

The Boice Report #39



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On the Beach With Nuclear Options

I enjoy reading and buying books. Not Kindles or magazines, but hard volumes with pages you can turn and sections you can underline. I buy books nearly every week and probably have a small library of tomes I'll never be able to read in my lifetime. I thought it might be "novel" to discuss novels I've just read, focusing on how radiation is integrated in popular literature. I'm sure most got the double entendre "[On the Beach](#)."

[The Martian](#) (Andy Weir) and NASA. Before I knew *The Martian* was a best seller and was made into a movie, I purchased the paperback and could not put it down. It's a fantastic and compelling read of an astronaut (Mark) left behind on Mars. "Lost in space" transmutes into "lost on the red planet!" Mark copes with isolation, starvation, engineering challenges, and mission control in a realistic, funny, and thrilling way. It's techno sci-fi, with duct tape the universal fix all. The book has popularized our going to Mars and "[may have saved NASA and the entire space program](#)"—perhaps a bit exaggerated, but how can you not like a protagonist who is a biologist with engineering skills! The situations encountered and the responses to providing solutions were eerily similar to the [drama this July](#) when the National Aeronautics and Space Administration's (NASA) [New Horizons Probe to Pluto](#) went dark just 10 days short of a 9½-year mission! Radiation pops up a few times incorrectly: I doubt whether ^{238}Pu used for minor electrical generation would cause immediate death (or even long-term death) if the containment broke. There was a lost opportunity to mention the increase in cosmic-ray exposures that would occur in a possible rescue mission—cumulative radiation being a limiting factor for allowing time in space. The narrative could also have touched on the protection guidelines that allow men to spend more time in space than women because of differences in projected lifetime risks of cancer development (but this is set in the future when perhaps we will have resolved these dicey issues). The National Council on Radiation Protection and Measurements continues enthusiastically to provide guidance to NASA on radiation issues, outlined in the recent [Commentary No. 23](#), and with our ongoing evaluations of [possible central nervous system effects](#) during long space missions. Personally, I hope we go to Mars!



Photo by John Boice "on the beach"

[Against the Tide](#) (Dave Oliver) and the Nuclear Navy. Another short but fascinating read is by Admiral Oliver, who served 32 years in the U.S. Navy and commanded diesel and nuclear submarines. The book focuses on the management style of Admiral Hyman Rickover, one of my personal heroes, who fathered the nuclear navy and made it into the premier military force that it is today. I also like to jot notes in margins: "Leaders cope with change"; "Follow process or embrace innovation"; "Options and stupidity may be synonyms"; "The man in charge must concern himself with details"; "Don't defend past actions, what is right today may be wrong tomorrow"; "Once genius is submerged by bureaucracy, a nation is doomed to mediocrity." Rickover was concerned about radiation exposures and always chose safety first—even over performance. Accordingly, the U.S. Navy has had no radiation accidents and no excessive radiation exposures to sailors even today. In contrast the Soviet fleet suffered accidents and radiation sickness (so much so that sailors had to take six months off in order for their bone marrow to regenerate). This was a nice follow-up to a "spellbinder" I read last summer about spies and secret nuclear submarine programs during the

Cold War ([Blind Man's Bluff](#)). I continue to be in awe of our nuclear navy, especially after my day under the sea on a fast-attack nuclear sub (SSN 765, [USS Montpelier](#)). I interact with the U.S. Navy in studies of [atomic sailors](#) who served during the weapons tests in the Pacific and in studies of naval shipyard workers as part of the [Million Worker Study](#) as well as being an advisor to the new follow-up of the [Johns Hopkins naval shipyard study](#). It would be wonderful to extend the follow-up of the [Navy submariner study](#).

[Building the H Bomb \(Ken Ford\) and Atomic Veterans.](#) Imagine being in your 20s and working on developing the most powerful weapon known to man. And you relaxed with Ed Teller, Enrico Fermi, Stan Ulam, John von Neumann, and John Wheeler, and you've met Robert Oppenheimer, Hans Bethe, Richard Feynman, and others enshrined in the halls of nuclear fame. And you're the only one still alive and decide to write a personal (and entertaining) history on building "the Super" (aka, the H bomb, hydrogen bomb, thermonuclear bomb). And the design worked: the first atmospheric detonation of an H bomb was in 1952 ("Ivy Mike"). I like short, informative books with pictures and this one has it all: personality conflicts, design challenges, conflicting views, physics possibilities versus societal implications, personal recollections, and that "aha" inspirational moment that changes the course of history. And it's an easy read in three parts: history of building the H bomb, a mini text on nuclear physics (easy read), and a personal memoir. I met John Wheeler and Hans Bethe when I was in my 20s; Robert Oppenheimer, Enrico Fermi, and other notables are included as atomic veterans in our Million Worker Study because they received military commissions to work at Los Alamos on the Manhattan Project. Some of the sailors in our study were at the [1952 "Ivy Mike" weapons test](#). Recently I asked Richard Rhodes (author of one of my favorite books, [The Making of the Atomic Bomb](#), and of [Dark Sun: The Making of the Hydrogen Bomb](#)) for his help in identifying persons in our atomic veteran study who were present at the Trinity shot. I enjoyed reading the history of the atomic and hydrogen bombs and about the personalities involved, and I find such books put a human dimension on the epidemiologic health studies I'm conducting. The past becomes alive and vibrant.

[Overwhelmed: Work, Love, and Play When No One Has the Time \(Brigid Schulte\)](#). Hey, I don't just read books on radiation. This one surprised me in how easy it was to identify with the author, a young professional woman and mother! I share her pain, her sleepiness, her trying to do it all (and not always successfully). Life overwhelms us. It's 24/7—there's no down time. We continually try to be more efficient and meet the challenges of professional, family, and spiritual life. If you snooze, you lose. We need time-management skills and if you are overwhelmed, you should read this funny and entertaining and insightful book. Okay, how to weave in a radiation twist? Easy. At this year's [Nuclear Regulatory Commission Regulatory Information Conference \(RIC\)](#), Commissioner [Kristine Svinicki's](#) talk was entertaining, informative, and personal. Her engaging presentation can be found [online](#) and includes policy matters of course, quotes Rickover, and summarizes Brigid Schulte on how busyness has become a way of life, a badge of honor, a status symbol. She reads an excerpt from [Dwight D. Eisenhower's 1956 acceptance speech](#) at the 1956 Republican convention:

It will not seem futile for young people to dream of a brave and new and shining world . . . Science and technology, labor-saving methods, management, labor organization, education, medicine—and not least, politics and government. All these have brought within our grasp a world in which backbreaking toil and longer hours will not be necessary . . . The material things that make life interesting and pleasant will be available to everyone. Leisure, together with educational and recreational facilities, will be abundant, so that all can develop the life of the spirit, of reflection, of religion, of the arts, of the full realization of the good things of the world.

How far have we come in realizing this dream of replacing long work hours with abundant leisure time these past 60 years? Uh oh, just noticed the time, got to run, it's Saturday night and I haven't completed half of my "to do list" and still have to pack for my flight tomorrow to attend the Health Physics Society annual meeting in Indiana, but not "In the Annapolis" as Charles Barkley might say. See you there (if any time frees up in our schedules).