

Great Awakening
Product Requirements Document
Manned Mission to Europa



Introduction:

- Purpose: Establish the specifications and requirements for the spacecraft and supporting systems for the Europa mission.
- Scope: Covers all onboard systems including propulsion, life support, navigation, and scientific instruments.

Section 1: Spacecraft Specifications

- Size and Layout: Dimensions, module design, and accommodation capacity.
- Propulsion System: Specific requirements for chosen propulsion technology.
- Power Systems: Solar panels, nuclear reactors, battery storage capacities.

Section 2: Life Support Systems

- Air System Requirements: Oxygen levels, CO2 scrubbing, and ventilation specifications.
- Water System Requirements: Recycling systems, storage, and purification processes.
- Food Storage and Preparation: Nutrition requirements, storage conditions, and cooking facilities.

Section 3: Navigation and Communication Systems

- Navigation System Specs: Accuracy requirements, backup systems, and software needs.
- Communication System Specs: Data rate requirements, encryption, and redundancy.

Section 4: Scientific Instrumentation

- Scientific Goals: Define the primary scientific objectives of the mission.
- Instruments Required: List of necessary instruments and their specifications.

Section 5: Safety and Redundancy

- Emergency Systems: Escape pods, fire suppression, and radiation shelters.
- Redundancy Levels: Duplication of critical systems and parts.

Section 6: Testing and Validation

- Testing Phases: Outline of pre-launch, in-flight, and pre-landing tests.
- Validation Criteria: Performance benchmarks and success criteria.

Conclusion

- Review and Approval Processes: Steps for review and approval of the final spacecraft design.
- Documentation Requirements: Necessary documentation for training and operations.