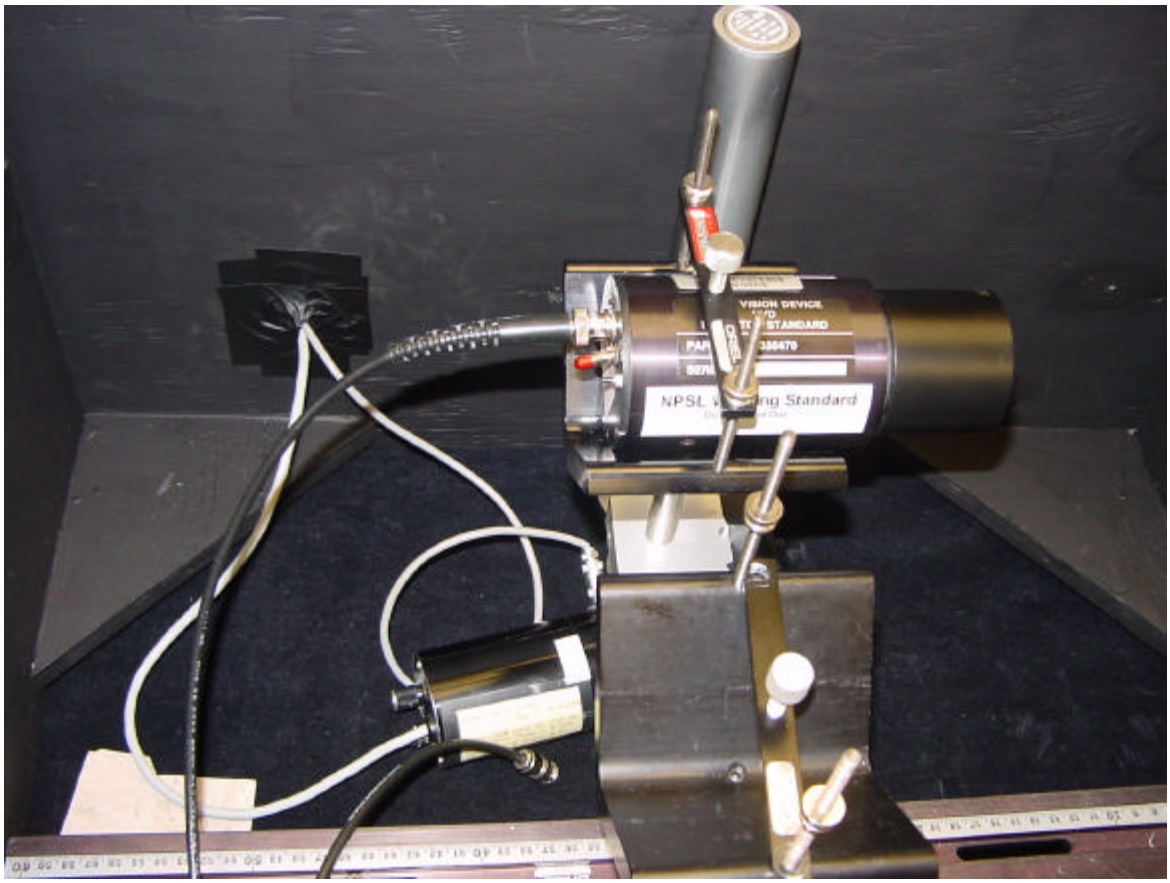
Status of Night Vision Detector Calibrations at NPSL

Night vision provides a crucial cornerstone for the Navy Warfighter. With the advent of night vision goggles came the need to assure their correct functioning. This challenge was met through the development of a series of test sets that had to be rugged enough to send to many different environments and remain reliable. The test sets permit the night vision goggles to be calibrated at field calibration activities close to where they are used. Naturally the test sets themselves need calibration in ordered to be relied upon with confidence.

To provide for this new metrology need the Measurement Science Directorate (MSD), Naval Surface Warfare Center Corona worked with the Navy Primary Standards Laboratory (NPSL) Naval Air Depot North Island and the National Institute of Standards and Technology (NIST) to bring forth, in 1997, a new primary standard which would provide the metrological support required for the test sets. Through diligent efforts NIST created an optical standard for use at NPSL, which provided for traceability to NIST, as well as secondary, battery powered standards, which could be sent to the various calibration activities. These standards (the AVI1014 and the 13335470) allow for the direct and easy calibration of the night vision goggle test sets.

An ever-present challenge has been to adapt the standards and their calibration to the constantly evolving night vision goggles and their required test sets. Through the years Edward Trovato of MSD and Donald Matson from NPSL have worked with Dr. George Eppeldauer of NIST to modify the calibration procedures for the 13335470 and AVI1014 as new demands arose. The current calibration procedure at NPSL, developed in part by Todd Uzzell from NPSL consists of a light-tight enclosure receiving light from a large integrating sphere. Through this method the unit being calibrated can be compared directly, through substitution, to the NIST calibrated standard. An 810nm, 690nm, and a photopic filter are used in the calibration process to match the response of the detector to the customer's night vision goggle test sets. Responsibility for NVD metrology and its associated Operation Interlab program will be moving from Donald Matson, who is retiring, to Todd Uzzell. Todd, a graduate of the Purdue University School of Electrical Engineering brings a very strong background to this program.

Don Matson and Todd Uzzell stand with the Night Vision Detector (NVD) Measurement System at NPSL



The NPSL Working Standard inside the “Light-tight” enclosure