Journey around the Moon powered by Airbus DS

While travelling around the Moon and back on its first mission (EM-1), the unmanned NASA Orion spacecraft will demonstrate its systems and high speed entry performance prior to crewed flights. Under an ESA contract, Airbus Defence and Space is building the European Service Module (ESM) that will power the spacecraft and hence provide critical functions during the whole mission:

1. Launch
   Stand-by for Abort to Orbit Manoeuvre in case of emergency

2. Low Earth Orbit
   Solar array deployment

3. Trans-Lunar Injection
   Propulsion on stand-by for launcher/spacecraft separation

4. Outbound coasting phase
   Trajectory correction manoeuvres

5. Outbound powered Lunar fly-by
   Main engine burn (185 km above surface)

6. Distant Retrograde Orbit
   Main engine burn for insertion

7. Inbound powered Lunar fly-by
   Main engine burn to return towards Earth

8. Distant Retrograde Orbit departure
   Main engine burn

9. Inbound coasting phase
   Trajectory correction manoeuvres

10. Inbound powered Lunar fly-by
    Main engine burn

11. Crew Module/Service Module separation

12. Re-entry
    ESM and Crew Module Adapter burn up

1st European supply of critical functions for a NASA space mission:
- Main engine propulsion
- Consumable storage (for later crewed flights)
- Reaction control/auxiliary thruster
- Thermal control
- Electrical power supply

Orion spacecraft and ESM

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