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This official NASA document provides the complete transcription of the historic Apollo 11 post-flight debriefing given by astronauts Neil Armstrong, Buzz Aldrin, and Michael Collins on July 31, 1969. Every aspect of the incredible adventure is discussed - from moonwalking to personal hygiene issues, launch through landing. This is an invaluable addition to the ebook library of anyone interested in the Apollo moon

*landings. Contents: Suiting
and Ingress * Status Checks
and Countdown * Powered
Flight * Earth Orbit and
Systems Checkout * TLI
through S-IVB Closeout *
Translunar Coast * LOI
through Lunar Module
Activation * Lunar Module
Checkout through Separation *
DOI through Touchdown *
Lunar Surface * CSM
Circumlunar Operations * Lift-
Off, Rendezvous and Docking *
Lunar Module Jettison through
TEI * Transearth Coast * Entry
* Landing and Recovery *
Geology and Experiments *
Command Module Systems
Operations * Lunar Module*

*Systems Operations *
Miscellaneous Systems, Flight
Equipment and GFE * Visual
Sightings * Prepermission
Planning * Mission Control *
Training * Human Factors *
Miscellaneous * Concluding
Comments At 10:56 P.M. EDT,
Sunday, July 20. Astronaut
Neil A. Armstrong, spacecraft
commander of Apollo 11, set
foot on the moon. His descent
from the lowest rung of the
ladder which was attached to a
leg of the lower stage of the
Lunar Module (LM), to the
footpad, and then to the
surface of earth's only natural
satellite constituted the climax
of a national effort that began*

in 1961. It was an effort that involved, at its peak, more than 300,000 people in industry, the universities and in government. As he took his epochal step, Armstrong commented "That's one small step for a man, one giant leap for Mankind." Sharing this electric moment with Armstrong and Edwin "Buzz" Aldrin, the LM pilot, were an estimated half-billion TV watchers in most of the earth's nations. As the astronaut descended the ladder, he pulled a "D" ring that deployed a black and white television camera which was focused to record the event. Framed by

parts of the LM's under-carriage, Armstrong's heavily-booted left foot descended across millions of TV tubes until his boot sole made contact.

NEW YORK TIMES

BESTSELLER • *The riveting inside story of three heroic astronauts who took on the challenge of mankind's historic first mission to the Moon, from the bestselling author of Shadow Divers. "Robert Kurson tells the tale of Apollo 8 with novelistic detail and immediacy."—Andy Weir, #1 New York Times bestselling author of The Martian and Artemis By August 1968, the*

American space program was in danger of failing in its two most important objectives: to land a man on the Moon by President Kennedy's end-of-decade deadline, and to triumph over the Soviets in space. With its back against the wall, NASA made an almost unimaginable leap: It would scrap its usual methodical approach and risk everything on a sudden launch, sending the first men in history to the Moon—in just four months. And it would all happen at Christmas. In a year of historic violence and discord—the Tet Offensive, the assassinations of Martin

Luther King, Jr., and Robert Kennedy, the riots at the Democratic National Convention in Chicago—the Apollo 8 mission would be the boldest, riskiest test of America's greatness under pressure. In this gripping insider account, Robert Kurson puts the focus on the three astronauts and their families: the commander, Frank Borman, a conflicted man on his final mission; idealistic Jim Lovell, who'd dreamed since boyhood of riding a rocket to the Moon; and Bill Anders, a young nuclear engineer and hotshot fighter pilot making his first space flight. Drawn

from hundreds of hours of one-on-one interviews with the astronauts, their loved ones, NASA personnel, and myriad experts, and filled with vivid and unforgettable detail, Rocket Men is the definitive account of one of America's finest hours. In this real-life thriller, Kurson reveals the epic dangers involved, and the singular bravery it took, for mankind to leave Earth for the first time—and arrive at a new world. "Rocket Men is a riveting introduction to the [Apollo 8] flight. . . . Kurson details the mission in crisp, suspenseful scenes. . . . [A] gripping book."—The New

York Times Book Review

This official NASA document provides the complete transcription of the Apollo 13 post-flight debriefing given by astronauts Lovell, Haise, and Swigert, with their first-hand description of the harrowing flight. This ebook is an invaluable addition to the library of anyone interested in the Apollo moon landings.

*Contents include: SUITING
AND INGRESS * STATUS
CHECKS AND COUNTDOWN *
POWERED FLIGHT * EARTH
ORBIT AND SYSTEMS
CHECKOUT * TLI THROUGH
S-IVB CLOSEOUT *
TRANSLUNAR COAST **

*LUNAR MODULE
FAMILIARIZATION *
SPACECRAFT EMERGENCY *
LUNAR FLYBY THROUGH
2-HOUR MANEUVER *
TRANSEARTH COAST *
ENTRY * LANDING AND
RECOVERY * COMMAND AND
SERVICE MODULE SYSTEMS
OPERATIONS * LUNAR
MODULE SYSTEMS
OPERATIONS * FLIGHT DATA
FILE * FLIGHT EQUIPMENT
AND GOVERNMENT-
FURNISHED EQUIPMENT *
VISUAL SIGHTINGS *
PREMISSION PLANNING *
MISSION CONTROL *
TRAINING * HUMAN
FACTORS Apollo 13 was*

supposed to land in the Fra Mauro area. An explosion on board forced Apollo 13 to circle the moon without landing. The Fra Mauro site was reassigned to Apollo 14. At 5 1/2 minutes after liftoff, John Swigert, Fred Haise and James Lovell felt a little vibration. Then the center engine of the S-II stage shut down two minutes early. This caused the remaining four engines to burn 34 seconds longer than planned, and the S-IVB third stage had to burn nine seconds longer to put Apollo 13 in orbit. Days before the mission, backup lunar module pilot, Charles Duke,

inadvertently exposed the crew to German measles. Command Module Pilot Ken Mattingly had no immunity to measles and was replaced by backup command module pilot, John Swigert. Ground tests before launch indicated the possibility of a poorly insulated supercritical helium tank in the lunar module, or LM, descent stage, so the flight plan was modified to enter the LM three hours early in order to obtain an onboard readout of helium tank pressure. The No. 2 oxygen tank, serial number 10024X-TA0009, had been previously installed in the service module

of Apollo 10, but was removed for modification and damaged in the process. The tank was fixed, tested at the factory, installed in the Apollo 13 service module and tested again during the Countdown Demonstration Test at NASA's Kennedy Space Center beginning March 16, 1970. The tanks normally are emptied to about half full. No. 1 behaved all right, but No. 2 dropped to only 92 percent of capacity. Gaseous oxygen at 80 pounds per square inch was applied through the vent line to expel the liquid oxygen, but to no avail. An interim discrepancy report was

written, and on March 27, two weeks before launch, detanking operations resumed. No. 1 again emptied normally, but No. 2 did not. After a conference with contractor and NASA personnel, the test director decided to "boil off" the remaining oxygen in No. 2 by using the electrical heater within the tank. The technique worked, but it took eight hours of 65-volt DC power from the ground support equipment to dissipate the oxygen. Due to an oversight in replacing an underrated component during a design modification, this turned out to severely damage the internal heating elements

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of the tank.

The captivating true story of NASA's effort to land the first man on the Moon is told through powerful free verse and stunning illustrations. An inspiring testament to American grit, teamwork, and ingenuity, Countdown presents exhilarating, informative, and accessible free verse by award-winning author Suzanne Slade paired with historic photographs and detailed illustrations by New York Times best-selling illustrator Thomas Gonzalez. Together, they capture the gripping historic story of NASA's twentieth century efforts to

conquer a new space frontier. Through triumph and tragedy, success and failure, an entire nation is glued to the high-stakes, 2,979-day mission as eighteen astronauts climb into spacecraft; three men die before even leaving the ground; eight rockets soar into space; and four hundred thousand people—engineers, technicians, scientists, mathematicians, and machinists—join Project Apollo in pursuit of making a dream a reality.

*Apollo 13 Technical Crew
Debriefing with Unique
Observations about the
Aborted Mission - Astronauts*

*Lovell, Haise, and Swigert
When Liftoff Goes Wrong
Rocket Ranch*

Chariots for Apollo

Gateway to the Moon

Moon Mission

*NASA Launch Vehicles and
Facilities*

*Describes how the U.S. sent
astronauts to the moon.*

*A comprehensive history of the
Kennedy Space Center uses
archival illustrations, aerial
views, and extensive interviews
with NASA personnel to tell the
story. Reprint.*

*Jonathan Ward takes the reader
deep into the facilities at
Kennedy Space Center to*

describe NASA's first computer systems used for spacecraft and rocket checkout and explain how tests and launches proceeded. Descriptions of early operations include a harrowing account of the heroic efforts of pad workers during the Apollo 1 fire. A companion to the author's book Countdown to a Moon Launch: Preparing Apollo for Its Historic Journey, this explores every facet of the facilities that served as the base for the Apollo/Saturn missions. Hundreds of illustrations complement the firsthand accounts of more than 70 Apollo program managers and

engineers. The era of the Apollo/Saturn missions was perhaps the most exciting period in American space exploration history. Cape Canaveral and Kennedy Space Center were buzzing with activity. Thousands of workers came to town to build the facilities and launch the missions needed to put an American on the Moon before the end of the decade. Work at KSC involved much more than just launching rockets. It was a place like none other on Earth. Technicians performed intricate operations, and hazards abounded everywhere,

including lightning, fire, highly-toxic fuels, snakes, heat, explosives, LOX spills, and even plutonium. The reward for months of 7-day workweeks under intense pressure was witnessing a Saturn V at liftoff. For anyone who ever wished they had worked at Kennedy Space Center during the Apollo era, this book is the next best thing. The only thing missing is the smell of rocket fuel in the morning.

Written by a trio of experts, this is the definitive reference on the Apollo spacecraft and lunar modules. It traces the design of the vehicles, their development,

and their operation in space. More than 100 photographs and illustrations highlight the text, which begins with NASA's origins and concludes with the triumphant Apollo 11 moon mission.

The Epic Story of the First Men on the Moon

The Epic 400-Year Journey to Apollo 11

Countdown to the Moon Mission Moon

The Nuts and Bolts of the Apollo Moon Program at Kennedy Space Center

Final Countdown

Apollo 12 Official NASA Mission Reports and Press Kit - 1969

*Second Lunar Landing by
Astronauts Conrad, Gordon,
and Bean*

For many, the moon landing was the defining event of the twentieth century. So it seems only fitting that Norman Mailer—the literary provocateur who altered the landscape of American nonfiction—wrote the most wide-ranging, far-seeing chronicle of the Apollo 11 mission. A classic chronicle of America's reach for greatness in the midst of the Cold War, *Of a Fire on the Moon* compiles the reportage Mailer published between

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1969 and 1970 in Life magazine: gripping firsthand dispatches from inside NASA's clandestine operations in Houston and Cape Kennedy; technical insights into the magnitude of their awe-inspiring feat; and prescient meditations that place the event in human context as only Mailer could. Praise for *Of a Fire on the Moon* "The gift of a genius . . . a twentieth-century American epic—a Moby Dick of space."—New York "Mailer's account of Apollo 11 stands as a stunning image

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of human energy and purposefulness. . . . It is an act of revelation—the only verbal deed to be worthy of the dream and the reality it celebrates.”—Saturday Review “A wild and dazzling book.”—The New York Times Book Review “Still the most challenging and stimulating account of [the] mission to appear in print.”—The Washington Post Praise for Norman Mailer “[Norman Mailer] loomed over American letters longer and larger than any other writer of

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his generation.”—The New York Times “A writer of the greatest and most reckless talent.”—The New Yorker “Mailer is indispensable, an American treasure.”—The Washington Post “A devastatingly alive and original creative mind.”—Life “Mailer is fierce, courageous, and reckless and nearly everything he writes has sections of headlong brilliance.”—The New York Review of Books “The largest mind and imagination [in modern] American literature . . . Unlike just about every

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American writer since Henry James, Mailer has managed to grow and become richer in wisdom with each new book."—Chicago Tribune
"Mailer is a master of his craft. His language carries you through the story like a leaf on a stream."—The Cincinnati Post

Three comprehensive official NASA documents chronicle the incredible flight of Apollo 13, which returned safely to Earth after aborting its planned lunar landing in April 1970. (Please note that due to space constraints,

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the Cortright Apollo 13 Review Board report is available as a separate ebook.) Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo Mission Report and the NASA Headquarters Mission Operation Report (MOR), provide complete details about every aspect of the mission. Apollo 13 MSC Mission Report: Mission description, pilots' report, communications, trajectory, command and service module performance, mission support performance,

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assessment of mission objectives, launch vehicle summary, anomaly summary (CSM, LM, government furnished equipment), conclusions, vehicle descriptions. Apollo 13 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch countdown, detailed flight mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew,

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mission management
responsibility, program
management, abbreviations
and acronyms. Apollo 13
Press Kit: Detailed
preview from countdown to
landing. The Apollo 13
mission, planned as a
lunar landing in the Fra
Mauro area, was aborted
because of an abrupt loss
of service module
cryogenic oxygen
associated with a fire in
one of the two tanks at
approximately 56 hours.
The lunar module provided
the necessary support to
sustain a minimum
operational condition for

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a safe return to earth. A circumlunar profile was executed as the most efficient means of earth return, with the lunar module providing power and life support until transfer to the command module just prior to entry. Although the mission was unsuccessful as planned, a lunar flyby and several scientific experiments were completed. The space vehicle, with a crew of James A. Lovell, Commander; Fred W. Haise, Jr., Lunar Module Pilot; and John L. Swigert, Jr.,

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Command Module Pilot; was launched from Kennedy Space Center, Florida, at 2:13:00 p.m. e.s.t.

(19:13:00 G.m.t.) April 11, 1970. Two days before launch, the Command Module Pilot, as a member of the Apollo 13 backup crew, was substituted for his prime crew counterpart, who was exposed and found susceptible to rubella (German measles). During S-II stage boost, an automatic shutdown of the center engine occurred because of a divergent dynamic structural condition associated with

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that engine. At approximately 56 hours, the pressure in cryogenic oxygen tank 2 began to rise at an abnormally high rate and, within about 100 seconds, the tank abruptly lost pressure. The loss of oxygen and primary power in the service module required an immediate abort of the mission. The crew powered up the lunar module, and the first maneuver following the incident was made with the descent propulsion system to place the spacecraft once again on a free-return trajectory. A

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second maneuver performed with the descent engine 2 hours after passing pericyynthion reduced the transearth transit time and moved the earth landing point from the Indian Ocean to the South Pacific. Two small transearth midcourse corrections were required prior to entry. The lunar module was jettisoned 1 hour before entry, which was performed nominally using the primary guidance and navigation system. Landing occurred at 142:54:41 within sight of the recovery ship. The

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landing point was reported as 21 degrees 38 minutes 24 seconds south latitude and 165 degrees 21 minutes 42 seconds west longitude. The crew were retrieved and aboard the recovery ship within 45 minutes after landing.

This official NASA document provides the complete transcription of the Apollo 14 post-flight debriefing given by astronauts Shepard, Mitchell, and Roosa, with their first-hand description of the third moon landing. This ebook is an invaluable addition

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to the library of anyone interested in the Apollo moon landings. Contents include: SUITING AND INGRESS * STATUS CHECKS AND COUNTDOWN * POWERED FLIGHT * EARTH ORBIT AND SYSTEMS CHECKOUT * TLI THROUGH S-IVB CLOSEOUT * TRANSLUNAR COAST * LOI THROUGH LUNAR MODULE ACTIVATION * LUNAR MODULE CHECKOUT THROUGH SEPARATION * DPI THROUGH TOUCHDOWN * LUNAR SURFACE * CSM CIRCUMLUNAR OPERATIONS * LIFTOFF, RENDEZVOUS, AND DOCKING * LUNAR MODULE JETTISON THROUGH TEI * TRANSEARTH

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COAST * ENTRY * LANDING
AND RECOVERY * COMMAND
MODULE SYSTEMS OPERATIONS
* LUNAR MODULE SYSTEMS
OPERATIONS * FLIGHT DATA
FILE * FLIGHT EQUIPMENT *
EMU SYSTEMS * VISUAL
SIGHTINGS * PREMISSION
PLANNING * MISSION CONTROL
* TRAINING * HUMAN FACTORS
* MISCELLANEOUS Apollo 14
launched at 4:03 p.m. EST
Jan. 31, 1971. At
approximately 3:41 p.m.
ground elapsed time, or
GET, difficulties were
experienced in docking
with the lunar module, or
LM, and six attempts were
required before a "hard

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dock" was achieved. Prior to the powered descent initiation, or PDI, for the Antares landing, a short in the LM computer abort switch was discovered, which could have triggered an undesired abort during the LM's descent. On Feb. 5, Antares made the most precise landing to date, approximately 87 feet from the targeted landing point. The landing point coordinates were 3 degrees, 40 minutes, 27 seconds south and 17 degrees, 27 minutes, 58 seconds west, midway

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between the Doublet and Triplet craters in the hilly uplands of the Fra Mauro crater, and about 110 miles east of the Apollo 12 landing site. During the two traverses, the astronauts collected 94 pounds of rocks and soil for return to Earth. The samples were scheduled to go to 187 scientific teams in the United States, as well as 14 other countries for study and analysis. The liftoff of Antares from the lunar surface took place precisely on schedule. Rendezvous and docking

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occured only two minutes later than scheduled. The command module Kitty Hawk splashed down safely in the Pacific Ocean at 4:05 p.m. EST Feb. 9, exactly nine days and two minutes after launch. The actual landing point was only 1.02 nautical miles off its targeted point of about 765 nautical miles south of Samoa, and four miles from the prime recovery ship, the USS New Orleans. The mission duration from liftoff to splashdown was 216 hours, two minutes.

Four comprehensive

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official NASA documents chronicle the historic mission of Apollo 11, which accomplished the first landing of humans on the moon in July 1969. Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo 11 Mission Report and the NASA Headquarters Mission Operation Report (MOR), provide complete details about every aspect of the mission. Apollo 11 MSC Mission Report: Mission description, pilots' report, lunar descent and ascent, communications, trajectory, command and

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service module
performance, lunar module
performance,
extravehicular mobility
unit performance, the
lunar surface, biomedical
evaluation, mission
support performance,
assessment of mission
objectives, launch vehicle
summary, anomaly summary
(CSM, LM, government
furnished equipment),
conclusions, vehicle
descriptions, spacecraft
histories, postflight
testing, data
availability, glossary.
Apollo 11 MOR: Mission
design and execution,

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spacecraft performance,
flight anomalies, detailed
objectives and
experiments, launch
countdown for the Apollo-
Saturn AS-506 launch
vehicle, detailed flight
mission description, back
contamination program,
contingency operations,
configuration differences,
mission support, recovery
support plan, flight crew,
mission management
responsibility, program
management, abbreviations
and acronyms Apollo 11
Press Kit: Countdown,
Launch events, mission
events, mission trajectory

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and maneuver description,
earth parking orbit (EPO),
trans-lunar injection
(TLI), translunar coast,
lunar orbit insertion,
lunar module descent,
lunar landing, EVA, lunar
sample collection, LM
ascent, lunar orbit
rendezvous, transearth
injection (TEI),
transearth coast, entry
and landing, recovery
operations, quarantine,
Lunar Receiving
Laboratory, go/no-go
decision points, alternate
missions, abort modes,
deep space aborts, onboard
television, photographic

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tasks, lunar description,
lunar landing sites, CSM
systems, lunar module
structures, Saturn V
launch vehicle, Apollo 11
crew, Early Apollo
Scientific Experiments
Package, ALRH, launch
operations, Launch Complex
39, Manned Space Flight
Network, ARIA, tracking
ships, contamination
control program, Apollo
program management,
Principal Investigators
and Sample Investigations,
Glossary, acronyms and
abbreviations. NASA
Mission Report (PAO
Release) - At 10:56 P.M.

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EDT, Sunday, July 20.

Astronaut Neil A.

Armstrong, spacecraft
commander of Apollo 11,
set foot on the moon. His
descent from the lowest
rung of the ladder which
was attached to a leg of
the lower stage of the
Lunar Module (LM), to the
footpad, and then to the
surface of earth's only
natural satellite
constituted the climax of
a national effort that
began in 1961. It was an
effort that involved, at
its peak, more than
300,000 people in
industry, the universities

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and in government. As he took his epochal step, Armstrong commented "That's one small step for a man, one giant leap for Mankind." Sharing this electric moment with Armstrong and Edwin "Buzz" Aldrin, the LM pilot, were an estimated half-billion TV watchers in most of the earth's nations. As the astronaut descended the ladder, he pulled a "D" ring that deployed a black and white television camera which was focused to record the event. Framed by parts of the LM's under-carriage,

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Armstrong's heavily-booted left foot descended across millions of TV tubes until his boot sole made contact.

Apollo 11 Moon Landing
Apollo 14 Technical Crew
Debriefing with Unique
Observations about the
Third Lunar Landing -
Astronauts Shepard,
Mitchell and Roosa
Moon Missions

Moonport

The People, Technology,
and Daring Feats of
Science Behind Humanity's
Greatest Adventure
Hello, World! Moon Landing
Rocket Men

Examines the history of NASA's shuttle program, its missions, and its impending demise in a behind-the-scenes view of what was once the cornerstone of the U.S. space program.

Exposes the behind-the-scenes events of the U.S. and Soviet space programs, describing key personalities, technologies, successes, and failures encountered along the way

"Ranger VII returned to Earth the first high-resolution pictures of the Moon's surface; it proved to be the first of three highly successful lunar photographic missions. The

Ranger VIII and IX flights brought to more than 17,250 the total of Ranger pictures, extending the close-up coverage both in area and variety of terrain. Subsequent unmanned-spacecraft projects will further extend the coverage and bring the focus even closer. Project Apollo will place observers on the lunar surface. Still, some pride of position, as forerunner, must remain with Ranger VII."--Foreword.

LONGLISTED FOR THE
NATIONAL BOOK AWARD •
YALSA EXCELLENCE IN
NONFICTION FINALIST • A
ROBERT F. SIBERT HONOR

BOOK This beautifully illustrated, oversized guide to the people and technology of the moon landing by award-winning author/illustrator John Rocco (illustrator of the Percy Jackson series) is a must-have for space fans, classrooms, and tech geeks. Everyone knows of Neil Armstrong's famous first steps on the moon. But what did it really take to get us there? The Moon landing is one of the most ambitious, thrilling, and dangerous ventures in human history. This exquisitely researched and illustrated book tells the stories of the 400,000 unsung heroes--the engineers,

mathematicians, seamstresses, welders, and factory workers--and their innovations and life-changing technological leaps forward that allowed NASA to achieve this unparalleled accomplishment. From the shocking launch of the Russian satellite Sputnik to the triumphant splashdown of Apollo 11, Caldecott Honor winner John Rocco answers every possible question about this world-altering mission. Each challenging step in the space race is revealed, examined, and displayed through stunning diagrams, experiments, moments of

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crisis, and unforgettable
human stories. Explorers of all
ages will want to pore over
every page in this
comprehensive chronicle
detailing the grandest human
adventure of all time!

TV Brings the Moon Landing
to Earth

Apollo 13 Official NASA
Mission Reports and Press Kit
- April 1970 Aborted Third
Lunar Landing Attempt

"Successful Failure" - Lovell,
Haise, and Swigert

A History of Apollo Launch
Facilities and Operations

Bringing Columbia Home

The Daring Odyssey of Apollo
8 and the Astronauts Who

Made Man's First Journey to the Moon

The Flight of Apollo 11

Apollo 11 Technical Crew

Debriefing with Unique

Observations about the First

Lunar Landing - Astronauts

Armstrong, Aldrin, Collins

The Space Race of the mid-1900s took

humankind where it had never gone

before—the moon! This volume takes

readers on their own moon mission as it

outlines a contest of ultimate exploration,

recounts the Apollo missions, and adds

depth with stellar detail and stunning

visual aids.

The “gripping and dramatic” inside story

of the epic search and recovery operation

after the Columbia shuttle disaster that

united thousands of Americans (Booklist).

Voted the Best Space Book of the Year by

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the Space Hipsters On February 1, 2003, Columbia disintegrated on reentry before the nation's eyes, and all seven astronauts aboard were lost. Mike Leinbach, Launch Director of the space shuttle program at NASA's John F. Kennedy Space Center, was a key leader in the search and recovery effort as NASA, FEMA, the FBI, the US Forest Service, and dozens more federal, state, and local agencies combed an area of rural east Texas the size of Rhode Island for every piece of the shuttle and her crew they could find. Assisted by hundreds of volunteers, it would become the largest ground search operation in US history—an effort that was instrumental in piecing together what happened so the shuttle program could return to flight and complete the International Space Station. Written by Leinbach, this is the definitive inside story of the disaster, the recovery, and the inspiring response, sharing the

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deeply personal stories that emerged as NASA employees looked for lost colleagues and searchers overcame immense physical, logistical, and emotional challenges and worked together to accomplish the impossible. Featuring a foreword and epilogue by astronauts Robert Crippen and Eileen Collins, and dedicated to the astronauts and recovery search persons who lost their lives, this is “a gripping account of a fatal tragedy and the impressive and deeply emotional human response that ensued” (Kirkus Reviews, starred review). “Despite the dramatic tragedy at the beginning of the book, it's the quiet stories of perseverance and camaraderie that will linger longest.” —Christian Science Monitor “Vividly capture[s] the intensity of those very difficult days...The book also reminded me of the spirit of the American people who selflessly worked together to help NASA

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in its hour of greatest need. It's a message we all need to remember these days.”

—Scott Kelly

Three comprehensive official NASA documents - converted for accurate flowing-text e-book format reproduction - chronicle the incredible journey of Apollo 10, which tested the Lunar Module in lunar orbit for the first time, paving the way for the Apollo 11 landing mission. It was conducted by astronauts Stafford, Cernan, and Young in May 1969. Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo Mission Report and the NASA Headquarters Mission Operation Report (MOR), provide complete details about every aspect of the mission. Apollo 10 MSC Mission Report: Mission description, pilots' report, communications, trajectory, command and service module performance, mission support performance, assessment of

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mission objectives, launch vehicle summary, anomaly summary (CSM, LM, government furnished equipment), conclusions, vehicle descriptions. Apollo 10 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch countdown, detailed flight mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew, mission management responsibility, program management, abbreviations and acronyms. Apollo 10 Press Kit: Detailed preview from countdown to landing. The Apollo 10 mission encompassed all aspects of an actual crewed lunar landing, except the landing. It was the first flight of a complete, crewed Apollo spacecraft to operate around the moon. Objectives included a scheduled eight-hour lunar

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orbit of the separated lunar module, or LM, and descent to about nine miles off the moon's surface before ascending for rendezvous and docking with the command and service module, or CSM, in about a 70-mile circular lunar orbit. Pertinent data to be gathered in this landing rehearsal dealt with the lunar potential, or gravitational effect, to refine the Earth-based crewed spaceflight network tracking techniques, and to check out LM programmed trajectories and radar, and lunar flight control systems. Twelve television transmissions to Earth were planned. All mission objectives were achieved. Apollo 10 launched from Cape Kennedy on May 18, 1969, into a nominal 115-mile circular Earth-parking orbit at an inclination of 32.5 degrees. One-and-a-half orbits later, translunar injection occurred. The S-IVB fired to increase velocity from 25,593 to 36,651 feet per

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second on a free-return trajectory. Twenty-five minutes later, the CSM separated for transposition and docking with the LM, similar to the maneuver performed on Apollo 9. The orbital vehicle was comprised of the S-IVB stage, and its payload of the CSM, the LM and spacecraft-lunar module adapter, or SLA, shroud. The Apollo 10 crew members were Commander Thomas Stafford, Command Module Pilot John Young and Lunar Module Pilot Eugene Cernan. The first live color TV transmissions to Earth began three hours after launch when Apollo 10 was 3,570 miles from Earth and concluded when the spacecraft was 9,428 miles away. The transmission showed the docking process and the interior of the CSM. About four hours after launch, Apollo 10 separated from the S-IVB stage, which was followed by another telecast from 14,625 miles out. A third TV

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transmission of pictures of Earth was made from 24,183 miles out, and a fourth telecast of the Earth was made from 140,000 miles. The LM flew over Landing Site 2 in the Sea of Tranquility. During this run, the LM landing radar was tested for altitude functioning, providing both "high gate" and "low gate" data.

A unique look at the successful Ñ though nearly disastrous Ñ Apollo 11 moon landing! In a riveting narrative told from the astronautsÕ points of view, readers get to relive every step of Apollo 11Õs 1969 mission Ñ from ignition to moon walk to splashdown Ñ including the nail-biting (and relatively unknown) crucial moments when it came close to failure. And, setting this book apart, each step is linked to the innovations and discoveries from the past four centuries that made it possible. ItÕs a fascinating new perspective on an epic journey Ñ and how STEM set it in motion!

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Readers better fasten their seat belts,
they're in for the ride of a lifetime!

Countdown to a Moon Launch

Countdown!

Countdown

Apollo 12 Technical Crew Debriefing
with Unique Observations about the
Second Lunar Landing - Astronauts
Conrad, Gordon, Bean

How We Got to the Moon

Apollo 9 Official NASA Mission Reports
and Press Kit - 1969 First Manned Flight
of the Lunar Module in Earth Orbit by
McDivitt, Scott, and Schweickart

*Thousands of workers labored at
Kennedy Space Center around the
clock, seven days a week, for half a
year to prepare a mission for the liftoff
of Apollo 11. This is the story of what
went on during those hectic six months.
Countdown to a Moon Launch provides*

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an in-depth look at the carefully choreographed workflow for an Apollo mission at KSC. Using the Apollo 11 mission as an example, readers will learn what went on day by day to transform partially completed stages and crates of parts into a ready-to-fly Saturn V. Firsthand accounts of launch pad accidents, near misses, suspected sabotage, and last-minute changes to hardware are told by more than 70 NASA employees and its contractors. A companion to Rocket Ranch, it includes many diagrams and photographs, some never before published, to illustrate all aspects of the process. NASA's groundbreaking use of computers for testing and advanced management techniques are also covered in detail. This book will demystify the question of

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how NASA could build and launch Apollo missions using 1960s technology. You'll discover that there was no magic involved – just an abundance of discipline, willpower, and creativity.

Describes the dangers of launching spacecraft, covering the Russian Mars space probe explosion, the Apollo 1 fire, the Apollo 12 lightning strike, and the Challenger explosion.

This official NASA document provides the complete transcription of the historic Apollo 12 post-flight debriefing given by astronauts Pete Conrad, Al Bean, and Dick Gordon. Every aspect of the incredible adventure of the second moon landing, which landed next to the Surveyor 3 spacecraft, is discussed - from

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moonwalking to personal hygiene issues, launch through landing. This is an invaluable addition to the ebook library of anyone interested in the Apollo moon landings. Surprising facts, comments, and anecdotes are included in this debriefing. Did you know, for example, that Conrad was so hungry on the moon, he ate some of Al Bean's food? Or that Conrad briefly feared that Bean was critically injured during the splashdown: "We really hit flatter than a pancake, and it was a tremendous impact, much greater than anything I'd experienced in Gemini. The 16-mm camera, which was on the bracket - and we may have been remiss in this and I'm not sure, but it wasn't in the checklist - whistled off and clanked Al on the head to the tune of six

*stitches. It cold-cocked him, which is why we were in stable II. Although he doesn't realize it, he was out to lunch for about 5 seconds. Dick was hollering for him to punch in the breakers, and in the meantime, I'd seen this thing whistle off out of the corner of my eye and he was blankly staring at the instrument panel. I was convinced he was dead over there in the right seat, but he wasn't, and finally got the breakers in." Contents: Suiting and Ingress * Status Checks and Countdown * Powered Flight * Earth Orbit and Systems Checkout * TLI Through S-IVB Closeout * Translunar Coast * LOI Through Lunar Module Activation * Lunar Module Checkout Through Separation * DPI Through Touchdown * Lunar Surface * CSM*

*Circumlunar Operations * Liftoff,
Rendezvous, And Docking * Lunar
Module Jettison Through TEI *
Transearth Coast * Entry * Landing
and Recovery * Geology and
Experiments * Command Module
Systems Operations * Lunar Module
Systems Operations * Miscellaneous
Systems, Flight Equipment, And GFE *
Visual Sightings * Pre-mission
Planning * Mission Control * Training
* Medical and Food * Miscellaneous*

*The primary mission objectives of the
second crewed lunar landing included
an extensive series of lunar exploration
tasks by the lunar module, or LM,
crew, as well as the deployment of the
Apollo Lunar Surface Experiments
Package, or ALSEP, which was to be
left on the moon's surface to gather*

seismic, scientific and engineering data throughout a long period of time. Other Apollo 12 objectives included a selenological inspection; surveys and samplings in landing areas; development of techniques for precision-landing capabilities; further evaluations of the human capability to work in the lunar environment for a prolonged period of time; deployment and retrieval of other scientific experiments; and photography of candidate exploration sites for future missions. The astronauts also were to retrieve portions of the Surveyor III spacecraft, which had soft-landed on the moon April 20, 1967, a short distance from the selected landing site of Apollo 12. The flight plan for Apollo 12 was similar to that of Apollo 11,

except Apollo 12 was to fly a higher inclination to the lunar equator and leave the free-return trajectory after the second translunar midcourse correction. This first non-free-return trajectory on an Apollo mission was designed to allow a daylight launch and a translunar injection above the Pacific Ocean. It also allowed a stretch of the translunar coast to gain the desired landing site lighting at the time of LM descent, conserved fuel and permitted the Goldstone, Calif., tracking antenna to monitor the LM descent and landing.

On-point historical photographs combined with strong narration bring the story of the moon landing to life. Kids will learn about the cold war tensions between the US and the USSR

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that led to the space race, and the push from presidents Kennedy and Johnson to ensure the U.S. got to the moon first. As an added bonus, readers will learn about how this played out on TV. All of the networks covered it, but Walter Cronkite and astronaut Wally Shirra are there to narrate how it happened with real excitement. Accompanying video will show readers what viewers saw at the time.

NASA and the End of the Space Shuttle Program

2979 Days to the Moon

Apollo 11 Official NASA Mission Reports and Press Kit - Historic First

Manned Landing Lunar Landing

Apollo Moon Missions

Exploring The Moon With

Chandrayaan 1

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*The Untold Story of a Lost Space
Shuttle and Her Crew
Of a Fire on the Moon*

This official NASA document provides the complete transcription of the Apollo 16 post-flight debriefing given by astronauts, with their first-hand description of the fifth moon landing - featuring the second use of the Lunar Roving Vehicle (LRV). This ebook is an invaluable addition to the library of anyone interested in the Apollo moon landings. Contents include: SUITING AND INGRESS * STATUS CHECKS AND COUNTDOWN * POWERED FLIGHT * EARTH ORBIT AND SYSTEMS

CHECKOUT * TLI THROUGH S-
IVB CLOSEOUT *
TRANSLUNAR COAST * LOI,
DPI, LUNAR MODULE
CHECKOUT * LUNAR MODULE
CHECKOUT THROUGH
SEPARATION * SEPARATION
THROUGH LM TOUCHDOWN *
LUNAR SURFACE * CSM
CIRCUMLUNAR OPERATIONS
* LIFTOFF, RENDEZVOUS,
AND DOCKING * LUNAR
MODULE JETTISON
THROUGH TEI *
TRANSEARTH COAST *
ENTRY * LANDING AND
RECOVERY * TRAINING * CSM
SYSTEMS OPERATIONS *
LUNAR MODULE SYSTEMS
OPERATIONS * LRV

OPERATIONS * EMU
SYSTEMS * FLIGHT
EQUIPMENT * FLIGHT DATA
FILE * VISUAL SIGHTINGS *
PREMISSION PLANNING *
MISSION CONTROL * HUMAN
FACTORS Three primary
objectives were (1) to inspect,
survey, and sample materials
and surface features at a
selected landing site in the
Descartes region; (2) emplace
and activate surface
experiments; and (3) conduct in-
flight experiments and
photographic tasks from lunar
orbit. Additional objectives
included performance of
experiments requiring zero
gravity and engineering

evaluation of spacecraft and equipment. The Descartes landing site is in a highlands region of the moon's southeast quadrant, characterized by hilly, grooved, furrowed terrain. It was selected as an outstanding location for sampling two volcanic constructional units of the highlands - the Cayley formation and the Kant Plateau. The Apollo Lunar Surface Experiments Package, or ALSEP, was the fourth such station to become operational after Apollos 12, 14 and 15. Orbital science experiments were concentrated in an array of instruments and cameras in the scientific instrument

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module, or SIM, bay. Handheld Hasselblad 70mm still and Mauer 16mm motion cameras were used by the crew. Minor changes in surface extravehicular activity, or EVA, equipment were evaluated - a stronger clutch spring in the television camera drive mechanism to eliminate aiming problems experienced on Apollo 15, longer seat belts on the Lunar Roving Vehicle for better astronaut retention, continuous fluting of drill bits to eliminate bit binding due to extracta jamming, and the addition of a treadle and jack to aid in drill core removal from the lunar subsurface. A significant

addition to surface objectives was an ultraviolet stellar camera to return photography of the Earth and celestial regions in spectral bands not seen from Earth. Evaluation of the lunar rover through a "Grand Prix" exercise consisting of S-turns, hairpin turns and hard stops also was to be conducted. A final orbital objective was to launch a subsatellite into lunar orbit from the command and service module, or CSM, shortly before transearth injection. It is the year 1568. Emperor Akbar is on the throne and all is well in Hindustan. Or is it? Meet Ash and Tara, two feisty kids who battle the vilest villains in

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Akbar ' s court. Devious minds are at work, planning to steal Akbar ' s precious emerald dagger, which the emperor believes brings him good luck. Ash and Tara, twin brother and sister, growing up in a village across the Yamuna land up in Agra Fort and get to know of the conspiracy. Can they stop the ruthless Magesh and his accomplices from carrying out the plan? Or will they get framed for the theft and end up on the wrong side of the world ' s most powerful monarch? The breathless adventure twists and turns its way through the magnificent Agra Fort, the bylanes of

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medieval Agra and the dark, stormy forests across the Yamuna. Each story in the brand new Ash and Tara series will keep you engrossed till the final action-packed ending even as you get to know and love Akbar, Birbal, Ash, Tara and their friends like never before.

Three comprehensive official NASA documents chronicle the flight of Apollo 17, the sixth and final Apollo lunar landing featuring the first scientist-astronaut, Harrison "Jack" Schmitt. Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo Mission Report and the NASA Headquarters Mission Operation

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Report (MOR), provide complete details about every aspect of the mission. Apollo 17 MSC Mission Report: Mission description, pilots' report, communications, trajectory, command and service module performance, mission support performance, assessment of mission objectives, launch vehicle summary, anomaly summary (CSM, LM, government furnished equipment), conclusions, vehicle descriptions. Apollo 17 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch countdown, detailed flight

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mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew, mission management responsibility, program management, abbreviations and acronyms. Apollo 17 Press Kit: Detailed preview from countdown to landing. At 9:15:29 a.m. GMT Dec. 7, 1972, the command and service module, or CSM, was separated from the S-IVB. Approximately 15 min later, the CSM docked with the lunar module, or LM. Landing occurred at 7:54:57 p.m. Dec. 11, at lunar latitude

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20 degrees, 10 minutes north, and longitude 30 degrees 46 minutes east. Apollo 17 was the last lunar landing mission.

Three extravehicular activities, or EVAs, lasted a total of 22 hours, four minutes on the lunar surface. EVA No. 1 began at 11:54:49 p.m. Dec. 11, with Eugene Cernan egressing at 12:01 a.m. Dec. 12. The first EVA was seven hours, 12 minutes long and was completed at 7:06:42 a.m. Dec. 12. The second EVA began at 11:28:06 p.m. Dec. 12, and lasted seven hours, 37 minutes, ending at 7:05:02 a.m. Dec. 13. The final EVA began at 10:25:48 p.m. Dec. 13, and ended at 5:40:56

a.m. Dec. 14. The LM ascent stage lifted off the moon at 10:54:37 p.m. Dec. 14. Ronald Evans performed a transearth EVA at 8:27:40 p.m. Dec. 17, that lasted one hour, six minutes, during which time he retrieved the lunar sounder film, as well as the panoramic and mapping camera film cassettes. Apollo 17 hosted the first scientist-astronaut to land on moon: Harrison Schmitt. The sixth automated research station was set up. The lunar rover vehicle traversed a total of 30.5 kilometers. Lunar surface-stay time was 75 hours, and lunar orbit time 17 hours. Astronauts gathered 110.4

kilograms, or 243 pounds, of material.

A New York Times Bestseller "Celebrates a bold era when voyaging beyond the Earth was deemed crucial to national security and pride." - The Wall Street Journal Restoring the drama, majesty, and sheer improbability of an American triumph, this is award-winning historian Craig Nelson's definitive and thrilling story of man's first trip to the moon. At 9:32 a.m. on July 16, 1969, the Apollo 11 rocket launched in the presence of more than a million spectators who had gathered to witness a truly historic event. Through interviews, 23,000

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pages of NASA oral histories, and declassified CIA documents on the space race, *Rocket Men* presents a vivid narrative of the moon mission, taking readers on the journey to one of the last frontiers of the human imagination.

Space Launch Disaster
An Interactive Space
Exploration Adventure
Apollo 10 Official NASA
Mission Reports and Press Kit -
1969 LM Test Flight in Lunar
Orbit by Astronauts Stafford,
Cernan, and Young
Through the Glass Ceiling to the
Stars
A History of Space Flight
4D an Augmented Reading

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Experience

The Story of the First American
Woman to Command a Space
Mission

Three comprehensive official NASA documents chronicle the amazing journey of Apollo 12, which performed the second manned lunar landing in November 1969. It was conducted by astronauts Conrad, Gordon, and Bean. Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo Mission Report and the NASA Headquarters Mission Operation Report (MOR), provide complete details about every aspect of the mission. Apollo 12 MSC Mission Report: Mission description, pilots' report,

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communications, trajectory, command and service module performance, mission support performance, assessment of mission objectives, launch vehicle summary, anomaly summary (CSM, LM, government furnished equipment), conclusions, vehicle descriptions. Apollo 12 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch countdown, detailed flight mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew, mission management responsibility, program

management, abbreviations and acronyms. Apollo 12 Press Kit: Detailed preview from countdown to landing. The Apollo 12 mission provided a wealth of scientific information in this significant step of detailed lunar exploration. The emplaced experiments, with an expected equipment operation time of 1 year, will enable scientific observations of the lunar surface environment and determination of structural perturbations. This mission demonstrated the capability for a precision landing, a requirement for proceeding to more specific and rougher lunar surface locations having particular scientific interest. The space vehicle, with a crew of Charles Conrad, Jr.,

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Commander; Richard F. Gordon, Command Module Pilot; and Alan L. Bean, Lunar Module Pilot; was launched from Kennedy Space Center, Florida, at 11:22:00 a.m. e.s.t. (16:22:00 G.m.t.) November 14, 1969. The activities during earth-orbit checkout, translunar injection, and translunar coast were similar to those of Apollo 11, except for the special attention given to verifying all spacecraft systems as a result of lightning striking the space vehicle at 36.5 seconds and 52 seconds. A non-free-return translunar trajectory profile was used for the first time in the Apollo 12 mission. The spacecraft was inserted into a 168.8- by 62.6-mile lunar orbit at about 83-1/2 hours. Two

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revolutions later a second maneuver was performed to achieve a 66.1- by 54.3-mile orbit. The initial checkout of lunar module systems during translunar coast and in lunar orbit was satisfactory. At about 104 hours, the Commander and the Lunar Module Pilot entered the lunar module to prepare for descent to the lunar surface.

Recounts Borman's flights aboard NASA's Gemini 7 and Apollo 8, and his battle to keep Eastern Airlines financially sound during his tenure as the company's president

“ An extraordinary delight for a reader of any age. ” —The New York Times Book Review Brian Floca explores Apollo 11 ' s famed

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moon landing with this newly expanded edition of Moonshot! Simply told, grandly shown, and now with eight additional pages of brand-new art and more in-depth information about the historic moon landing, here is the flight of Apollo 11. Here for a new generation of readers and explorers are the steady astronauts clicking themselves into gloves and helmets, strapping themselves into sideways seats. Here are their great machines in all their detail and monumentality, the ROAR of rockets, and the silence of the Moon. Here is a story of adventure and discovery—a story of leaving and returning during the summer of 1969, and a story of home, seen

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whole, from far away.

The long-awaited memoir of a trailblazer and role model who is telling her story for the first time. Eileen Collins was an aviation pioneer her entire career, from her crowning achievements as the first woman to command an American space mission as well as the first to pilot the space shuttle to her early years as one of the Air Force 's first female pilots. She was in the first class of women to earn pilot 's wings at Vance Air Force Base and was their first female instructor pilot. She was only the second woman pilot admitted to the Air Force 's elite Test Pilot Program at Edwards Air Force Base. NASA had such confidence in her skills as

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a leader and pilot that she was entrusted to command the first shuttle mission after the Columbia disaster, returning the US to spaceflight after a two-year hiatus. Since retiring from the Air Force and NASA, she has served on numerous corporate boards and is an inspirational speaker about space exploration and leadership. Eileen Collins is among the most recognized and admired women in the world, yet this is the first time she has told her story in a book. It is a story not only of achievement and overcoming obstacles but of profound personal transformation. The shy, quiet child of an alcoholic father and struggling single mother, who grew up in modest

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circumstances and was an unremarkable student, she had few prospects when she graduated from high school, but she changed her life to pursue her secret dream of becoming an astronaut. She shares her leadership and life lessons throughout the book with the aim of inspiring and passing on her legacy to a new generation.

Apollo and America's Moon
Landing Program: Apollo 8 Official
NASA Mission Reports and Press
Kit - the Epic 1968 First Flight to the
Moon by Borman, Lovell and
Anders

Moonshot

Apollo and America's Moon
Landing Program

The NASA History of Manned

Lunar Spacecraft to 1969

The Unsung Heroes

Apollo - America's Moon Landing
Program

Preparing Apollo for Its Historic
Journey

**Three comprehensive official
NASA documents chronicle
the epic December 1968
mission of Apollo 8, the first
manned lunar orbit mission by
Frank Borman, James Lovell,
and Bill Anders. Two technical
mission reports, the Manned
Spacecraft Center (MSC)
Apollo 8 Mission Report and
the NASA Headquarters
Mission Operation Report
(MOR), provide complete**

details about every aspect of the mission. Apollo 8 MSC Mission Report: Mission description, pilots' report, lunar decent and ascent, communications, trajectory, command and service module performance, mission support performance, assessment of mission objectives, launch vehicle summary, anomaly summary (CSM, government furnished equipment), conclusions, vehicle descriptions. Apollo 8 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch

countdown, detailed flight mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew, mission management responsibility, program management, abbreviations and acronyms. Apollo 8 Press Kit: Detailed preview from countdown to landing. The mission objectives for Apollo 8 included a coordinated performance of the crew, the command and service module, or CSM, and the support facilities. The mission also

was to demonstrate translunar injection; CSM navigation, communications and midcourse corrections; consumable assessment; and passive thermal control. The detailed test objectives were to refine the systems and procedures relating to future lunar operations. All primary mission objectives and detailed test objectives were achieved. All launch vehicle and spacecraft systems performed according to plan. Engineering accomplishments included use of the ground network with onboard navigational techniques to

sharpen the accuracy of lunar orbit determination and the successful use of Apollo high-gain antenna -- a four-dish unified S-band antenna that deployed from the service module, or SM, after separation from the third stage.

Mission Highlights
Apollo 8 launched from Cape Kennedy on Dec. 21, 1968, placing astronauts Frank Borman, James Lovell Jr. and William Anders into a 114 by 118 mile parking orbit at 32.6 degrees. During the second revolution, at two hours, 50 minutes ground elapsed time, the S-IVB third

stage restarted for a five-minute, 17-second burn, initiating translunar coast. Following S-IVB/CSM separation at three hours, 21 minutes, a 1.5 feet per second radial burn of the SM reaction control engines was initiated to establish sufficient distance for S-IVB propellant dumping. Following the propellant dumping, which sent the stage into diverging trajectory and solar orbit, the separation distance still was deemed inadequate and a second SM reaction control burn of 7.7 feet per second was performed. The first

midcourse correction occurred at about 10 hours, 55 minutes into the mission and provided a first check on the service propulsion system, or SPS, engine prior to committing spacecraft to lunar orbit insertion. The second and final midcourse correction prior to lunar orbit insertion occurred at 61 hours, 8 minutes, 54 seconds. Loss of signal occurred at 68 hours, 58 minutes, 45 seconds when Apollo 8 passed behind the moon. At that moment, NASA's three astronauts became the first humans to see the moon's far side. The

first lunar orbit insertion burn, at 69 hours, 8 minutes, 52 seconds, lasted four minutes, two seconds and reduced the spacecraft's 8,400 feet per second velocity by 2,994 feet per second, resulting in an initial lunar orbit of 70 by 193 miles. The orbit circularized at 70 miles by the second lunar orbit insertion burn of 135 feet per second, performed at the start of the third revolution, again on the back side of the moon, at 73 hours, 35 minutes, five seconds.

Three comprehensive official NASA documents chronicle the vital first manned test

flight of the Apollo lunar module, Apollo 9, conducted by astronauts McDivitt, Scott, and Schweickart in early 1969. Two technical mission reports, the Manned Spacecraft Center (MSC) Apollo Mission Report and the NASA Headquarters Mission Operation Report (MOR), provide complete details about every aspect of the mission. Apollo 9 MSC Mission Report: Mission description, pilots' report, communications, trajectory, command and service module performance, mission support performance, assessment of

mission objectives, launch vehicle summary, anomaly summary (CSM, LM, government furnished equipment), conclusions, vehicle descriptions. Apollo 9 MOR: Mission design and execution, spacecraft performance, flight anomalies, detailed objectives and experiments, launch countdown, detailed flight mission description, back contamination program, contingency operations, configuration differences, mission support, recovery support plan, flight crew, mission management

responsibility, program management, abbreviations and acronyms. Apollo 9 Press Kit: Detailed preview from countdown to landing. Apollo 9 was the first manned flight of the lunar module and was conducted to qualify this portion of the spacecraft for lunar operations. The crew members were James A. McDivitt, Commander; David R. Scott, Command Module Pilot; and Russell L. Schweikart, Lunar Module Pilot. The primary objectives of the mission were to evaluate crew operation of the lunar module and to

demonstrate docked vehicle functions in an earth orbital mission, thereby qualifying the combined spacecraft for lunar flight. Lunar module operations included a descent engine firing while docked with the command module, a complete rendezvous and docking profile, and, with the vehicle unmanned, an ascent engine firing to propellant depletion. Combined spacecraft functions included command module docking with the lunar module (after transposition), spacecraft ejection from the launch vehicle, five service

propulsion firings while docked, a docked descent engine firing, and extravehicular crew operations from both the lunar and command modules. These primary objectives were all satisfied. All spacecraft systems operated satisfactorily in performing the mission as planned. The thermal response of both spacecraft remained within expected ranges for an earth orbital flight, and consumable usages were maintained within acceptable limits. Management of the many complex systems of both

spacecraft by the crew was very effective, and communications quality was generally satisfactory. The space vehicle was launched from the Kennedy Space Center, Florida, at 11:00:00 a.m. e.s.t., on March 3, 1969. Following a normal launch phase, the S-IVB stage inserted the spacecraft into an orbit of 102.3 by 103.9 nautical miles. After the post-insertion checkout was completed, the command and service modules were separated from the S-IVB, transposed, and docked with the lunar module. The docked spacecraft were

**ejected from the S-IVB at
4:08:06.**

It's 1969 and the United States is about to begin an adventure that mankind has dreamed of since the beginning of time — a trip to the moon. In a day-by-day, minute-by-minute countdown — in the control room and up in space — you'll experience the thrill of this breathtaking "One small step for man, one giant leap for mankind!" Countdown to the Moon is a companion to Steve Englehart's award-winning story of the Wright Brothers, Countdown to Flight. Together, these two

**Countdowns chronicle the
liftoff and apex of mankind's
eternal quest to leave the
earth behind.**

**Countdown to a Moon
Launch Preparing Apollo for
Its Historic Journey Springer
Building the Kennedy Space
Center Launch Complex
Apollo 17 Official NASA
Mission Reports and Press Kit
- 1972 Sixth and Final Lunar
Landing - Astronauts Cernan,
Evans, and Schmitt
Apollo 16 Technical Crew
Debriefing with Unique
Observations about the Fifth
Lunar Mission by Astronauts
Young, Duke and Mattingly**

**An Autobiography
The View from Ranger
NASA EP.**

This book explores various perspectives surrounding the Apollo 11 mission to land on the moon. Readers are immersed in the action as their choices guide the narrative. A celebration of the ordinary men and women, from all walks of life, whose ingenuity, passion, and sacrifice helped the space program meet President Kennedy's challenge to land a man on the moon and return him safely to earth.