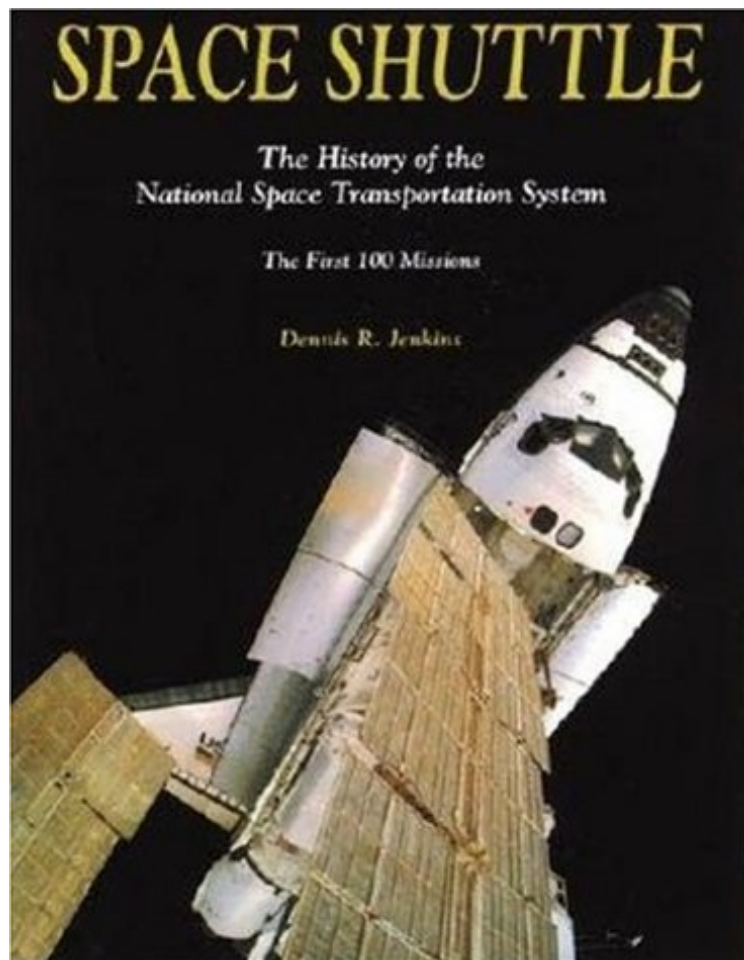


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## Space Shuttle: The History of the National Space Transportation System The First 100 Missions

*Dennis R. Jenkins*

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**Dennis R. Jenkins : Space Shuttle: The History of the National Space Transportation System The First 100 Missions** before purchasing it in order to gage whether or not it would be worth my time, and all praised Space Shuttle: The History of the National Space Transportation System The First 100 Missions:

7 of 7 people found the following review helpful. A great technical read that avoids asking difficult questions By ideas The product description is correct in saying that this book contains "enough minutiae of the space shuttle to enable, it seems, the building of one's own orbiter." On technical matters, this book is brilliant. It contains a depth of information about the shuttle that is probably unmatched anywhere else. The printed information and diagrams are

exhaustive, not just about the shuttle as it was built, but also about the dozens of proposals that came before the shuttle and influenced its design. If a technical history is what you seek, you'll find none better than this book. Although I enjoyed this book, it bills itself as a complete history of the shuttle, not just a technical history. The real shortcoming of the book is its failure to examine the shuttle program critically. A 2012 Forbes article said that "criticizing the Space Shuttle is like punching America in the face." While many people do have an instinctive need to defend the shuttle at all costs, the fact is that the shuttle was delivered years late and came with enormous cost overruns, limited capability, and multiple safety problems that were impossible to remedy. It's important to remember the promises NASA made for the shuttle. In the 1970s it was sold as a safe, extremely low cost, reliable means to access space on a weekly basis. It would serve the needs of both commercial launch customers and the US military. In short, it would be so cheap and versatile that it would make disposable rockets a relic of the past. These promises turned out not just to be unrealistic, but unrealistic in the extreme. Just five years into operating a vehicle that endured for three decades, NASA found itself with a spacecraft that had killed seven astronauts, entered service years late, was exorbitantly expensive to develop and operate, was prohibited from launching commercial satellites, had been abandoned by the military, and had failed to outperform the expendable rockets it was designed to replace. Few technical programs could have survived after such an extreme turn of fortunes, but NASA doubled down with a brave face, and the program carried on. The circumstances of how NASA kept the shuttle going in the face of harsh realities is a story that really should be told. The people selling the shuttle in the 1970s were promising reliable access to space for the low, low price of \$118 per pound of payload. If Congress would just allocate a few billion dollars to develop this revolutionary vehicle, the extreme savings made possible with shuttle operations would pile up year after year. It all sounded great, but the promised per-pound cost of \$118 per pound ended up being as high as \$27,000 per pound. Shuttle launches that were projected to cost \$12 million ended up costing well over \$1 billion, a staggering sum of money for one launch to low earth orbit. This book explains such discrepancies in terms like "estimates had been unrealistically low" (page 288). That sentence deserves the lifetime achievement award for understatement. Any way you look at the shuttle's performance on cost, it was a complete debacle. The shuttle failed to deliver on lots of other promises too. You get little sense of that reading this book, little explanation for why NASA's predictions were so tragically wrong. On topics such as these, the author's long association with United Space Alliance may be telling. USA's bread was buttered on both sides by billions of shuttle dollars, which is a reasonable explanation for why the author goes out of his way to present a "go shuttle!" attitude while steadfastly avoiding asking unpleasant questions. I could give dozens of examples, but here are just a couple. The book gives the impression that NASA management had no idea that cold temperatures endangered the Challenger mission. "No critical issues were identified to NASA or contractor management officials", the book claims (page 277). It's common knowledge that Larry Mulloy (NASA's manager of the SRB project for Marshall Space Flight Center) was on the phone the night before the Challenger launch, arguing with Thiokol management, pressuring for their support to launch against the advice of Thiokol's best SRB engineers. (How is Mulloy not considered part of NASA management?). If you look at the history of that conference call, NASA managers were clearly more concerned about maintaining shuttle flight schedules than they were about the safety questions raised. True, there probably were higher ups in NASA management who didn't know of the debate over the Challenger launch, but NASA's failure to coordinate and communicate the risk to Challenger across multiple levels of management was a big part of its failing. Donald J. Kutyna raised the issue in a very revealing manner at the Challenger review board hearings: "If this were an airplane and I just had a two-hour argument with Boeing on whether the wing was going to fall off or not, I think I would tell the pilot, at least mention it." The Challenger disaster was as much a failure of management as a technical failure, but in this book, the people managing shuttle come in for only the mildest of criticism, and that criticism is delivered very gently. "The review board said these bad things about us". The fact that poor NASA management later contributed to the Columbia disaster (another 7 astronauts killed) only confirms that the Challenger review board had gotten it right about NASA's poor management of the program. Similarly, the book takes an uncritical view of the shuttle's inherent design shortcomings. The shuttle was a vehicle with little to no margin for crew safety during critical times during both launch and landing. With shuttle, there were numerous failure modes that would spell certain death for the crew. There was no practical way to quickly get the crew away from an exploding booster in time to save them, a capability that all previous NASA vehicles had. The shuttle was also susceptible to destruction on landing in a way that previous NASA spacecraft were not, as evidenced by the loss of Columbia. The fact that NASA would build such a vehicle so dangerous when compared to previous spacecraft is presented uncritically. The shuttle might make a risky business much more dangerous than before, but this is a bold new vehicle and we must ride it. Really? In numerous instances, the author presents data that raises unpleasant questions, yet he refuses to acknowledge the obvious implications of the data. On page 246, the author says that NASA anticipated 581 shuttle flights over a 20 year period. Later, he says NASA had determined through repetitive studies that an average of 2% of shuttle flights would end in catastrophic failure during launch, as well as an additional 1% that would fail on landing (page 281). If NASA planned to fly nearly 600 shuttle missions, losing 3 shuttles for every 100 flights, does it not logically follow that they would necessarily lose 18 shuttles and crews to various disasters? How would shuttle continue to fly with such a loss rate when NASA intended to build only 5

orbiters? If they did anticipate losing 18 flights, why would they max out shuttle flights with crews of 7 astronauts per flight? Did NASA actually consider it acceptable to lose 126 astronauts during the normal course of the shuttle program? Clearly that seems wildly implausible, but as with so many things related to the shuttle, NASA's numbers were little more than fiction designed to sell the program to Congress. It shouldn't be news to anyone that manned space flight will always involve risk to life, but why did NASA behave as it did for so many years? Knowing that 3% of shuttle flights would fail, why would they promote shuttle flights as routine and safe, touting the advantages of safe, reliable "shirt sleeve" access to space? Why recruit civilians like Christa McAuliffe (the first of many civilians intended to fly on shuttle) if they knew full well that 3% of those flights would end in disaster? Yet, the author never asks these questions. In a book of over 500 pages, clearly there was an opportunity to do so. But the approach here is matter of fact. Space is hard and we always knew people would die (Go shuttle!). All in all, I found this book to be an unparalleled technical history, though one that lacks an honest evaluation of the shuttle's performance. It steadfastly avoids a realistic discussion of the ways in which the shuttle didn't live up to its promises, never asking what could have been accomplished with the \$209 billion NASA spent on the shuttle, had they developed a more practical vehicle instead. While this book is excellent on technical details, readers would be well served by seeking other perspectives on the program that consider the failures of the program as well as its successes. 3.5 stars. 1 of 1 people found the following review helpful. This is an awesome book! By Richard S This is a really great book and worth getting if you have any interest in the (now defunct) shuttle program. It really makes you appreciate the amount of work and time the people at NASA and the various sub-contractors put into getting the shuttle built and flown. This book reminded me of a university text book, it has that sort of heft and appearance. The history and illustrations are fantastic and the writing is excellent. My exposure to the shuttle program was slightly more than the average person's in that I was asked to transfer some of the drawings to Autocad format from the originals (printed), but that was only for a cable, so it's not much, but I feel I contributed more than just my tax dollars ;) I wish the shuttle was still active but time moves on. Not to make this review political, but hopefully in the coming years, the USA will not abandon the knowledge and technologies that made all this possible. There is no substitute for manned space flight. 2 of 2 people found the following review helpful. Awesome Technical Insight to the Space Shuttle Program By Joseph T. Page II Mr. Dennis Jenkins' book, "Space Shuttle: The History of the National Space Transportation System: The First 100 Missions" is one of the most amazing technical books on space vehicles ever printed. The amount of historical, technical, and operational information packed into these couple hundred pages is AMAZING!! While not slighting the STS program, Mr. Jenkins did a wonderful job of outlining the "shuttle" concept from the ideas of Dr. Eugen Sanger to the present day model. Almost 1/3 of the book is composed of ideas that merged to form the present day system. The end of the book even includes proposed shuttle replacements like "Shuttle-C" heavy-lift vehicle. Mission coverage is outstanding, albeit somewhat confusing in a paragraph style. A great feature is the "Common Payloads" boxes that list all shuttle payloads of a particular type (military, TDRS, commercial, Spacelab, etc.) - it has been helpful when referencing certain shuttle aspects. A mid-book color spread has the insignias of the missions covered by the book. An additional bonus is his in-depth research on the "other" shuttle launch and landing site - Vandenberg AFB. Mothballed after the Manned Orbiting Laboratory program, Vandenberg was chosen to launch military missions... until the Challenger disaster of 1986. Not many publications have good information on Vandy, but his tops the list with diagrams and photos of shuttle pad tests. While most shuttle books have pointed political agendas, either vilifying it after the Apollo moon missions, or praising it as the "second coming" of space flight, this text is appropriately apolitical. Its power lies in the breadth and depth of technical information about the Space Transportation System. If you like technical publications and love space flight, this is a "MUST OWN!"

This history chronicles the development of reusable spacecraft, including the full and fascinating history of Space Shuttle flights and all developmental and experimental craft. This book has been totally revised and updated since it was last published in 1996.

From Booklist Banking on space enthusiasts' appetite for detail, Jenkins delves into enough minutiae of the space shuttle to enable, it seems, the building of one's own orbiter. Schematic diagrams abound, as do more than 1,000 photos of all aspects of the space shuttle system: construction, maintenance, transportation (piggyback on 747s), and launch pad infrastructure. Curiously, the launches constitute a minor visual element in Jenkins' presentation, but the book is aimed at technophiles, not Canaveral tourists rubbernecking a blastoff. The engineering oriented will linger over Jenkins' history of the design of reusable spacecraft, which began on the drawing boards of Nazi rocket scientists who proposed an atmosphere-skipping craft to bomb New York. The American military's desire for a nuclear bomber lay behind the first space shuttle project, the canceled Dyna-Soar spacecraft of the early 1960s. When revived in the early 1970s, minus the bomb bay, the space shuttle showed a compromise configuration; its might-have-been structures are attested by drawings of about 40 alternative concepts. Hard-core space fans will have all they can handle in Jenkins' comprehensive catalog. Gilbert Taylor Copyright © American Library Association. All rights reserved "It is a superb title, full of fact, figures and crammed with high quality images so we have no reservations in highly

recommending it." -Model Airplane International, March 2010 (Model Airplane International 2010-03-01)About the AuthorDennis R. Jenkins worked on the Space Shuttle Program for over 20 years in a variety of technical and managerial positions. He has also worked on the X-33 program and is currently a consultant to the Orbital Space Plane program. In addition, he supported the Columbia Accident Investigation Board during their deliberations.