



Wings In Orbit

*Scientific and Engineering
Legacies of the Space Shuttle*

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Wings In Orbit Scientific And Engineering Legacies Of The Space Shuttle 1971 201

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OVERTOCK SALE Significantly reduced list price *Wings in Orbit* is an authoritative documentation of the many accomplishments of the NASA Space Shuttle Program Starting with a foreword written by astronauts John Young and Robert Crippen this compelling book provides accurate authentic and easily understood accounts from NASA's best subject matter experts and external resources The book captures the passion of those who devoted their energies to the Program's success for more than three decades It focuses on their science and engineering accomplishments the rich history of the program and the shuttle as an icon in U S history No other book on the market has accumulated as many experts and resources on this subject nor broken it down in such easy to understand language with compelling imagery With the Shuttle Program coming to a close consumers will be inclined to purchase this book as it provides comprehensive information on this historic program as it ends its 30 year run The promotions for this book will definitely benefit from the publicity of this historic event Other related products NASA's Contributions to Aeronautics Vols 1 2 is available here <https://bookstore.gpo.gov/products/sku/033000013345> Leadership in Space Selected Speeches of NASA Administrator Michael Griffin May 2005 October 2008 is available here <https://bookstore.gpo.gov/products/sku/033000013141> Dressing for Altitude U S Aviation Pressure Suits Wiley Post to Space Shuttle ePub format is available for purchase through the Apple iBookstore Please use ISBN 9780160915604 to search for this title in their platform Revolutionary Atmosphere The Story of the Altitude Wind Tunnel and the Space Power Chambers is available here <https://bookstore.gpo.gov/products/sku/033000013426> Other products produced by NASA can be found here <https://bookstore.gpo.gov/agency/550> *Wings in Orbit* Wayne Hale, Helen Lane, Gail Chapline, Kamlesh Lula, 2011-06-10 The Space Shuttle is an engineering marvel perhaps only exceeded by the station itself The shuttle was based on the technology of the 1960s and early 1970s It had to overcome significant challenges to make it reusable Perhaps the greatest challenges were the main engines and the Thermal Protection System The program has seen terrible tragedy in its 3 decades of operation yet it has also seen marvelous success One of the most notable successes is the Hubble Space Telescope a program that would have been a failure without the shuttle's capability to rendezvous capture repair as well as upgrade Now Hubble is a shining example of success admired by people around the world As the program comes to a close it is important to capture the legacy of the shuttle for future generations That is what *Wings In Orbit* does for space fans students engineers and scientists This book written by the men and women who made the program possible will serve as an excellent reference for building future space vehicles We are proud to have played a small part in making it happen Our journey to document the scientific and engineering accomplishments of this magnificent winged vehicle began with an audacious proposal to capture the passion of those who devoted their energies to its success while answering the question What are the most significant accomplishments of the longest operating human spaceflight program in our nation's history

This is intended to be an honest accurate and easily understandable account of the research and innovation accomplished during the era *Wings in Orbit* National Aeronautics Administration, 2012-11-15 This publication Authoritatively documents the many accomplishments of NASA's Space Shuttle Program from its origins to the present Beginning with a Foreword by astronauts John Young and Robert Crippen this compelling book provides clear accurate and authentic accounts from NASA's best subject matter experts including aerospace engineers who worked with the shuttle program and leading experts from the science and academic communities The book captures the passion of those who devoted their energies to the program's success for more than three decades It focuses on their science and engineering accomplishments the rich history of the program and the shuttle as an icon in U S history Its comprehensive overview of the shuttle and its accomplishments combined with its lucid prose makes *Wings in Orbit* a unique resource for anyone interested in the history and achievements of American space exploration The first great age of space exploration culminated with the historic lunar landing in July 1969 Following that achievement the space policymakers looked back to the history of aviation as a model for the future of space travel The Space Shuttle was conceived as a way to exploit the resources of the new frontier Using an aviation analogy the shuttle would be the Douglas DC 3 of space That aircraft is generally considered to be the first commercially successful air transport The shuttle was to be the first commercially successful space transport This impossible leap was not realized an unrealistic goal that appears patently obvious in retrospect yet it haunts the history of the shuttle to this day Much of the criticism of the shuttle originates from this overhyped initial concept In fact the perceived relationship between the history of aviation and the promise of space travel continues to motivate space policymakers In some ways the analogy that compares space with aviation can be very illustrative If the first crewed spacecraft of 1961 are accurately the analog of the Wright brothers first aircraft the Apollo spacecraft of 1968 should properly be compared with the Wright brothers 1909 Model B their first commercial sale The B was the product of 6 years of tinkering experimentation and adjustments but were only two major iterations of aircraft design In much the same way Apollo was the technological inheritor of two iterations of spacecraft design in 7 years The Space Shuttle of 1981 coming 20 years after the first spaceflights could be compared with the aircraft of the mid 1920s In fact there is a good analogy in the history of aviation the Ford Tri Motor of 1928 But here the aviation analogy breaks down In aviation history advances are made not just because of the passage of calendar time but because there are hundreds of different aircraft designs with thousands of incremental technology advances tested in flight between the B and the Tri Motor Even so the aviation equivalent compression of decades of technological advance does not do justice to the huge technological leap from expendable rockets and capsules to a reusable winged hypersonic cargo carrying spacecraft This was accomplished with no intermediate steps Viewed from that perspective the Space Shuttle is truly a wonder No doubt the shuttle is but one step of many on the road to the stars but it was a giant leap indeed That is what this book is about not what might have been or what was impossibly promised but what

was actually achieved and what was actually delivered Viewed against this background the Space Shuttle was a tremendous engineering achievement a vehicle that enabled nearly routine and regular access to space for hundreds of people and a profoundly vital link in scientific advancement The vision of this book is to take a clear eyed look at what the shuttle accomplished and the shuttle s legacy to the world This book will serve as an excellent reference for building future space vehicles

Wings in Orbit Wayne Hale, Helen Woods Lane, United States. National Aeronautics and Space Administration, 2010 Explains how the space shuttle works and describes a shuttle trip from lift off to touchdown

Wings in Orbit N. Wayne Hale, Nasa Technical Reports Server (Ntrs), Et Al, 2013-06 This Space Shuttle book project reviews Wings In Orbit scientific and engineering legacies of the Space Shuttle The contents include 1 Magnificent Flying Machine A Cathedral to Technology 2 The Historical Legacy 3 The Shuttle and its Operations 4 Engineering Innovations 5 Major Scientific Discoveries 6 Social Cultural and Educational Legacies 7 Commercial Aerospace Industries and Spin offs and 8 The Shuttle continuum Role of Human Spaceflight

*Wings In Orbit, Scientific and Engineering Legacies of the Space Shuttle, NASA/SP-2010-3409, 1971-2010, *. , 2011*

After Apollo? John M. Logsdon, 2015-04-02 Once the United States landed on the moon in July 1969 it was up to President Nixon to decide what to do in space after Apollo This book chronicles the decisions he made including ending space exploration and approving the space shuttle Those decisions determined the character of the US human space flight program for the next forty years

Select astronaut observations and highlights of Space Shuttle Program payloads and experiments Helen Lane, 2011

Flying Magazine , 2002-08

Space Shuttle Marshall H. Kaplan, 1978

From Runway to Orbit Kenneth W. Iliff, Curtis Peebles, 2004 NOTE NO FURTHER DISCOUNT FOR THIS PRINT PRODUCT OVERSTOCK SALE Significantly reduced list price while supplies last

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Three Decades to a Space Shuttle D. M. Wylie, 2004 Three Decades to a Space Shuttle is the story of the evolution of space flight beginning with G force experiments in 1947 at Edwards Air Force Base Visionary concepts followed in 1951 and an evolutionary progression to space flight eventually led to the first shuttle flight in 1981 three decades later The expertise of the American engineering and scientific community is examined which chronologically forged new technology Columbia s first flight in 1981 was the culmination of a series of evolutionary steps one at a time over thirty years The justifications of major budget allocations are shown and the resulting benefits to world populations are discussed The space program and Government financing of private industry led to economical stability and brought our technical and

scientific capability to a level not thought possible thirty years ago Joint cooperation between American industry and government combined with foreign competition has enhanced world business and trade A study of the past shows us what our possibilities can be in the future and what new frontiers we may experience **To Orbit and Back Again** Davide Sivoletta, 2013-08-27 The Space Shuttle has been the dominant machine in the U S space program for thirty years and has generated a great deal of interest among space enthusiasts and engineers This book enables readers to understand its technical systems in greater depth than they have been able to do so before The author describes the structures and systems of the Space Shuttle and then follows a typical mission explaining how the structures and systems were used in the launch orbital operations and the return to Earth Details of how anomalous events were dealt with on individual missions are also provided as are the recollections of those who built and flew the Shuttle Many photographs and technical drawings illustrate how the Space Shuttle functions avoiding the use of complicated technical jargon The book is divided into two sections Part 1 describes each subsystem in a technical style supported by diagrams technical drawings and photographs to enable a better understanding of the concepts Part 2 examines different flight phases from liftoff to landing Technical material has been obtained from NASA as well as from other forums and specialists Author Davide Sivoletta is an aerospace engineer with a life long interest in space and is ideally qualified to interpret technical manuals for a wider audience This book provides comprehensive coverage of the topic including the evolution of given subsystems reviewing the different configurations and focusing on the solutions implemented The Space Shuttle Decision T. A. Heppenheimer, 1999 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

The Space Shuttle David M. Harland,1998-07-14 Presents the Space Shuttle as a utilitarian craft focusing on its origins operations and importance to many scientific missions

Bold They Rise David Hitt,Heather R. Smith,2014-06-01 After the Apollo program put twelve men on the moon and safely brought them home anything seemed possible In this spirit the team at NASA set about developing the Space Shuttle arguably the most complex piece of machinery ever created The world s first reusable spacecraft it launched like a rocket landed like a glider and carried out complicated missions in between **Bold They Rise** tells the story of the Space Shuttle through the personal experiences of the astronauts engineers and scientists who made it happen in space and on the ground from the days of research and design through the heroic accomplishments of the program to the tragic last minutes of the Challenger disaster In the participants own voices we learn what so few are privy to what it was like to create a new form of spacecraft to risk one s life testing that craft to float freely in the vacuum of space as a one man satellite to witness a friend s death A guided tour of the shuttle in historical scientific and personal terms this book provides a fascinating richly informed and deeply personal view of a feat without parallel in the human story Browse more spaceflight books at upinspace.org

Memories of the Apollo and Space Shuttle Programs Lawrence Korb,2017-07-14 I have had the privilege of being an engineer who worked on both the Apollo and Space Shuttle Orbiter Programs for more than 45 years It has been a fascinating and rewarding experience along with its share of pressures and disappointments Come take this exciting journey with me In this book I present the contributions of 30 key scientists who over a period of 2500 years made the Moon visit possible in my lifetime I review the birth of the Space Age early Russian dominance in the sixties and the successful landing on the Moon The details of the failure analyses of the Apollo Fire which cost the lives of three Apollo astronauts are presented along with the corrective actions taken I cover the contribution of the Mercury and Gemini programs the details of the design of the Apollo and the greatest material challenges we faced The book also describes the Lunar Module without its concept we may have never made the Moon landings The book also details how we beat the Russians to the Moon covers all Apollo missions and how we saved the Apollo 13 astronauts Finally I present what I consider to be the Apollo legacy This book presents the details of the building of the Space Shuttle Orbiter and the crucial development of its heat shield It also points out key failures that had to be resolved Included is a Chapter on the Russian Space Shuttle the Buran comparing it to the Space

Shuttle Orbiter The book covers the failure of the Challenger Spacecraft and what went wrong as well as how we determined the cause of the Columbia Spacecraft failure It also discusses the science of reentry of the Space Shuttle Orbiter the future of manned space and the legacy of the Space Shuttle This book is a detailed documentary of the American s manned space programs Read on and enjoy

The History of the American Space Shuttle Dennis R. Jenkins,2019-11-28 Detailed history of the American Space Shuttle Program from award winning NASA insider Each mission is reviewed from its early inception to delivering the remaining vehicles to their final display sites Covers the history of reusable winged spacecraft from the 1920s throughout the final mission of the American space shuttle

From Runway to Orbit Kenneth W. Iliff,Curtis L. Peebles,2020-10-09 In this remarkable memoir Dr Kenneth W Iliff the recently retired Chief Scientist of the NASA Dryden Flight Research Center tells a highly personal yet a highly persuasive account of the last forty years of American aeronautical research His interpretation of events commands respect because over these years he has played pivotal roles in many of the most important American aeronautics and spaceflight endeavors Moreover his narrative covers much of the second half of the first 100 years of flight a centennial anniversary being celebrated this year Dr Iliff s story is one of immense contributions to the nation s repository of aerospace knowledge He arrived at the then NASA Flight Research Center in 1962 as a young aeronautical engineer and quickly became involved in two of the seminal projects of modern flight the X 15 and the lifting bodies In the process he pioneered with Lawrence Taylor the application of digital computing to the reduction of flight data arriving at a method known as parameter estimation now applied the world over Parameter estimation not only enabled researchers to acquire stability and control derivatives from limited flight data but in time allowed them to obtain a wide range of aerodynamic effects Although subsequently involved in dozens of important projects Dr Iliff devoted much of his time and energy to hypersonic flight embodied in the Shuttle orbiter or as he refers to it the world s fastest airplane To him each Shuttle flight instrumented to obtain a variety of data represents a research treasure trove one that he has mined for years This book then represents the story of Dr Ken Iliff s passion for flight his work and his long and astoundingly productive career It can be read with profit not just by scientists and engineers but equally by policy makers historians and journalists wishing to better comprehend advancements in flight during the second half of the twentieth century

Space Shuttle, a Quantum Leap George J. Torres,1986

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