

DESTINATION: MOON

New Moon Rising

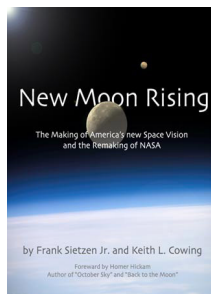
by Frank Sietzen Jr. and Keith Cowing
Apogee Books, 2004, 280 pp, \$33.95

Moonrush

by Dennis Wingo, Apogee Books, 2004
260 pp, \$24.95

In January 2004 President Bush announced a new space exploration strategy (see commentary, p. 56) that, among other things, calls for sending Americans back to the moon by no later than 2020. The plan was instantly controversial, and as of September it was caught in a bruising Congressional budget fight. Two new offerings from Apogee Books deal with different aspects of returning humans to the moon.

New Moon Rising, by Frank Sietzen and Keith Cowing, is billed as an insider account of how the new Exploration plan was drafted and how it is likely to be implemented. With subheadings like "Hooray for the Deputies," it is primarily a book for people interested in the mechanics of policy formation, rather than the technology that might return Americans to the moon.



It is clear that much of the information came from a couple of sources inside NASA, primarily NASA Administrator Sean O'Keefe and his best friend, the agency's now-former General Counsel, Paul Pastorek. The book reflects their points of view and perspectives, rather than presenting an objective account. A number of people mentioned were clearly not consulted for their own versions of events and are portrayed as grandstanding, arrogant, incompetent, or worse.

Whereas O'Keefe is described in glowing terms, his predecessor, the controversial and abrasive Dan Goldin, is portrayed entirely negatively, with little mention of his achievements - like completely reforming the robotic spaceflight program. The criticism of Goldin is trivial or irrelevant: There are long descriptions of his going-away parties, for example, and his post-NASA career. The writers also point out that when Goldin left NASA, the International Space Station was a whopping \$4 billion over budget, but they never explain how that happened, or how NASA would ensure that run away costs would not occur with the new space plan.

The book was finished in late June and printed by mid-July. It is therefore topical, but exhibits many of the problems one would expect from such a quick turnaround time, including numerous typographical and

grammatical errors and haphazard editing. Like most Apogee Books, it features text that nearly runs off the page, making for difficult reading.

Despite the flaws and biases, *New Moon Rising* does provide the first inside account of how the new space exploration strategy was developed. It is likely to remain the only detailed report on this subject for many years to come and cannot be ignored.

Dennis Wingo's *Moonrush* is about the moon's potential to provide a solution to the world's future energy needs. Unlike previous space advocates, who have often demonstrated a poor grasp of social and economic forces, Wingo not only understands these forces, but makes a surprisingly comprehensive and logical argument for space development.

Wingo analyzed various projections of world oil reserves and concluded that even with the most optimistic estimates (made by oil producers themselves), the world will have to find substantial alternatives to oil within the next five to six decades. Wingo proposes a hydrogen economy, based primarily on fusion and fuel cells. Solar power and fission



can eventually be supplemented by commercial fusion reactors for generating electricity. Gasoline-powered engines can be replaced with fuel cells, which require rare materials like platinum that are probably abundant on the moon. It thus

makes sense to go there and mine them.

Wingo's proposed solution has some major problems. Fusion advocates have been promising success for decades now, so their claim that commercially viable fusion can be achieved in only 15 years has limited credibility. The cost of launching vehicles to the moon is extremely high, and even if it can be reduced to a tenth of the current cost, it is difficult to see how mining lunar materials will be profitable. Furthermore, resource constraints are inevitably solved by technological substitution. If there is not enough platinum to supply the fuel cells that will substitute for gasoline, engineers will find an alternative to fuel cells, making lunar mining unnecessary.

But a lot of Wingo's suggestions for working toward his goals are sensible. The book includes a detailed analysis of the weaknesses and biases of past lunar exploration plans. *Moonrush* is a well-researched, thought-provoking book, even if it does not have all the answers to the impending demise of the petroleum economy.

-Dwayne A. Day is a science and space writer based in northern Virginia.