s) operating in LEO will be presumed trackable if each individual space station is 10 cm or larger in its smallest dimension, excluding deployable components.* |
| 3.4: How does the operator plan to identify the space station(s) following deployment?  |  |
| 3.5: Provide a statement on the accuracy, if any, with which orbital parameters will be maintained, including apogee, perigee, inclination, and the right ascension of the ascending node(s). |  |
| 3.6: Indicate the anticipated evolution of the orbit of the proposed satellite or satellites over time. |  |
| **4: Satellite Operations and Collision Risk** |
| **4.1: Collision with Large Objects** |
| 4.1.1: What other space station or debris are present in the planned orbit(s)?  |  |
| 4.1.2: Assess the potential risk of collision and provide a description of what measures the operator plans to take to avoid in orbit collisions.  |  |
| 4.1.3: If the space station operator is relying on coordination with another system, what steps will be taken to contact, and ascertain the likelihood of successful coordination of physical operations with the other system? |  |
| 4.1.4: For geostationary space stations, a statement that assesses whether there are any known satellites located at, or reasonably expected to be located at, the requested orbital location, or assigned in the vicinity of that location, such that the station-keeping volumes of the respective satellites might overlap. If so, the statement must include a statement as to the identities of those parties and the measures that will be taken to prevent collisions. The statement should address any licensed FCC systems, or any systems applied for and under consideration. The statement need not address every filing with the International Telecommunication Union (ITU) that meets these criteria. The operator should, however, assess and address any systems reflected in ITU filings that are in operation or that it believes may be progressing toward launch, for example, by the appearance of the system on a launch vehicle manifest.  |  |
| 4.1.5: Assess the probability of collision between any space station of the system and other large objects (10 cm or larger in diameter) during the total orbital lifetime of the space station, including any de-orbit phases, to less than 0.001 (1 in 1,000). [Use the NASA Debris Assessment Software (DAS) or a higher fidelity assessment tool]If the operator will rely on collision avoidance procedures for reduction of risk, what is the threshold for a collision avoidance maneuver and the targeted risk reduction from any maneuvers undertaken?  |  |
| 4.1.6: If the mission includes a tether, assess the large object collision risk with the tether deployment, the impact on deorbit time, and a statement as to whether the tether can be retracted. |  |
| **4.2: Collision with Small Objects** |
| 4.2.1: Identify any critical surfaces, i.e. ones that if struck by small object debris or meteoroids, could cause loss of control and prevent post mission disposal. Assess the small object risk. [Use the NASA Debris Assessment Software (DAS) or a higher fidelity assessment tool] |  |
| **4.3: Proximity Operation:** |
| 4.3.1: Will the satellite perform any close proximity maneuvers with other satellite or objects? | Yes/No |
| If the answer to 4.3.1 is yes |
| 4.3.1.a: Describe the planned proximity operations and addres debris generation that may result from the proposed operations, including any planned release of debris, the risk of accidental explosions, the risk of accidental collision, and measures taken to mitigate those risks. |  |
| **4.4: Debris Released and Deployment Devices** |
| 4.4.1: Will any debris be intentionally released from the spacecraft?  | Yes/No  |
| If the answer to 4.4.1 is yes |
| 4.4.1.a: Prepare and provide a justification.  |  |
| 4.4.2: Will the spacecraft be deployed from a device separate from the launch vehicle (such as rings or other deployment vehicles, sometimes referred to as “free-flyers”, but not including launch vehicles)? | Yes/No |
| If the answer to 4.4.2 is yes |
| 4.4.2.a: Provide a description of the deployment devices and a debris mitigation disclosure with respect to the deployment device. The debris mitigation disclosure should include a statement that the operator has assessed and limited the amount of debris released in a planned manner during normal operations, addressing facts such as the orbital lifetime of the deployment device and the collision risks associated with the device itself. If deploying multiple satellites, please include an evaluation of collision risk associated with the deployment of multiple satellites from the deployment device.  |  |
| **4.5: Explosion Risk and End of Life Passivation** |
| 4.5.1: What sources of accidental explosions before or after the completion of mission operations exist? Assess the probability of explosion occurrence.  |  |
| 4.5.2: What sources of energy (e.g. batteries, propellant, etc.) exist on-board the spacecraft? Could the conversion of such sources into energy (e.g. chemical, pressure, kinetic) generate debris that could fragment the spacecraft?  |  |
| 4.5.3: How will the stored energy be removed at the spacecraft’s end of life?  | a) By depleting residual fuel and leaving all fuel line valves openb) By venting any pressurized system, leaving all batteries in a permanent discharge state, and removing any remaining source of stored energyc) Through other equivalent procedures disclosed in the application |
| 4.5.4: Are there liquids on-board the spacecraft that if released would persist in droplet form? | Yes / No |
| 4.5.5: Are any of the on-board liquids ionic?  | Yes / No |
| If the answer to 4.5.4 or 4.5.5 is yes |
| 4.5.5.a: Will these liquids evaporate or sublimate if released? How long would such liquid remain in orbit? Describe any natural processes that would result in dispersion of the droplets. How effectively is the ionic liquid contained? |  |
| **5: Post Mission Disposal** |
| 5.1: Will any disposal maneuver be performed? | Yes/No |
| If the answer to 5.1 is yes |  |
| 5.1.a: How much fuel, if any, will be reserved for the disposal maneuver? |  |
| 5.2: Which disposal method will be used? | a) Atmospheric re-entryb) Storage Orbitc) Direct retrieval |
| If in 5.2 option “a” is selected, proceed to 5.2.a, if “b” is selected, proceed to 5.2.b.i, if “b” is selected and it is a GEO satellite, proceed to 5.2.b.ii, if “c” is selected, proceed to 5.2.c. |
| 5.2.a.i: If passing <2,000 km, after end of mission, how long will the space station stay in orbit before atmospheric re-entry? Does the space station deorbit within 5 years after end of mission? End of mission is the time at which the individual spacecraft is no longer capable of conducting collision avoidance maneuvers. For spacecraft without collision avoidance capabilities, end of mission is defined as the point in which the individual spacecraft has completed its primary mission, e.g. communications services, handling customer message traffic, remote-sensing, etc.  [Use NASA’s Debris Assessment Software (DAS) or a higher fidelity assessment tool to compute orbital lifetime.] |  |
| 5.2.a.ii: Assess whether portions of any individual spacecraft will survive atmospheric re-entry and impact the surface of the Earth with a kinetic energy in excess of 15 joules. Calculate the casualty risk for an individual spacecraft using the NASA Debris Assessment Software or a higher fidelity assessment tool and ensure that it is less than 0.0001 (1 in 10,000). | *If the NASA DAS software is used, a table with the following columns for each component is helpful:*1. *Component Name*
2. *Quantity*
3. *Material*
4. *Location In Spacecraft*
5. *Component Shape*
6. *Thermal Mass*
7. *Diameter / Width*
8. *Length*
9. *Height*
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| 5.2.a.iii: If you are performing a controlled atmospheric re-entry (i.e. one targeting a specific geographic area) will the object re-enter substantially intact? If not, please address methods for mitigating on-ground risks. If so, re-entry may be subject to Federal Aviation Administration (FAA) licensing.  |  |
| 5.2.b.i: What is the planned storage orbit and expected time to reach that orbit? |  |
| 5.2.b.ii: For GEO satellites, what altitude is selected for a disposal orbit and what calculations (See 47 CFR § 25.283) are used in deriving the disposal altitude?  |  |
| 5.2.c: What is the plan for direct retrieval of the satellite? |  |
| 5.3: If a post mission disposal (PMD) maneuver is required, will the the probability of success of the chosen disposal method be 0.9 or greater for any individual space station? Elaborate on the computation of this probability. (For space station systems consisting of multiple space stations, the demonstration should include additional information regarding efforts to achieve a higher probability of success, with a goal, for large systems, of a probability of success for any individual space station of 0.99 or better) |  |
| 5.4: If at any time during the space station(s)' mission or de-orbit phase the space station(s) will transit through the orbits used by any inhabitable spacecraft, including the ISS, what aspect of the system design and operational strategies, if any, will be used to minimize the risk of collision with, and avoid posing any operational constraints to, the inhabitable spacecraft? |  |