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KEY=CONTROL - MILA ACEVEDO

Mission Control Inventing the Groundwork of Spaceflight "In *Mission Control*, Michael Johnson explores the famous Johnson Space Center in Houston, the Jet Propulsion Laboratory in Pasadena, and the European Space Operations Centre in Darmstadt, Germany--each a strategically designed micro-environment responsible for the operation of spacecraft and the safety of passengers. He explains the motivations behind the location of each center and their intricate design. He shows how the robotic spaceflight missions overseen in Pasadena and Darmstadt set these centers apart from Houston, and compares the tracking networks used for different types of spacecraft."--Amazon.com. **The International Space Station Operating an Outpost in the New Frontier** *Government Printing Office* Looks at the operations of the International Space Station from the perspective of the Houston flight control team, under the leadership of NASA's flight directors, who authored the book. The book provides insight into the vast amount of time and energy that these teams devote to the development, planning and integration of a mission before it is executed. The passion and attention to detail of the flight control team members, who are always ready to step up when things do not go well, is a hallmark of NASA human spaceflight operations. With tremendous support from the ISS program office and engineering community, the flight control team has made the International Space Station and the programs before it a success. **NASA Spaceflight A History of Innovation** *Springer* This book presents the first comprehensive history of innovation at NASA, bringing together experts in the field to illuminate how public-private and international partnerships have fueled new ways of exploring space since the beginning of space travel itself. Twelve case studies trace the messy, risky history of such partnerships, exploring the role of AT&T in the early development of satellite technology, the connections between the Apollo program and Silicon Valley, the rise of SpaceX, and more. Some of these projects have succeeded, and some have failed; all have challenged conventional methods of doing the public's business in space. Together, these essays offer new insights into how innovation happens, with invaluable lessons for policymakers, investors, economists, and members of the space community. **The Birth of NASA The Work of the Space Task Group, America's First True Space Pioneers** *Springer* This is the story of the work of the original NASA space pioneers; men and women who were suddenly organized in 1958 from the then National Advisory Committee on Aeronautics (NACA) into the Space Task Group. A relatively small group, they developed the initial mission concept plans and procedures for the U. S. space program. Then they boldly built hardware and facilities to accomplish those missions. The group existed only three years before they were transferred to the Manned Spacecraft Center in Houston, Texas, in 1962, but their organization left a large mark on what would follow.Von Ehrenfried's personal experience with the STG at Langley uniquely positions him to describe the way the group was structured and how it reacted to the new demands of a post-Sputnik era. He artfully analyzes how the growing space program was managed and what techniques enabled it to develop so quickly from an operations perspective. The result is a fascinating window into history, amply backed up by first person documentation and interviews. **Air Force Magazine Militarizing Outer Space Astroculture, Dystopia and the Cold War** *Springer Nature* Militarizing Outer Space explores the dystopian and destructive dimensions of the Space Age and challenges conventional narratives of a bipolar Cold War rivalry. Concentrating on weapons, warfare and violence, this provocative volume examines real and imagined endeavors of arming the skies and conquering the heavens. The third and final volume in the groundbreaking European Astroculture trilogy, Militarizing Outer Space zooms in on the interplay between security, technopolitics and knowledge from the 1920s through the 1980s. Often hailed as the site of heavenly utopias and otherworldly salvation, outer space transformed from a promised sanctuary to a present threat, where the battles of the future were to be waged. Astroculture proved instrumental in fathoming forms and functions of warfare's futures past, both on earth and in space. The allure of dominating outer space, the book shows, was neither limited to the early twenty-first century nor to current American space force rhetorics. **Shoot for the Moon The Space Race and the Extraordinary Voyage of Apollo 11** *Little, Brown* Learn why NASA astronaut Mike Collins calls this extraordinary space race story "the best book on Apollo": this inspiring and intimate ode to ingenuity celebrates one of the most daring feats in human history. When the alarm went off forty thousand feet above the moon's surface, both astronauts looked down at the computer to see 1202 flashing on the readout. Neither of them knew what it meant, and time was running out. . . . On July 20, 1969, Neil Armstrong and Buzz Aldrin became the first humans to walk on the moon. One of the world's greatest technological achievements -- and a triumph of the American spirit -- the Apollo 11 mission was a mammoth undertaking involving more than 410,000 men and women dedicated to winning the space race against the Soviets. Set amid the tensions and upheaval of the sixties and the Cold War, Shoot for the Moon is a gripping account of the dangers, the challenges, and the sheer determination that defined not only Apollo 11, but also the Mercury and Gemini missions that came before it. From the shock of Sputnik and the heart-stopping final minutes of John Glenn's Mercury flight to the deadly whirligig of Gemini 8, the doomed Apollo 1 mission, and that perilous landing on the Sea of Tranquility -- when the entire world held its breath while Armstrong and Aldrin battled computer alarms, low fuel, and other problems -- James Donovan tells the whole story. Both sweeping and intimate, Shoot for the Moon is "a powerfully written and irresistible celebration" of one of humankind's most extraordinary accomplishments (Booklist, starred review). **Bulletin of the Atomic Scientists** The Bulletin of the Atomic Scientists is the premier public resource on scientific and technological developments that impact global security. Founded by Manhattan Project Scientists, the Bulletin's iconic "Doomsday Clock" stimulates solutions for a safer world. **Flight My Life in Mission Control** *Dutton Adult* One of the architects of the U.S. space program recalls his most exciting moments at mission control as he guided heroes like Alan Shepard and John Glenn on their historic missions. **Go, Flight! The Unsung Heroes of Mission Control, 1965-1992** *U of Nebraska Press* The inspiration for the documentary Mission Control: The Unsung Heroes of Apollo At first glance, it looks like just another auditorium in just another government building. But among the talented men (and later women) who worked in mission control, the room located on the third floor of Building 30—at what is now Johnson Space Center—would become known by many as “the Cathedral.” These members of the space program were the brightest of their generations, making split-second decisions that determined the success or failure of a mission. The flight controllers, each supported by a staff of specialists, were the most visible part of the operation, running the missions, talking to the heavens, troubleshooting issues on board, and, ultimately, attempting to bring everyone safely back home. None of NASA’s storied accomplishments would have been possible without these people. Interviews with dozens of individuals who worked in the historic third-floor mission control room bring the compelling stories to life. Go, Flight! is a real-world reminder of where we have been and where we could go again given the right political and social climate. **Spinoff 2007** *Office of Aerospace Technology* Spinoff is NASA's annual premiere publication featuring successfully commercialized NASA technology. For more than 40 years, the NASA Commercial Technology Program has facilitated the transfer of NASA technology to the private sector, benefitting global competition and the economy. The resulting commercialization has contributed to the development of commercial products and services in the fields of health and medicine, industry, consumer goods, transportation, public health, computer technology, and environmental resources. Since 1976, Spinoff has featured between 40 and 50 of these commercial products annually. **Management The Value of the Moon How to Explore, Live, and Prosper in Space Using the Moon's Resources** *Smithsonian Institution* While the Moon was once thought to hold the key to space exploration, in recent decades, the U.S. has largely turned its sights toward Mars and other celestial bodies instead. In The Value of the Moon, lunar scientist Paul Spudis argues that the U.S. can and should return to the moon in order to remain a world leader in space utilization and development and a participant in and beneficiary of a new lunar economy. Spudis explores three reasons for returning to the Moon: it is close, it is interesting, and it is useful. The proximity of the Moon not only allows for frequent launches, but also control of any machinery we place there. It is interesting because recorded deep on its surface and in its craters is the preserved history of the moon, the sun, and indeed the entire galaxy. And finally, the moon is useful because it is rich with materials and energy. The moon, Spudis argues, is a logical base for further space exploration and even a possible future home for us all. Throughout his work, Spudis incorporates details about man's fascination with the moon and its place in our shared history. He also explores its religious, cultural, and scientific resonance and assesses its role in the future of spaceflight and our national security and prosperity. **Apollo 8 The Thrilling Story of the First Mission to the Moon** *Henry Holt and Company* The untold story of the historic voyage to the moon that closed out one of our darkest years with a nearly unimaginable triumph In August 1968, NASA made a bold decision: in just sixteen weeks, the United States would launch humankind’s first flight to the moon. Only the year before, three astronauts had burned to death in their spacecraft, and since then the Apollo program had suffered one setback after another. Meanwhile, the Russians were winning the space race, the Cold War was getting hotter by the month, and President Kennedy’s promise to put a man on the moon by the end of the decade seemed sure to be broken. But when Frank Borman, Jim Lovell and Bill Anders were summoned to a secret meeting and told of the dangerous mission, they instantly signed on. Written with all the color and verve of the best narrative non-fiction, Apollo 8 takes us from Mission Control to the astronaut’s homes, from the test labs to the launch pad. The race to prepare an untested rocket for an unprecedented journey paves the way for the hair-raising trip to the moon. Then, on Christmas Eve, a nation that has suffered a horrendous year of assassinations and war is heartened by an inspiring message from the trio of astronauts in lunar orbit. And when the mission is over—after the first view of the far side of the moon, the first earth-rise, and the first re-entry through the earth’s atmosphere following a flight to deep space—the impossible dream of walking on the moon suddenly seems within reach. The full story of Apollo 8 has never been told, and only Jeffrey Kluger—Jim Lovell’s co-author on their bestselling book about Apollo 13—can do it justice. Here is the tale of a mission that was both a calculated risk and a wild crapshoot, a stirring account of how three American heroes forever changed our view of the home planet. **Management, a Bibliography for NASA Managers Rocket Men The Daring Odyssey of Apollo 8 and the Astronauts Who Made Man's First Journey to the Moon** *Random House* 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 **Apollo 11 Der Wettlauf zum Mond und der Erfolg einer fast unmöglichen Mission - Mit zahlreichen farbigen Abbildungen** *DVA Apollo 11 - die unmögliche Mission* In der Nacht vor seinem Flug zum Mond rechnete Neil Armstrong die Chancen aus, die er, Buzz Aldrin und Michael Collins hatten, um lebend zur Erde zurückzukehren. Fifty-Fifty, dachte er. Andere Experten hingegen, darunter auch Wissenschaftler und Techniker der NASA, sahen die Sache weitaus weniger optimistisch: 5 zu 1, sagten sie, dass die Männer nicht zurückkommen. Oder sogar 10 zu 1. Apollo 11 war die unmögliche Mission, ihr Scheitern wahrscheinlicher als ihr Erfolg. Pünktlich zum Jahrestag erzählt der Journalist und Historiker James Donovan die Geschichte der Mondlandung in allen spannenden Details noch einmal neu und legt dabei auch viel Gewicht auf die menschliche Seite. Entstanden ist ein mitreißendes und reich bebildertes Sachbuch. **Commercial Orbital Transportation Services A New Era in Spaceflight** *Government Printing Office Commercial Orbital Transportation Services: A New Era in Spaceflight* provides a history of the NASA Commercial Orbital Transportation Services (COTS) program executed by the Commercial Crew & Cargo Program Office from 2006 to 2013 at the Johnson Space Center, Houston, Texas. It discusses the elements and people that ultimately made the COTS model a success. **Spinoff 2003 United States Government Printing Hearing on the NASA Space Shuttle and the Reusable Launch Vehicle Programs Hearing Before the Subcommittee on Science, Technology, and Space of the Committee on Commerce, Science, and Transportation, United States Senate, One Hundred Fourth Congress, First Session, May 16, 1995 NASA SP-7500 Management, a continuing bibliography with indexes** **Breaking the Chains of Gravity The Story of Spaceflight before NASA** *Bloomsbury Publishing NASA's history is a familiar story, one that typically peaks with Neil Armstrong taking his small step on the Moon in 1969.* But America's space agency wasn't created in a vacuum. It was assembled from pre-existing parts, drawing together some of the best minds the non-Soviet world had to offer. In the 1930s, rockets were all the rage in Germany, the focus both of scientists hoping to fly into space and of the German armed forces, looking to circumvent the restrictions of the Treaty of Versailles. One of the key figures in this period was Wernher von Braun, an engineer who designed the rockets that became the devastating V-2. As the war came to its chaotic conclusion, von Braun escaped from the ruins of Nazi Germany, and was taken to America where he began developing missiles for the US Army. Meanwhile, the US Air Force was looking ahead to a time when men would fly in space, and test pilots like Neil Armstrong were flying cutting-edge, rocket-powered aircraft in the thin upper atmosphere. **Breaking the Chains of Gravity** tells the story of America's nascent space program, its scientific advances, its personalities and the rivalries it caused between the various arms of the US military. At this point getting a man in space became a national imperative, leading to the creation of the National Aeronautics and Space Administration, otherwise known as NASA. **Telecommunications Competition and Deregulation Act of 1981 Hearings Before the Committee on Commerce, Science, and Transportation, United States Senate, Ninety-seventh Congress, First Session, on S. 898 ... June 2, 11, 15, 16, and 19, 1981 Beyond Horizons A Half Century of Air Force Space Leadership The X-15 Rocket Plane Flying the First Wings Into Space** *U of Nebraska Press* With the Soviet Union's launch of the first Sputnik satellite in 1957, the Cold War soared to new heights as Americans feared losing the race into space. The X-15 Rocket Plane tells the enthralling yet little-known story of the hypersonic X-15, the winged rocket ship that met this challenge and opened the way into human-controlled spaceflight. Drawing on interviews with those who were there, Michelle Evans captures the drama and excitement of, yes, rocket science: how to handle the heat generated at speeds up to Mach 7, how to make a rocket propulsion system that could throttle, and how to safely reenter the atmosphere from space and make a precision landing. This book puts a human face on the feats of science and engineering that went into the X-15 program, many of them critical to the development of the Space Shuttle. And, finally, it introduces us to the largely unsung pilots of the X-15. By the time of the Apollo 11 moon landing, thirty-one American astronauts had flown into space—eight of them astronaut-pilots of the X-15. The X-15 Rocket Plane restores these pioneers, and the others who made it happen, to their rightful place in the history of spaceflight. Browse more spaceflight books at upinspace.org. Purchase the audio edition. **Benefits Stemming from Space Exploration Bulletin of the Atomic Scientists** The Bulletin of the Atomic Scientists is the premier public resource on scientific and technological developments that impact global security. Founded by Manhattan Project Scientists, the Bulletin's iconic "Doomsday Clock" stimulates solutions for a safer world. **Deep Space The NASA Mission Reports** *Apogee Books* From Voyager to Stardust, this complete guide to NASA's deep space probes features a DVD containing thousands of pictures and videos captured by the journeying probes. 250 photos, 100 in full color. **The Hubble Space Telescope From Concept to Success** *Springer* The highly successful Hubble Space Telescope was meant to change our view and understanding of the universe. Within weeks of its launch in 1990, however, the space community was shocked to find out that the primary mirror of the telescope was flawed. It was only the skills of scientists and engineers on the ground and the daring talents of astronauts sent to service the telescope in December 1993 that saved the mission. For over two decades NASA had developed the capabilities to service a payload in orbit. This involved numerous studies and the creation of a ground-based infrastructure to support the challenging missions. Unique tools and EVA hardware supported the skills developed in crew training that then enabled astronauts to complete a demanding series of spacewalks. Drawing upon first hand interviews with those closely involved in the project over thirty years ago this story explains the development of the servicing mission concept and the hurdles that had to be overcome to not only launch the telescope but also to mount the first servicing mission – a mission that restored the telescope to full working order three years after its launch, saved the reputation of NASA, and truly opened a new age in understanding of our place in space. This is not just a tale of space age technology, astronauts and astronomy. It is also a story of an audacious scientific vision, and the human ingenuity and determination to overcome all obstacles to make it possible. **Hubble Space Telescope: From Concept to Success** is a story of an international partnership, dedicated teamwork and a perfect blend of human and robotic space operations that will inspire people of all ages. The subsequent servicing missions that enabled the telescope to continue its scientific program beyond its 25th year in orbit are described in a companion volume **Enhancing Hubble's Vision: Servicing a National Treasure**. **Humans to Mars Fifty Years of Mission Planning, 1950-2000 Shuttle, Houston My Life in the Center Seat of Mission Control** *Hachette UK* From the longest-serving Flight Director in NASA's history comes a revealing account of high-stakes Mission Control work and the Space Shuttle program that has redefined our relationship with the universe. A compelling look inside the Space Shuttle missions that helped lay the groundwork for the Space Age, *Shuttle, Houston* explores the determined personalities, technological miracles, and eleventh-hour saves that have given us human spaceflight. Relaying stories of missions (and their grueling training) in vivid detail, Paul Dye, NASA's longest-serving Flight Director, examines the split-second decisions that the directors and astronauts were forced to make in a field where mistakes are unthinkable, and where errors led to the loss of national resources -- and more importantly one's crew. Dye's stories from the heart of Mission Control explain the mysteries of flying the Shuttle -- from the powerful fiery ascent to the majesty of on-orbit operations to the high-speed and critical re-entry and landing of a hundred-ton glider. The Space Shuttles flew 135 missions. Astronauts conducted space walks, captured satellites, and docked with the Mir Space Station, bringing space into our everyday life, from GPS to satellite TV. *Shuttle, Houston* puts readers in his own seat at Mission Control, the hub that made humanity's leap into a new frontier possible. **Chariots for Apollo The NASA History of Manned Lunar Spacecraft to 1969** *Courier Corporation* 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. **Phase 1 Program Joint Report** Each of the Phase 1 Program Joint Working Groups describes the organizational structure and work processes that they used during the program, joint accomplishments, lessons learned, and applications to the International Space Station Program. **The Space Shuttle Decision NASA's Search for a Reusable Space Vehicle** Long before the NASA was the throes of planning for the Apollo voyages to the Moon, many people had seen the need for a vehicle that could access space routinely. The idea of a reusable space shuttle dates at least to the theoretical rocketplane studies of the 1930s, but by the 1950s it had become an integral part of a master plan for space exploration. The goal of efficient access to space in a heavy-lift booster prompted NASA's commitment to the space shuttle as the vehicle to continue human space flight. By the mid-1960s, NASA engineers concluded that the necessary technology was within reach to enable the creation of a reusable winged space vehicle that could haul scientific and applications satellites of all types into orbit for all users. President Richard M. Nixon approved the effort to build the shuttle in 1972 and the first orbital flight took place in 1981. Although the development program was risky, a talented group of scientists and engineers worked to create this unique space vehicle and their efforts were largely successful. Since 1981, the various orbiters -Atlantis, Columbia, Discovery, Endeavour, and Challenger (lost in 1986 during the only Space Shuttle accident)- have made early 100 flights into space. Through 1998, the space shuttle has carried more than 800 major scientific and technological payloads into orbit and its astronaut crews have conducted more than 50 extravehicular activities, including repairing satellites and the initial building of the International Space Station. The shuttle remains the only vehicle in the world with the dual ability to deliver and return large payloads to and from orbit, and is also the world's most reliable launch system. The design, now almost three decades old, is still state-of-the-art in many areas, including computerized flight control, airframe design, electrical power systems, thermal protection system, and main engines. This significant new study of the decision to build the space shuttle explains the shuttle's origin and early development. In addition to internal NASA discussions, this work details the debates in the late 1960s and early 1970s among policymakers in Congress, the Air Force, and the Office of Management and Budget over the roles and technical designs of the shuttle. Examining the interplay of these organizations with sometimes conflicting goals, the author not only explains how the world's premier space launch vehicle came into being, but also how politics can interact with science, technology, national security, and economics in national government. **F & S Index United States Annual Read You Loud and Clear! The Story of NASA's Spaceflight Tracking and Data Network, Part 1 - Scholar's Choice Edition** This work has been selected by scholars as being culturally important, and is part of the knowledge base of civilization as we know it. This work was reproduced from the original artifact, and remains as true to the original work as possible. Therefore, you will see the original copyright references, library stamps (as most of these works have been housed in our most important libraries around the world), and other notations in the work. This work is in the public domain in the United States of America, and possibly other nations. Within the United States, you may freely copy and distribute this work, as no entity (individual or corporate) has a copyright on the body of the work. As a reproduction of a historical artifact, this work may contain missing or blurred pages, poor pictures, errant marks, etc. Scholars believe, and we concur, that this work is important enough to be preserved, reproduced, and made generally available to the public. We appreciate your support of the preservation process, and thank you for being an important part of keeping this knowledge alive and relevant. **Spinoff 2007 Inspiration, Innovation, Discovery, Future** In our increasingly competitive global economy, strategic U.S. leadership in aeronautics research and space exploration is a critical component of America's strength and vitality. Through our focused work, the men and women of NASA are dedicated to expanding civilization's exploration and scientific horizons in the air and in space and to bringing the inner solar system into our sphere of commerce. The vibrancy of NASA's work can be seen in our current activities, ongoing plans for the future, and international recognition of our achievements. In 2007, during the space shuttle's 25th anniversary year, three shuttle missions advanced construction work on the International Space Station, adding significantly to the capabilities of this orbiting research outpost and setting the stage for continued expansion of the station's size and research capabilities. We also announced plans for a fifth shuttle servicing mission to the Hubble Space Telescope, now slated for 2008, to extend and improve the telescope's capabilities through 2013. Looking forward, NASA took major steps to realize the national goal of establishing a permanent base on the lunar surface by 2024 in cooperation with many space-faring nations. In August 2006, we selected a prime contractor to build the Orion crew exploration vehicle, America's next human-rated spacecraft, to be operational by 2015. Last fall, our next-generation launch vehicle, the Ares I, successfully completed its systems requirement review. In December, NASA unveiled an initial Global Exploration Strategy and lunar architecture which details how sustained lunar exploration will advance science, commerce, and technology development and help us prepare for later journeys to Mars and other destinations. Throughout the year, NASA orbiting spacecraft and rovers continued to expand our understanding of the Red Planet and lay the groundwork for future surface missions. Also, NASA launched the New Horizons spacecraft to Pluto and twin STEREO spacecraft that produce three dimensional views of the Sun; recovered comet and interstellar dust particles from the successful Stardust mission; and through our Cassini mission, possibly discovered evidence of liquid water reservoirs that erupt in Yellowstone-like geysers on Saturn's moon Enceladus. Closer to home, NASA's Earth science team launched the CloudSat and CALIPSO spacecraft to study the role that clouds and aerosols play in regulating Earth's weather, climate, and air quality. And we restructured our aeronautics research portfolio to return to long-term, cutting-edge, fundamental research required to enable the next generation air transportation system and to support our future space missions. Finally, the entire NASA community cheered the awarding in December of the 2006 Nobel Prize in Physics to Dr. John C. Mather, senior astrophysicist and senior project scientist at the Goddard Space Flight Center. Consistent with our Agency's charter, Spinoff 2007 highlights NASA's work to "research, develop, verify, and transfer advanced aeronautics, space, and related technologies." Among the useful NASA-derived technologies featured in Spinoff 2007 already receiving prominent use in the commercial and public sectors are: * A revolutionary method that makes the manufacture of carbon nanotubes safer and less expensive for researchers now creating next-generation electronics. * NASA-developed air traffic management software tools that are helping to streamline the flow of commercial flights across

the entire National Airspace System. * A new, commercial, all-natural nutritional fat replacement and flavor enhancement product designed with help from NASA's astronaut nutrition program that is now making everyday foods healthier. **Computers Take Flight A History of Nasa's Pioneering Digital Fly-by-Wire Project** *United States Government Printing* **Rocket Ranch The Nuts and Bolts of the Apollo Moon Program at Kennedy Space Center** *Springer* 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. **Deep Space Propulsion A Roadmap to Interstellar Flight** *Springer Science & Business Media* The technology of the next few decades could possibly allow us to explore with robotic probes the closest stars outside our Solar System, and maybe even observe some of the recently discovered planets circling these stars. This book looks at the reasons for exploring our stellar neighbors and at the technologies we are developing to build space probes that can traverse the enormous distances between the stars. In order to reach the nearest stars, we must first develop a propulsion technology that would take our robotic probes there in a reasonable time. Such propulsion technology has radically different requirements from conventional chemical rockets, because of the enormous distances that must be crossed. Surprisingly, many propulsion schemes for interstellar travel have been suggested and await only practical engineering solutions and the political will to make them a reality. This is a result of the tremendous advances in astrophysics that have been made in recent decades and the perseverance and imagination of tenacious theoretical physicists. This book explores these different propulsion schemes - all based on current physics - and the challenges they present to physicists, engineers, and space exploration entrepreneurs. This book will be helpful to anyone who really wants to understand the principles behind and likely future course of interstellar travel and who wants to recognize the distinctions between pure fantasy (such as Star Trek's 'warp drive') and methods that are grounded in real physics and offer practical technological solutions for exploring the stars in the decades to come.