

## Book Reviews

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### ***No Downlink—A Dramatic Narrative About the Challenger Accident and Our Time***

Claus Jensen, Translated by Barbara Haveland, Farrar Straus Giroux, New York, 1996, 397 pp., \$25.00

### ***The Challenger Launch Decision—Risky Technology, Culture and Deviance at NASA***

Diane Vaughan, The University of Chicago Press, Chicago, 1996, 575 pp., \$24.95

On a clear, unseasonably cold day for Florida—Jan. 28, 1986—the Space Shuttle *Challenger* was launched from Cape Kennedy. After 73 seconds, a catastrophic explosion occurred, destroying the orbiter and sending seven astronauts, including Teacher in Space Christa McAuliffe, to their deaths. The nation and the world were stunned and grieved with the astronauts' families for the lost lives. After a few days, President Ronald Reagan appointed a 13-person Presidential Commission headed by former Secretary of State William P. Rogers to establish the causes of the accident and make recommendations for corrective actions. Later, the U.S. House of Representatives Committee on Science and Astronautics also conducted hearings.

The Presidential Commission concluded that the loss of the *Challenger* was caused by a failure in the joint between the lower segments of the right solid rocket motor, and that the problem began with the faulty design of the joint and increased as both NASA and the contractor, Morton Thiokol, first failed to recognize it as a problem, then failed to fix it, and finally treated it as an acceptable flight risk. The Commission also concluded that the decision to launch the *Challenger* was flawed. The Commission determined that those who made the launch decision were unaware of the recent history of problems with the joint and its O-rings and were unaware of both the initial recommendation of Thiokol advising against the launch at temperatures below 53°F and the continuing opposition of engineers at Thiokol after their management reversed its position.

The new books *No Downlink* by Claus Jensen and *The Challenger Launch Decision* by Diane Vaughan describe these events with quite different approaches and from entirely different perspectives. Although their books are distinct, the authors have in common their nontechnical backgrounds; Claus Jensen is a professor of literature in Denmark, and Diane Vaughan is a professor of sociology at Boston College.

*No Downlink* provides a concise history of the U.S. space program until the time of *Challenger*. Twenty-six of the book's 46 chapters are devoted to historical background, beginning with the origins of the space program after World War II. In the Preface the author states that the book was written in Denmark based solely on written sources and that he deliberately chose to retain his

perspective as a layman and an outsider. There is a relatively short list of references; most of these are secondary books or articles, and there are few primary source documents. Thus, the book does not represent original research but rather is a synthesis of other authors' views. But author Jensen captures the drama of the large-scale events of the space program, and the book is easy to read. However, it is better suited for laymen or young people rather than aerospace professionals.

In contrast, *The Challenger Launch Decision* is an impressive work of scholarship in which the author focuses on the *Challenger* and the launch decision. The author devoted considerable effort to original research. She reviewed thousands of pages of NASA documents in the National Archives and conducted interviews with a number of NASA and Morton Thiokol participants. The book addresses two basic questions: why, in the years preceding the *Challenger* launch, did NASA continue launching with a design known to be flawed, and why did NASA launch the *Challenger* against the eve-of-launch objections of engineers? The book's 10 chapters examine these questions carefully from a sociological viewpoint. A large portion of the book is devoted to answering the questions by studying the organizations and their culture. There are a number of terms such as "thick ethnographic description," "work group culture," "normalization of deviance," and "structural secrecy," that aerospace engineers are likely to find perhaps strange and new. For this reason, the book does not lend itself to casual reading but instead requires serious study. But the very thorough descriptions of the launch decision and the background events make the effort worthwhile.

The book's conclusions are intriguing and in conflict with the Rogers Commission Report. She notes that the Rogers Commission had only three months to prepare their report. Although the commission staff interviewed over 160 individuals, fewer than half appeared before the commission.

There is a widespread perception that wrongdoing by middle-level managers at NASA and Morton Thiokol contributed to the tragedy. Indeed, undergraduate textbooks cite the *Challenger* launch decision when discussing ethical issues for engineers. Roger M. Boisjoly, one of the Thiokol engineers participating in the key meeting on the eve of the launch, has referred on

television and in published documents to the launch decision as managerial unethical behavior. Diane Vaughan's analysis yields a far more complex explanation of the decision, and she emphasizes the role of organizations and their rules in the tragedy. She does not address the troubling issues of the professional and moral responsibilities of individuals, either engineers or engineering managers, in the decision-making process. The book does

cite papers discussing these issues, which are valuable supplemental reading. Diane Vaughan's book *The Challenger Launch Decision* is a significant contribution and presents important lessons that have application to many organizations responsible for future utilization of high-risk space technology.

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