Apollo service module power system

What were the Apollo Command and service modules?
The Apollo Command and Service Modules - The Apollo Command and service modules housed the astronauts and the spacecraft's fuel system. Learn about the command and service modules.

What is Apollo 15 Command & Service Module?
A photograph of the Apollo 15 Command and Service Module taken from the Lunar Module while in orbit around the moon is shown below. The Service Module is the dominant cylindrical structure with the rocket motor expansion nozzle attached. The Command Module is the...

How many engines were used in the Apollo Service Module?
Apollo Service Module (NASA drawing cropped by author) Cross section of the Service Module through propellant tanks (NASA graphic) Foursets of a group of four reaction control engines used to maneuver the spacecraft were mounted on the periphery of the Service Module.

What does a service module do?
The Service Module supplies the electrical power,water,oxygen,and life supportnecessary for the CM and astronauts for the trip from the Earth to the Moon. The SM also controls the flight path of the CSM/LM stack.

How did the command and service module work?
The reaction control system in the Service Module fired small rocket enginesto control the attitude and position of the Command and Service Module. Attitude could be controlled in the pitch and yaw planes and around the roll axis. Translation maneuvers could be conducted along the X,Y,and Z axes.

How much power does a Command Service Module use?
Typical electrical power consumption of the Command Service Module was about 2,200 watts. At a voltage of 28 volts,the typical total current supplied by the three fuel cells would have been 78.6 amperes.

The Apollo spacecraft"s power system was indeed a marvel of engineering, designed to provide reliable power to each module throughout the mission. Here"s a more detailed breakdown of the power systems: Command Module: Primary power source: three compact batteries, providing around 1600 watts of power. Role: These batteries were essential ...

Once the S-IVB inserted the spacecraft into a lunar trajectory, it separated from the rest of the vehicle. At that point, the spacecraft would jettison the 4,000 pound spacecraft lunar module adapter (SLA). Now, all that remained of the spacecraft was the command module (CM), the service module (SM) and the lunar module (LM).

The surface of the moon is reflected in the command and service module as it prepares to rendezvous with the

lunar module in this December 1972 image from the Apollo 17 mission. Image Credit: NASA. One of the improvements made to the CM after the deadly Apollo 1 fire in January 1967 was the development of a quick opening hatch.

APOLLO NEWS REFERENCE Function The service module contains the main spacecraft propulsion system and supplies most of the space craft"s consumables (oxygen, water, propellant, hydrogen). It is not manned. The service module remains attached to the command module until just before entry, when it is jettisoned and is

This article considers the utilisation of modern image processing and enhancement to determine the impact of the catastrophic failure of Cryogenic Oxygen Tank 2, and it"s subsequent impact on Bay 4 and critical systems on Apollo 13. The analysis also aims to aid visualisation and identify key components of the damaged Service Module.

Apollo 13 Day 3, part 5: Minimising Power. ... When one of the Service Module"s oxygen tanks exploded, Apollo 13 was on a hybrid free-return trajectory, one that would require significant rocket thrust to get back on a path to Earth. ... [11.6 m/s] mid-course correction burn using the Descent Propulsion System of the Lunar Module put the ...

The primary EPS energy source was the cryogenic gas storage system that provided fuel (H2) and oxidizer (O2) to the power generating system. Two hydrogen and two oxygen tanks, with the associated controls and plumbing, were located in the service module. The system was automatically or manually controlled.

power From LCC To LM sub-systems LUNAR MODULE POWER SYSTEM Electrical Control Assembly subsystem 30 A LMP bus Bat. 1 HV LV RJB battery feed tie 100 A 30 A AC bus A To LM From GSE sub-systems ECA 1 crosstie balance loads 30 A 100A Bat. 2 HV 100 A Inverter 2 5 A 5 A ECA 3 ECA 4 Lunar bat. Bat. 5 Bat. 6 Inverter 1 5 A 5 A On On On On C crosstie ...

The central pressure vessel of the command module was its sole habitable compartment. It had an interior volume of 210 cubic feet (5.9 m 3) and housed the main control panels, crew seats, guidance and navigation systems, food and equipment lockers, the waste management system, and the docking tunnel.. Dominating the forward section of the cabin was the crescent-shaped ...

The first uncrewed spaceflight test of a production Apollo Command and Service Module (CSM), and the first launch of a Saturn-IB rocket, took place on Feb. 26, 1966. The Apollo-Saturn (AS) 201 mission used the "all-up" philosophy that tested all components of a system in a single first flight.

The Service Module (SM) is connected to the Command Module (CM) until just before re-entry, and it supplies oxygen, water and electric power to the Command Module. The SM is equipped with the SPS (Service Propulsion Subsystem) engine, four quads of four (16 elements) RCS (Reaction Control Subsystem) engines, the fuel, oxidizer, helium which is ...

Module (CSM). A photograph of the Apollo 15 Command Service Module taken from the Lunar Module while in orbit around the moon is shown next page. The Service Module is the dominant cylindrical structure with the rocket motor expansion nozzle attached. The Command Module is the dark looking conical structure attached to the forward end of the ...

The Service Propulsion SystemCSMNEWSREF. The Service Propulsion System (SPS) is the Command/Service Module main engine and provides the impulse for all velocity changes (DVs) throughout a mission and the SPS abort capability after the launch escape tower is jettisoned. The engine uses Aerozine 50 (hydrazine/UDMH) fuel and nitrogen tetroxide oxidizer and has a ...

A service module (also known as an equipment module or instrument compartment) is a component of a crewed space capsule containing a variety of support systems used for spacecraft operations. Usually located in the uninhabited area of the spacecraft, the service module serves a storehouse of critical subsystems and supplies for the mission such as electrical systems, ...

Because both the lunar module and service module were jettisoned during the Apollo missions, no flown examples exist. The Marquardt Corporation was awarded the contract to build the reaction-control rocket engines for the Apollo spacecraft in 1963. They were first flown in the unmanned Apollo-Saturn 201 test flight launched in February 1966.

The beginning of the Apollo Spacecraft News Reference [Command/Service Module] features a three-page fold-out of a cutaway diagram of the Apollo Command/Service Module: Click image for a 771x1080 pixel version of this image in a new window or see the download links for additional sizes and formats.

Complete Apollo spacecraft stack: launch escape system, command module, service module, Lunar Module, and spacecraft-LM adapter The Apollo 17 CSM seen in lunar orbit from the ascent stage of the Lunar Module The Apollo spacecraft was composed of three parts designed to accomplish the American Apollo program"s goal of landing astronauts on the Moon by the end ...

The Apollo Lunar Module originally specified using fuel cells to power its 65 kW-hr, 4 kW electrical system for the 35-hour lunar mission. Due to various factors, batteries replaced the fuel cells. The final LM electrical configuration included 7 batteries to power redundant 28V DC buses, supplying AC converters. Changes were made for Apollo 13, including adding a 5th battery and ...

The Command Module was an efficient space capsule that provided living accommodations for three astronauts for several days. Along with providing comfortable accommodations for the crew, it contained controls for maneuvering the Command Service Module or the Command Module alone, firing the rocket engine of the Service Module, and ...

The Apollo service module provides the primary propulsion system, electric power supply, and part of the

basic life support apparatus for the Apollo spacecraft command module. The service propulsion system (SPS) rocket engine is employed for all man euvers requiring major spacecraft velocity changes subsequent to insertion of the

An overview of the Apollo Command and Service Module (CSM) propulsion systems is provided. The systems for CSM propulsion and control are defined, the times during the mission when each system is used are listed, and, the basic components and operation of the service propulsion system, SM reaction control system and CM reaction control system are described.

APOLLO COMMAND AND SERVICE MODULE AND LUNAR MODULE ENVIRONMENTAL CONTROL SYSTEMS by James C. Brady Donald F. Hughes Frank H. Samonski, Jr. Lyndon B. Johnson Space Center Roger W. Young David M. Browne The Boeing Aerospace Company Introduction The Apollo Command and Service Module (CSM) and Lunar Module (LM) proved ...

Design The CSM in Earth orbit. The Command Module (CM) is the nerve center of the Apollo spacecraft, as it functions as primary control and navigation platform during the missions. It houses the highly-advanced (for the 1960s) Apollo Guidance Computer, as well as all the systems the astronauts need to safely re-enter earth"s atmosphere. The Service Module (SM) contains ...

The Apollo command and service module (CSM) was one of two principal components of the United States Apollo spacecraft, ... Sector 4 (50°) contained the electrical power system (EPS) fuel cells with their hydrogen and oxygen reactants. Sector 5 (70°) contained the SPS fuel sump tank. This was the same size as the oxidizer sump tank and held ...

A review of the design philosophy and development of the Apollo command and service modules electrical power distribution subsystem, a brief history of the evolution of the total system, and some of the more significant components within the system are discussed. The electrical power distribution primarily consisted of individual control units, interconnecting units, and associated ...

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