

Hypersonic The Story Of The North American X 15 S

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Breaking the Chains of Gravity Amy Shira Teitel 2015-10-22 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.

U.S. Experimental & Prototype Aircraft Projects William Norton 2008-09-30 This book focuses on those American fighter projects of WWII that never reached combat forces, or only in a very limited manner. The book illuminates little known or minimally documented aircraft and projects that significantly advanced fighter design that never went into full-rate production and deployment.

Lockheed Blackbird Family Tony R. Landis 2010-03-01 Still the world's most popular and most exciting aircraft, the Lockheed family of A-12, YF-12, D-21/M-21, and SR-71 Blackbirds are to this day the highest-performance jet-

powered airplanes ever flown. They have set numerous world speed and altitude records for manned aircraft powered by air-breathing engines that theoretically may never be broken. Although no longer operational, A-12s and SR-71s flew for nearly three decades at speeds in excess of Mach 3 and altitudes of up to 90,000 feet. Expanding on the successful sales of all Specialty Press Blackbird publications is this natural extension of our product line created by compiling many never-before-published photos coupled with new de-classified information recently released by the CIA, including black-and-white and color photos of A-12 cockpits, early camera installations, and never-before-seen special camouflage schemes.

The Wind and Beyond James R. Hansen 2003 Volume 1 relates the story of the invention of the airplane by the Wright brothers and the creation of the original aeronautical research establishment in the United States.

The Hypersonic Revolution: From Max Valier to Project PRIME, 1924-1967 1998

North American X-15 Peter E. Davies 2017-05-18 The revolutionary X-15 remains the fastest manned aircraft ever to fly. Built in the two decades following World War II, it was the most successful of the high-speed X-planes. The only recently broken 'sound barrier' was smashed completely by the X-15, which could hit Mach 6.7 and soar to altitudes above 350,000ft, beyond the edge of space. Several pilots qualified as astronauts by flying above 50 miles altitude in the X-15, including Neil Armstrong, the first man on the Moon. The three X-15s made 199 flights, testing new technologies and techniques which greatly eased America's entry into manned space travel, and made the Apollo missions and Space Shuttle viable propositions. With historical photographs and stunning digital artwork, this is the story of arguably the greatest of the X-Planes.

The Wind and Beyond: The ascent of the airplane 2003

NASA's Contributions to Aeronautics Richard Hallion 2010 Two-volume collection of case studies on aspects of NACA-NASA research by noted engineers, airmen, historians, museum curators, journalists, and independent scholars. Explores various aspects of how NACA-NASA research took aeronautics from the subsonic to the hypersonic era.-publisher description.

X-15 John Anderson 2014-02-15 "The X-15, which flew from 1959-1970, is still the most advanced research aircraft ever developed and flown, and hangs in a place of honor in the Smithsonian's Air and Space Museum. Its test pilots not only reached the edge of space, but their skill and daring helped engineers understand hypersonic speed and thus pave the way for the Space Shuttle"--

X-15 Dennis R. Jenkins 2007 1. A new science / 2. A hypersonic research airplane / 3. Conflict and innovation / 4. The million-horsepower engine / 5. High range and dry lakes / 6. Preparations / 7. The flight program / 8. The research program.

Modeling Flight NASA Latest Version Joseph Chambers 2015-08-10 state of the art in aeronautical engineering has been continually accelerated by the development of advanced analysis and design tools. Used in the early design stages for aircraft and spacecraft, these methods have provided a fundamental understanding of physical phenomena and enabled designers to predict and analyze critical characteristics of new vehicles, including the capability to control or modify unsatisfactory behavior. For example, the relatively recent emergence and routine use of extremely powerful digital computer hardware and software has had a major impact on design capabilities and procedures. Sophisticated new airflow measurement and visualization systems permit the analyst to conduct micro- and macro-studies of properties within flow fields on and off the surfaces of models in advanced wind tunnels. Trade studies of the most efficient geometrical shapes for aircraft can be conducted with blazing speed within a broad scope of integrated technical disciplines, and the use of sophisticated piloted simulators in the vehicle development process permits the most important segment of operations—the human pilot—to make early assessments of the acceptability of the vehicle for its intended mission. Knowledgeable applications of these tools of the trade dramatically reduce risk and redesign, and increase the marketability and safety of new aerospace vehicles.

Future Spacecraft Propulsion Systems Claudio Bruno 2009-03-20 An understandable perspective on the types of space propulsion systems necessary to enable low-cost space flights to Earth orbit and to the Moon and the future developments necessary for exploration of the solar system and beyond to the stars.

Critical Issues in the History of Spaceflight Steven J. Dick 2006 In March 2005, the NASA History Division and the Division of Space History at the National Air and Space Museum brought together a distinguished group of scholars to consider the state of the discipline of space history. This volume is a collection of essays based on those deliberations. The meeting took place at a time of extraordinary transformation for NASA, stemming from the new Vision of Space Exploration announced by President George W. Bush in January 2004: to go to the Moon, Mars, and beyond. This Vision, in turn, stemmed from a deep reevaluation of NASA's goals in the wake of the Space Shuttle Columbia accident and the recommendations of the Columbia Accident Investigation Board. The new goals were seen as initiating a "New Age of Exploration" and were placed in the context of the importance of exploration and discovery to the American experiences. (Amazon).

Testing Aircraft, Exploring Space Roger E. Bilstein 2003 Selected by Choice Magazine as an Outstanding Academic Title for 2003 The National Advisory Committee for Aeronautics—forerunner of today's NASA—emerged in 1915, when airplanes were curiosities made of wood and canvas and held together with yards of baling wire. At the time an unusual example of government intrusion (and foresight, given the importance of aviation to national military concerns), the committee oversaw the development of wind tunnels, metal fabrication, propeller design, and powerful new high-speed aircraft during the 1920s and '30s. In this richly illustrated account, acclaimed historian of aviation Roger E. Bilstein

combines the story of NACA and NASA to provide a fresh look at the agencies, the problems they faced, and the hard work as well as inventive genius of the men and women who found the solutions. NACA research during World War II led to critical advances in U.S. fighter and bomber design and, Bilstein explains, contributed to engineering standards for helicopters. After 1945 the agency's test pilots experimented with jet-powered aircraft, testing both human and technical limits in trying to break the so-called "sound barrier." In October 1958, when the launch of the Soviet Sputnik signaled the beginning of the space race, NACA formed the nucleus of the new National Aeronautics and Space Agency. The new agency's efforts to meet President Kennedy's challenge—safely landing a man on the Moon and returning him to Earth before the end of the 1960s—is one of the great adventure stories of all time. Bilstein goes on to describe NASA's recent planetary and extraplanetary exploration, as well as its less well-known research into the future of aeronautical design.

Beyond Blue Skies Chris Petty 2020-11 In 1945 some experts still considered the so-called sound barrier an impenetrable wall, while winged rocket planes remained largely relegated to science fiction. But soon a series of unique rocket-powered research aircraft and the dedicated individuals who built, maintained, and flew them began to push the boundaries of flight in aviation's quest to move ever higher, ever faster, toward the unknown. *Beyond Blue Skies* examines the thirty-year period after World War II during which aviation experienced an unprecedented era of progress that led the United States to the boundaries of outer space. Between 1946 and 1975, an ancient dry lakebed in California's High Desert played host to a series of rocket-powered research aircraft built to investigate the outer reaches of flight. The western Mojave's Rogers Dry Lake became home to Edwards Air Force Base, NASA's Flight Research Center, and an elite cadre of test pilots. Although one of them—Chuck Yeager—would rank among the most famous names in history, most who flew there during those years played their parts away from public view. The risks they routinely accepted were every bit as real as those facing NASA's astronauts, but no magazine stories or free Corvettes awaited them—just long days in a close-knit community in the High Desert. The role of not only the test pilots but the engineers, aerodynamicists, and support staff in making supersonic flight possible has been widely overlooked. *Beyond Blue Skies* charts the triumphs and tragedies of the rocket-plane era and the unsung efforts of the men and women who made amazing achievements possible.

Critical issues in the history of spaceflight Steven J. Dick 2018

From Runway to Orbit Kenneth W. Iliff 2004 NASA SP 2004-4109. NASA History Series. Presents the memoirs of Dr. Kenneth W. Iliff, the retired Chief Scientist of NASA Dryden Flight Research Center. He worked at NASA from 1962-2002.

Spaceplanes Matthew A. Bentley 2009-03-02 *Spaceplanes From Airport to Spaceport* presents a coherent, lucid, and optimistic picture of the future of the near future. Space vehicles may soon take off from international airports and refuel

in space. New technologies could allow flights to take off regularly between the Earth and the Moon. The technical details presented explain precisely how all this can be accomplished within the next few decades. This book also explains why the Space Tourist market could easily become the single most important factor in the mid-term future development of space transportation. In a few years it will be possible to board a spaceplane and fly into Earth orbit, and perhaps visit a space station. Later development could include refuelling in orbit to take a tour of cislunar space. The book's solid engineering foundation will be of interest to both space exploration enthusiasts and future space travelers.

World's Fastest Single-Engine Jet Aircraft Col. Doug Barbier 2017-04-17
Developed for the Air Force in the early 1950s as a next-generation interceptor following Convair's pioneering delta-wing F-102, the F-106 excelled in every aspect of the Air Defense Command mission. With its advanced Hughes radar system, Falcon air-to-air missiles, and a top speed in excess of Mach 2, the Delta Dart became known as "the ultimate interceptor," able to scramble, launch, find its targets, and blow them out of the sky. The 'Dart was also the lightest-weight aircraft ever powered by a Pratt & Whitney J75 turbojet. This book provides an insightful and in-depth look at the sixth member of the Air Force "Century Series" family of supersonic fighters. From initial concept through early flight test and development and into operational service, every facet of the F-106's career is examined and explained in comprehensive, yet easy-to-read text. All USAF Air Defense Command units that operated F-106s are covered, and aircraft markings and color schemes are included as well. The Convair F-106 remains to this day as one of the most successful military aircraft ever built. This book now gives the reader a thorough and meticulous reference source on the F-106 using excellent photographs and technical illustrations to tell the story of this history-making aircraft, while also providing valuable detailed information for modelers and historians.

The Wind and Beyond 2003

Dressing for Altitude Dennis R. Jenkins 2012-08-27 "Since its earliest days, flight has been about pushing the limits of technology and, in many cases, pushing the limits of human endurance. The human body can be the limiting factor in the design of aircraft and spacecraft. Humans cannot survive unaided at high altitudes. There have been a number of books written on the subject of spacesuits, but the literature on the high-altitude pressure suits is lacking. This volume provides a high-level summary of the technological development and operational use of partial- and full-pressure suits, from the earliest models to the current high altitude, full-pressure suits used for modern aviation, as well as those that were used for launch and entry on the Space Shuttle. The goal of this work is to provide a resource on the technology for suits designed to keep humans alive at the edge of space."--NTRS Web site.

Hypersonics Before the Shuttle: A Concise History of the X-15 Research Airplane
2000

Breaking the Mishap Chain Peter W. Merlin This volume contains a collection of case studies of mishaps involving experimental aircraft, aerospace vehicles, and spacecraft in which human factors played a significant role. In all cases the engineers involved, the leaders and managers, and the operators (i.e., pilots and astronauts) were supremely qualified and by all accounts superior performers. Such accidents and incidents rarely resulted from a single cause but were the outcome of a chain of events in which altering at least one element might have prevented disaster. As such, this work is most certainly not an anthology of blame. It is offered as a learning tool so that future organizations, programs, and projects may not be destined to repeat the mistakes of the past. These lessons were learned at high material and personal costs and should not be lost to the pages of history.

The Last of NASA's Original Pilot Astronauts David J. Shayler 2017-06-19 Resulting from the authors' deep research into these two pre-Shuttle astronaut groups, many intriguing and untold stories behind the selection process are revealed in the book. The often extraordinary backgrounds and personal ambitions of these skilled pilots, chosen to continue NASA's exploration and knowledge of the space frontier, are also examined. In April 1966 NASA selected 19 pilot astronauts whose training was specifically targeted to the Apollo lunar landing missions and the Earth-orbiting Skylab space station. Three years later, following the sudden cancellation of the USAF's highly classified Manned Orbiting Laboratory (MOL) project, seven military astronauts were also co-opted into NASA's space program. This book represents the final chapter by the authors in the story of American astronaut selections prior to the era of the Space Shuttle. Through personal interviews and original NASA documentation, readers will also gain a true insight into a remarkable age of space travel as it unfolded in the late 1960s, and the men who flew those historic missions.

NASA's Contributions to Aeronautics: Flight environment, operations, flight testing, and research 2010 Two-volume collection of case studies on aspects of NACA-NASA research by noted engineers, airmen, historians, museum curators, journalists, and independent scholars. Explores various aspects of how NACA-NASA research took aeronautics from the subsonic to the hypersonic era.- publisher description.

Hypersonic Dennis R. Jenkins 2008-07-23 This is the most extensively researched history of the X-15 program yet produced, written with the cooperation of surviving X-15 pilots as well as many other program principals.

Digital Apollo David A. Mindell 2011-09-30 The incredible story of how human pilots and automated systems worked together to achieve the ultimate achievement in flight—the lunar landings of NASA's Apollo program As Apollo 11's Lunar Module descended toward the moon under automatic control, a program alarm in the guidance computer's software nearly caused a mission abort. Neil Armstrong responded by switching off the automatic mode and taking direct control. He stopped monitoring the computer and began flying the spacecraft, relying on skill to land it and earning praise for a triumph of human over

machine. In *Digital Apollo*, engineer-historian David Mindell takes this famous moment as a starting point for an exploration of the relationship between humans and computers in the Apollo program. In each of the six Apollo landings, the astronaut in command seized control from the computer and landed with his hand on the stick. Mindell recounts the story of astronauts' desire to control their spacecraft in parallel with the history of the Apollo Guidance Computer. From the early days of aviation through the birth of spaceflight, test pilots and astronauts sought to be more than "spam in a can" despite the automatic controls, digital computers, and software developed by engineers. *Digital Apollo* examines the design and execution of each of the six Apollo moon landings, drawing on transcripts and data telemetry from the flights, astronaut interviews, and NASA's extensive archives. Mindell's exploration of how human pilots and automated systems worked together to achieve the ultimate in flight—a lunar landing—traces and reframes the debate over the future of humans and automation in space. The results have implications for any venture in which human roles seem threatened by automated systems, whether it is the work at our desktops or the future of exploration.

The X-15 Rocket Plane Michelle Evans 2020-04-01 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.

X-Planes from the X-1 to the X-60 Michael H. Gorn 2021 For the past 75 years, the U.S. government has invested significant time and money into advanced aerospace research, as evidenced by its many experimental X-plane aircraft and rockets. *NASA's X-Planes* asks a simple question: What have we gained from it all? To answer this question, the authors provide a comprehensive overview of the X-planes long history, from the 1946 X-1 to the modern X-60. The chapters describe not just the technological evolution of these models, but also the wider story of politics, federal budgets, and inter-agency rivalries surrounding them. The book is organized into two sections, with the first covering the operational X-planes that symbolized the Cold War struggle between the U.S. and the U.S.S.R, and the second section surveying post-Cold War aircraft and spacecraft. Featuring dozens of original illustrations of X-plane

cross-sections, in-flight profiles, close-ups, and more, this book will educate general readers and specialists alike.

Future Spacecraft Propulsion Systems Paul A. Czysz 2006-09-19 An understandable perspective on the types of space propulsion systems necessary to enable low-cost space flights to Earth orbit and to the Moon and the future developments necessary for exploration of the solar system and beyond to the stars.

High Temperature Materials and Mechanisms Yoseph Bar-Cohen 2014-03-03 The use of high-temperature materials in current and future applications, including silicone materials for handling hot foods and metal alloys for developing high-speed aircraft and spacecraft systems, has generated a growing interest in high-temperature technologies. High Temperature Materials and Mechanisms explores a broad range of issues related to high-temperature materials and mechanisms that operate in harsh conditions. While some applications involve the use of materials at high temperatures, others require materials processed at high temperatures for use at room temperature. High-temperature materials must also be resistant to related causes of damage, such as oxidation and corrosion, which are accelerated with increased temperatures. This book examines high-temperature materials and mechanisms from many angles. It covers the topics of processes, materials characterization methods, and the nondestructive evaluation and health monitoring of high-temperature materials and structures. It describes the application of high temperature materials to actuators and sensors, sensor design challenges, as well as various high temperature materials and mechanisms applications and challenges. Utilizing the knowledge of experts in the field, the book considers the multidisciplinary nature of high temperature materials and mechanisms, and covers technology related to several areas including energy, space, aerospace, electronics, and metallurgy. Supplies extensive references at the end of each chapter to enhance further study Addresses related science and engineering disciplines Includes information on drills, actuators, sensors and more A comprehensive resource of information consolidated in one book, this text greatly benefits students in materials science, aerospace and mechanical engineering, and physics. It is also an ideal resource for professionals in the industry.

US Spacesuits Kenneth S. Thomas 2007-09-11 * the most accurate and comprehensive work on U.S. spacesuits ever published. *A unique insight into the development of US spacesuits through to the present day. * Presents in context the authors' unique collection of 172 black and white photographs. * Explains why spacesuits are a last refuge for astronauts for survival. * Details many technically and historically interesting developments, but which never achieved fruition.

Mayday! David Darling 2015-10-01 In a world without aircraft, to believe flight might be possible required a certain kind of character. You had to be starry-eyed, a possessor of practical ingenuity, nerves of steel and a level of sanity that would be best described as deficient. In Mayday!, David Darling tells the stories of the unconventional aviators across history who have been willing to

risk all to further their craft. Meet Sophie Blanchard, a balloonist of nervous disposition whom Napoleon charged with organizing balloon displays at all major ceremonies in France. Then there's the daredevil stuntman Lincoln Beachey, the dogfighter aces of WWI, the man who performed the dance of death – switching planes in mid-air, the real "X-Men" who flew at the edge of space, and the BASE jumpers who want to fly without wings. The cast are eccentric, reckless and extraordinary, and *Mayday!* is made up of their riveting tales, bizarre contraptions, magnificent achievements and, sometimes, startling folly.

Coming Home Roger D. Launius 2012 NOTE; NO FURTHER DISCOUNT ON THIS PRINT PRODUCT-- OVERSTOCK SALE -- Significantly reduced list price The technologies for the reentry and recovery from space might change over time, but the challenge remains one of the most important and vexing in the rigorous efforts to bring spacecraft and their crews and cargo home successfully. Returning to Earth after a flight into space is a fundamental challenge, and contributions from the NASA Aeronautics Research Mission Directorate in aerodynamics, thermal protection, guidance and control, stability, propulsion, and landing systems have proven critical to the success of the human space flight and other space programs. Without this base of fundamental and applied research, the capability to fly into space would not exist. Other related products: NASA Historical Data Book, V. 7: NASA Launch Systems, Space Transportation/Human Spaceflight, and Space Science can be found here: <https://bookstore.gpo.gov/products/sku/033-000-01309-4>

Revolutionary Atmosphere: The Story of the Altitude Wind Tunnel and the Space Power Chambers can be found here: <https://bookstore.gpo.gov/products/sku/033-000-01342-6>

Spinoff: Innovative Partnerships Program 2009 can be found here: <https://bookstore.gpo.gov/products/sku/033-000-01331-1>

Spinoff 2010: NASA Technologies Benefit Society can be found here: <https://bookstore.gpo.gov/products/sku/033-000-01343-4>

Spinoff 2015: Technology Transfer Program can be found here: <https://bookstore.gpo.gov/products/sku/033-000-01372-8>

Aerospace, Astronomy & Space Exploration resources collection can be found here: <https://bookstore.gpo.gov/catalog/science-technology/aerospace-astronomy...>

Other products produced by the U.S. National Aeronautics and Space Administration (NASA) can be found here: <https://bookstore.gpo.gov/agency/550>

Future Spacecraft Propulsion Systems and Integration Paul A. Czysz 2017-08-30

The updated and expanded third edition of this book focuses on the multi-disciplinary coupling between flight-vehicle hardware alternatives and enabling propulsion systems. It discusses how to match near-term and far-term aerospace vehicles to missions and provides a comprehensive overview of the subject, directly contributing to the next-generation space infrastructure, from space tourism to space exploration. This holistic treatment defines a mission portfolio addressing near-term to long-term space transportation needs covering sub-orbital, orbital and escape flight profiles. In this context, a vehicle configuration classification is introduced covering alternatives starting from the dawn of space access. A best-practice parametric sizing approach is introduced to correctly design the flight vehicle for the mission. This

technique balances required mission with the available vehicle solution space and is an essential capability sought after by technology forecasters and strategic planners alike.

Space Exploration and Humanity: A Historical Encyclopedia [2 volumes] American Astronautical Society 2010-08-23 A complete history of human endeavors in space, this book also moves beyond the traditional topics of human spaceflight, space technology, and space science to include political, social, cultural, and economic issues, and also commercial, civilian, and military applications. • 580 articles describing various aspects of manned and unmanned space exploration, including a full range of social, technological, and political issues, such as government policy, nationalism, and the technology/military-driven economy • Six overview essays, introducing each of the encyclopedia's major sections and putting that aspect of space exploration into historical context • 136 contributors, many who are leading space historians and experts affiliated with the American Astronautical Society, make firsthand knowledge and fresh insights accessible to all audiences • Numerous photos, including stunning shots from space, star charts, technical drawings, and more • Short bibliographies conclude each entry, pointing readers to the best sources to find out more about the topic • A Glossary defining the various technical terms encountered in the encyclopedia

X-15 Photo Scrapbook Tony Landis 2003 The North American X-15 was the last in a line of manned rocket-powered research airplanes built during the 1950s to explore ever-faster and higher flight regimes. This was an era before computers were commonplace, and the only way to investigate the unknown was to go there. The program was launched in 1954 specifically to produce the first hypersonic (velocities greater than five times the speed of sound) manned aircraft. Forward-thinking researchers also decided to design the airplane to fly to the edge of space, long before the manned space program had begun in earnest. An in-depth history of the X-15 program may be found in *Hypersonic: The Story of the North American X-15* by Dennis R. Jenkins and Tony R. Landis. This book is a collection of illustrations that were assembled for *Hypersonic* but would not fit into the finished work. Since many of these are significant and most have never before been published, it was decided to print this scrapbook as a companion volume to *Hypersonic*. With over 350 b/w and 50 color photos, this scrapbook provides an excellent visual look at a very exciting research program. Dimensions (width x height): 9 x 9 inches # of pages 108 # of color photographs: 400 b/w & color photos

American X-vehicles Dennis R. Jenkins 2003

Hypersonics Before the Shuttle Dennis R. Jenkins 2000

NASA's Contributions to Aeronautics, Volume 2, Flight Environment . . . , NASA/SP-2010-570-Vol 2, 2010, * 2011

