

**PAUL SHANKLAND, Ph.D., Director
U. S. Naval Observatory Flagstaff Station**

Dr. Paul D. Shankland, a native of Greensboro, North Carolina, graduated from the U.S. Naval Academy in 1983 with a Bachelors degree in pure mathematics. During his subsequent 25 years of active duty, Shankland earned a masters degree in astronomy (with distinction) from the University of Western Sydney, and his Ph.D. in Astronomy from James Cook University (his published doctoral thesis research was on the dynamic astrophysics of Earth-like planets and Kuiper belts about M-dwarf stars.

Shankland began uniformed service aboard the guided missile destroyer USS SELLERS (DDG-11), where he earned Surface Warfare Officer designation. In 1986 he laterally transferred to the aviation community, earning Naval Aviator wings as an E-2C Hawkeye pilot. Shankland subsequently deployed with the *Steeljaws* and *Bluetails*, VAW (Carrier Airborne Early Warning) Squadrons 122 and 121, aboard carriers USS FORRESTAL (CV-59) and USS GEORGE WASHINGTON (CVN-73).

Later on USS THEODORE ROOSEVELT (CVN71), Shankland served as Strike Operations Officer. Aboard *TR*, he managed its complex overhaul, carrier workups, and led the *Operation Enduring Freedom* battle planning for the post-9/11 deployment to Afghanistan. Shankland also concurrently flew with VF-102 *Diamondbacks* (F-14D Tomcat) and HS-11 *Dragon Slayers* (HH-60 Rescue Hawk helicopter) on *TR*.

Ashore, Shankland served as a Fleet Replacement (FRS) Instructor Pilot and department head at VAW-120, the *Greyhawks*, and later served as the senior navy liaison to the Flag, at Joint Interagency Task Force East (JIATF-E), NAS Key West. He further served at the U.S. Naval Observatory, Washington, D.C., where he was Director of Space Acquisitions, Programs, Plans & Requirements (N5/N8), for USNO's Astrometric, Earth Orientation, Celestial Applications, and Atomic Time/GPS programs.

Shankland commanded the Strike Training Squadron NINE (VT-9), the *Tigers* – then the Navy's largest aviation squadron: numbering 550 members and 175 shared aircraft (\$2.2B in assets). During his command, VT-9 culminated Navy's retirement of the 46-year old T-2 *Buckeye* as the primary carrier and strike trainer jet, and began T-45C *Goshawk* operations. VT-9 was awarded both the Safety "S" and the Secretary of the Navy Meritorious Unit Citation award for exceeding safety, quality and training rates while restructuring all operations to T-45 "total system training" for providing tactical carrier strike/fighter pilots to the Navy Fleet.

Subsequent to his uniformed career, Dr. Shankland joined Navy civil service and became 6th Director of the U.S. Naval Observatory Flagstaff Station (NOFS) -- a remote DoD dark-sky facility in northern Arizona. NOFS observes celestial data to create DoD celestial reference frames; conducts on-orbit space situational awareness (SSA) activities; provides orbital and interplanetary navigation data for spacecraft; and develops specialized detectors, cameras, instruments, and advanced computers systems. NOFS operates several large telescopes and arrays in the area, and collaborates globally with major observatories, NASA, universities, and national and military laboratories. Dr. Shankland is Commander, Task Element 80.7.3.1, and is the Senior Naval Representative in Arizona.

Dr. Shankland has led several specific research endeavors. He has developed requirements for interferometric operations and spaceborne astrometry; published the *Global Exoplanet M-dwarf Search-Survey* (GEMSS); and performed dynamical radio, infrared and optical astronomy projects at: the *Very Large Array* (VLA), *NRAO Green Bank Telescope* (GBT), *Giant Metrewave Radio Telescope* (GMRT) and *Australia Telescope Compact Array* (ATCA) radio telescopes; *Lick, Naval, Perth, Siding Spring, Keck, Automated Planet-Finder* (APF), and *Palomar* Observatories; and the *Spitzer* Infrared Space Telescope.

Dr. Shankland is a principle of the UC Santa-Cruz/Caltech/USNO statistical analysis team, *Systemic*, and he designed, built and flew both the airborne *Tactical Observatory for Photometry of Astronomical Targets* (TOP-hAT), and the *Ten-Micron High-altitude Ephemeral Remote Military Infrared Camera* (THERMIC). He is currently involved in technical and programmatic development of large, multi-meter aperture infrared and optical telescopes, and their advanced cryogenically cooled detectors/cameras, instrumentation and electronics.

During active duty, Shankland earned subspecialties in Manpower resourcing, Command and Control (C2), and was designated a Space Professional. He retired with 4100 hours in 31 aircraft types, 454 arrested landings on 12 aircraft carriers, and earned 42 medals, decorations, and campaign awards. Today, Dr. Shankland is a member of the American Astronomical Society (Dynamical Astronomy and Planetary Sciences divisions), the American Institute of Physics, and the International Astronomical Union (Divisions A, B, C, F and G). He is a founding member of Arizona's *Astronomy, Planetary Science and Space Science* (APSS) consortium of observatory and space science CEO's/directors; and has served on several University of California doctoral candidate oral boards and dissertation audits.

Dr. Shankland is also a member of: the Institute of Navigation, the Navy Tailhook Foundation, races sled-dogs with the Arizona Mountain Mushers, is Chairman of the Board of Commissioners at the Grand Canyon Flagstaff Airport, and is an advanced diver. He is also a civilian aerobatics, single-multiengine instrument flight instructor and antique aircraft restorer; and on tracks, has raced SCCA & European Autocross since 1983.



*Dr. Paul Shankland, GS-15
Director, Naval Observatory
Flagstaff Station*