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Book Review

Virts T. *How to Astronaut. An Insider's Guide to Leaving the Planet.*

Workman Publishing Company; 2020; 320 pgs.; Hardcover; \$27.95; ISBN 978-1-5235-0961-4.

How to Astronaut is a book released in August 2020 and written by former Air Force F-16 pilot and astronaut Terry Virts. There is no shortage of books written by astronauts, but this book is refreshingly different in its approach, subject matter, attempt to downplay NASA jargon, and lack of a coauthor. Colonel Virts essentially ignores any of his personal history except for a few sentences in the Forward. The book contains 51 stories about his spaceflight training, flying, and landing experiences. While he minimizes his background, his personality, positive attitude, honesty, respect for the Earth, and humor radiate throughout the book.

This book is extremely valuable for those who train, provide care, or manage space missions, but covers enough subjects to be interesting to someone with limited knowledge of spaceflight, such as: 'has anyone had sex in space?' and 'recent developments in space underwear'. The book is divided into the "stories" like you might hear in discussions around the dinner table at the Gagarin Cosmonaut Training Center or at a watering hole near the Johnson Space Center. The discussion of the NOLs training in Alaska is especially enjoyable. There is some structure with divisions that include Training, Launch, Orbit, Spacewalking, Deep Space, and Re-entry. Since Col. Virts flew on the Shuttle and Soyuz to the ISS for a total of 200 d, he is able to relate experiences of short- and long-duration flight on all three spacecraft. Based on the author's choice of style, there is a bit of randomness in the story order, but this is not a problem since each of the stories stands independently. For this reason, there is no problem reading the stories out of order or setting the book down and picking it up later.

For flight surgeons and those who provide direct care to pilots or astronauts, the book contains extremely valuable data regarding astronauts, the stresses of training and flight, on-orbit adaptation, medical issues, entry, and rehabilitation. Many of these activities such as flying, survival training, zero-G flights, CO₂ training, medical research, and medical training are experiences flight surgeons share. Topics covered include survival training, CO₂ training, medical training, caring for animals,

physical training, circadian shifting, waste elimination, clothing choice, food and nutrition, handling an astronaut's in-flight death, psychological support, science studies, the impact of spaceflight and tragedy on families, and postflight rehabilitation. While the author is a fighter pilot, he does an excellent job on most of the medical and science portions of the book with only a few exceptions. Virts' book has an honest feel, for example, when postflight he admits that he wouldn't tell the NASA psychologists how he really was feeling during his mission. Most who have cared for military pilots and astronauts are aware that sometimes crewmembers are not known for exact statements of fact that could affect their flight status.

This book covers many other topics that will be of interest to the reader, and Virts discusses areas where errors (including his own) were made or management made boneheaded decisions. However, he is careful to pass out praise by name but mentions negatives or wrong decisions in a nameless fashion. Occasionally one would like to know who the offending party was or the celebrities that he talked with from space, but his choice is understandable. He also covers broader topics such as the origin of humans on Earth and other life in space, government oversight/funding, commercial spaceflight, and plans for the Moon and Mars. Being a realist, he knows that lunar and Mars exploration are about as far as anyone reading his book could accomplish in their lifetime. *How to Astronaut* is an important and enjoyable addition for anyone interested in an insider's look at the exploration of space.

Reviewed by

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