

## Book Review

***Final Countdown: NASA and the End of the Space Shuttle Program*, Pat Duggins, University Press of Florida, Gainesville, 2007 (265pp., \$24.95, ISBN: 978-08130-3146-0)**

Pat Duggins is one of the most respected journalists currently covering NASA's human spaceflight program, offering insightful analysis of the subject for National Public Radio from his base at WMFE-FM in Orlando, Florida. *Final Countdown: NASA and the End of the Space Shuttle Program* is a combined valentine/criticism of the Space Shuttle program that has operated from the Kennedy Space Center since 1981. It takes as its entrée the decision made in the aftermath of the *Columbia* accident on 1 February 2003, to retire the fleet by 2010 and to develop a new human spaceflight vehicle, the Orion capsule powered to orbit by the Ares I booster, to replace it.

While Duggins's concerns are very present tense, concentrating on the demise of the Space Shuttle program and its replacement, he also travels back in time to relate the history of the Shuttle from its approval in the aftermath of NASA's hugely successful Apollo Moon landing program. He takes a highly anecdotal approach to relating this story, relating in journalistic fashion episodes in the history of the Shuttle—some uncovered in his reporting on the program over the years—that illuminate its evolution. Mostly this is a straightforward narrative, told in an engaging style, with lavish personal tales to punctuate it. While entertaining, there is little in this book that members of the aerospace community will not already be at least somewhat familiar with.

As Duggins reports, the Space Shuttle was intended to make spaceflight routine, safe, and relatively inexpensive. Although NASA considered a variety of configurations, some of them quite exotic, it settled on a stage-and-one-half partially reusable vehicle with an approved development price tag of \$5.15 billion. On 5 January 1972 President Nixon announced the decision to build a Space Shuttle. He did so for both political reasons and for national prestige purposes. Politically, it would help a lagging aerospace industry in key states he wanted to carry in the 1972 election, especially California, Texas, and Florida. But building the Shuttle would also reaffirm the

USA's superpower status and help restore confidence in the nation's technological genius. After a decade of development, on 12 April 1981, *Columbia* took off for the first orbital test mission. It was successful and after only the fourth flight in 1982, President Ronald Reagan declared the system "operational". It would henceforth carry all US government payloads; military, scientific, and even commercial satellites could all be deployed from its payload bay. In the end, Duggins notes, the Shuttle program was an engagingly ambitious effort that developed an exceptionally sophisticated vehicle, one that no other nation on Earth could have built at the time. As such it has been enormously successful. At the same time, the shuttle was essentially a continuation of space spectacles, *à la* Apollo, and its much-touted capabilities were not fully realized. Despite its usefulness in constructing the International Space Station, it made far fewer flights and conducted far fewer scientific experiments than NASA had publicly predicted. This is a story well told in many venues, but Duggins relates it with a journalistic eye toward entertaining the reader while also informing.

Sometimes Duggins offers interesting insights unknown to all but the most diligent of students. For example, he highlights the supreme place of the US human spaceflight program that resulted from the presence of the Space Shuttle. As Duggins observed, much to the chagrin of rivals in space exploration, "The years of the space shuttle were relatively comfortable ones for NASA and the American public, where its place in the world of space exploration was concerned...With the exception of the Russians, anyone who wanted to go into orbit had to come to NASA 'hat in hand' and ask for a seat on the shuttle" (p. 27). NASA used that superiority, as did other US officials, as a foreign policy tool during both the Cold War and since. Likewise, Duggins's discussion of the *Challenger* accident in 1986 is excellent, offering a short, inclusive, and incisive account of the accident, its causes, and its ramifications (pp. 74–95).

For all its strengths as a well-written, engaging work of history about a topic that can become endlessly technical and difficult to follow, *Final Countdown* is really "once over lightly" as a sophisticated historical account of the Shuttle program. As an introductory work it is outstanding.

For more detailed discussions there are also several other works on the history of the program that readers will want to pursue. The most important of these is Dennis R. Jenkins's masterful *Space Shuttle: The History of the National Space Transportation System, the First 100 Missions* (North Branch, MN: Speciality Press, 2001), a new edition of which is in preparation and intended to appear at the end of the Shuttle program. As it is, Pat Duggins is to be commended for writing a useful, breezy

history of the program, one helpful as an introduction for students.

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