Naval Warfare Assessment Division

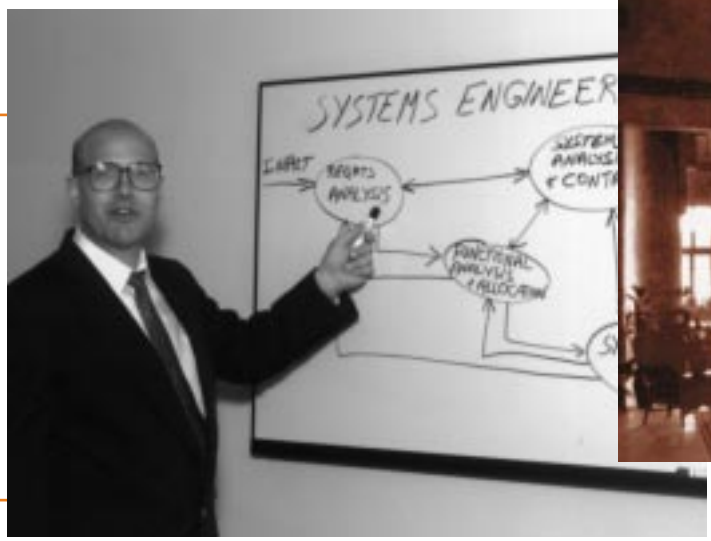
Naval Ordnance Center's Premier Testing and Research Facility

P. A. BARNES

Near Corona, California, in a former resort area once noted for the hijinks of the rich and famous, is the Naval Warfare Assessment Division (NWAD), a premier testing and research facility that offers a high level of instructional expertise for members of the acquisition workforce working toward certification in the Intermediate Systems Planning, Research, Development, and Engineering career field.

During March, Army Brig. Gen. Richard Black, Commandant, Defense Systems Management College (DSMC), visited NWAD as part of an oversight tour of several West Coast Defense Acquisition University (DAU) consortium schools. Black observed that NWAD's "primary mission, with its strong emphasis on quality assurance, is somewhat different than the mission of other schools belonging to the consortium." As its name might indicate, the primary purpose of NWAD is to assess the effectiveness of operational and acquisition systems and activities (Figure 1). Black added, "The training that NWAD provides for improving force readiness is particularly important as the Defense Department restructures the Armed Forces."

DSMC'S COMMANDANT, ARMY BRIG. GEN. RICHARD A. BLACK VISITED NWAD AS PART OF AN OVERSIGHT TOUR OF SEVERAL WEST COAST DEFENSE ACQUISITION UNIVERSITY (DAU) CONSORTIUM SCHOOLS. FROM LEFT: ROBERT A. BENNETT, QUALITY ENGINEERING DIVISION MANAGER, NWAD; DR. ARTHUR W. MEEKS, TECHNICAL DIRECTOR, NWAD; BLACK; NAVY CMDR. MICHAEL BERNARD, EXECUTIVE OFFICER, NWAD.
Photo by Richard Mattox



ACCORDING TO RONALD J. WEIS, AN INSTRUCTOR OF DAU COURSES, A MAIN STRENGTH OF THE ACQUISITION COURSES OFFERED BY NWAD IS ITS INSTRUCTORS, A CADRE OF MORE THAN 50 MULTIDISCIPLINARY, JOURNEYMAN-LEVEL ENGINEERS, MATHEMATICIANS, AND SCIENTISTS WHO ARE WORKING EXPERTS IN THEIR FIELDS.

History

In the years before World War II, the U.S. Congress, concerned by events

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Department of Navy photos unless otherwise noted.

THE REX CLARK RESORT CIRCA 1928, THE COMPLEX ON WHICH NWAD'S PREDECESSOR WAS ESTABLISHED. AS WAR IN THE PACIFIC LOOMED, THE U.S. NAVY SETTLED ON THE LUXURY RESORT AS A SITE FOR A HOSPITAL. AS WITH MANY MILITARY INSTALLATIONS, THE COMPLEX BECAME FEDERAL PROPERTY UNDER THE EXIGENCY OF WAR. THE NAVY TURNED THE OLD RESORT, TURNED NAVY HOSPITAL, OVER TO THE STATE OF CALIFORNIA IN THE EARLY 1960S FOR A DRUG REHABILITATION CENTER. TODAY, THIS VIEW SHOWS THE ENTRANCE TO THE WARDEN'S OFFICE OF THE CALIFORNIA REHABILITATION CENTER, A MEDIUM SECURITY PRISON IN NORCO, CALIFORNIA.

LATE 1928 OR EARLY 1929. VIEW FROM THE DINING ROOM OF THE REX CLARK RESORT'S NORCONIAN CLUB BEFORE IT BECAME FEDERAL PROPERTY AND LATER A NAVY HOSPITAL. PHOTO SHOWS THE WALKWAY FROM THE OLD RESORT (NOW THE CALIFORNIA REHABILITATION CENTER) DOWN TO THE CASINO ON LAKE NORCONIAN, A 55-ACRE LAKE CREATED BY REX CLARK. TODAY THE CASINO IS THE SITE OF THE NAVY'S NORCONIAN CLUB.

THE LOBBY OF THE REX CLARK RESORT (THE COMPLEX ON WHICH NWAD'S PREDECESSOR WAS ESTABLISHED) BEFORE IT BECAME FEDERAL PROPERTY AND LATER A NAVY HOSPITAL. THE PHOTO WAS TAKEN ON OPENING DAY, FEBRUARY 2, 1929. WALT DISNEY, ALONG WITH MANY HOLLYWOOD NOTABLES—LAWRENCE WELK, ROBERTA LINN, FRANKIE LANE, AND A VERY YOUNG BOB HOPE—STAYED AT THE RESORT. THE LOBBY IS NOW PART OF THE PRESENT DAY CALIFORNIA REHABILITATION CENTER.

Figure 1. Categories of Evaluations Performed by NWAD

Weapons and Combat Systems Performance. NWAD assesses the capabilities of not only deployed, but also developing weapons and combat systems.

Unit Warfighting Capability. NWAD evaluates the mission area effectiveness of unit, Joint, and combined forces in training exercises.

Tactical Training Range Engineering. NWAD provides systems engineering services to the Navy Tactical Training Range (NTTR) Program and to the Naval Air Forces.

Quality Engineering. NWAD develops and assesses life-cycle quality and program management requirements for contractors and Navy activities and assesses manufacturing processes for production readiness and quality control.

RM&A. NWAD evaluates field maintenance and support data to determine the readiness parameters that influence design and logistics support decisions and actions.

Test Systems Availability. NWAD develops engineering criteria and processes and assesses the measurement reliability and readiness of test systems.

Metrology Systems Engineering. NWAD assesses the adequacy of test equipment calibration plans and standards to meet design and field requirements. It also develops new metrology standards to meet advanced support requirements.

Weapons Test Engineering. NWAD assesses the adequacy of weapons tests and gaging to meet design, production, and field requirements.

Information Systems Engineering. NWAD collects, processes, simulates, stores, displays, and distributes warfare assessment information to Fleet, shore, and contractor defense communities.

elsewhere in the world, established the National Research Defense Committee to develop new and more sophisticated weapons. The National Bureau of Standards (NBS) in Washington was chosen to become the principal laboratory for this secret work. By 1940, NBS had assembled a distinguished

CAPT. MICHAEL G. MATHIS

U.S. Navy
Commanding Officer
Naval Warfare Assessment Division,
Naval Ordnance Center

Captain Michael G. Mathis is the Commanding Officer of the Naval Ordnance Center's Naval Warfare Assessment Division in Norco, California, a position he assumed in June 1995.

Captain Mathis was born in Rock Island, Illinois, May 7, 1948, and graduated from North Catholic High School, Portland, Oregon, in June 1966. He earned a Bachelor of Science degree in Chemistry from Seattle University in 1970. After completion of Officer Candidate School in Newport, Rhode Island, Captain Mathis was commissioned an ensign in May 1971. He was awarded a Master of Science Degree in Physics upon completion of the Weapons Engineering Curriculum at the Naval Postgraduate School in Monterey, California, in December 1983. In December 1991, he completed the Program Managers Course at the Defense Systems Management College at Fort Belvoir, Virginia.

Captain Mathis' initial assignment was aboard the U.S.S. *Chicago* (CG-11) as the Electrical Officer and subsequently the Electronic Warfare Officer. During this assignment, he was awarded the Combat Action Ribbon for operations supporting the mining of Haiphong Harbor, North Vietnam. He was assigned to the U.S.S. *Cayuga* (LST-1186) as Operations Officer in January 1975. Following Surface Warfare Officer Department Head School in Newport, Rhode Island, he was assigned as Weapons Officer aboard the U.S.S. *Stein* (FF-1065) in May 1977. Both ships were homeported in Southern California. He was assigned as Combat Systems Officer for Destroyer Squadron 33, Pearl Harbor, Hawaii, in April 1979.

From March 1981 to December 1983, Captain Mathis was assigned to the Naval Postgraduate School. Upon graduation, he was assigned as Executive Officer aboard the U.S.S. *George Philip* (FFG-12) and completed his seventh deployment to the Western Pacific and third to the Indian Ocean and Persian Gulf. In December 1985, he was assigned to Headquarters, Naval Sea Systems Command in Arlington, Virginia, as Director of the Surface Electronic Warfare Decoy Development Branch where he oversaw development of the North Atlantic Treaty Organization (NATO) Sea Gnat Chaff and AN/SLQ-49 Inflatable Decoy programs. He also served as Program Manager for the Advanced Electronic Warfare Decoy known as Nulka, a joint program with the Australian Navy.

Captain Mathis assumed command of the fast frigate, *Jesse L. Brown* (FF-1089), homeported in Charleston, South Carolina, in February 1989. During his time in command, the *Brown* and her crew circumnavigated South America as part of the UNITAS XXX Task Force, and were awarded the Commander in Chief, U.S. Atlantic Fleet Golden Anchor Award for retention, and the Joint Meritorious Unit Award for counter-narcotics operations in the Caribbean Sea and Pacific Ocean.

Following his command tour, Captain Mathis accepted designation as an Acquisition Professional and attended the Defense Systems Management College Program Managers Course in July 1991. Upon completion of course work, he became Director of the Directed Energy Weapons Division of the Space and Naval Warfare Systems Command in December 1991, where he led the Navy's efforts to develop technology for future laser and high-power microwave weapon systems. In October 1993, he transferred to the Program Executive Office for Ship Self Defense, later to become the PEO for Theater Air Defense, as the first Chief of Staff until his assignment as Commanding Officer Naval Warfare Assessment Division.

Captain Mathis' military awards and decorations include the Legion of Merit, the Meritorious Service Medal with two gold stars, the Navy Commendation Medal with gold star, the Combat Action Ribbon, the Battle Efficiency Award, and various other Service and campaign awards.

Captain Mathis was promoted to the rank of Captain July 1, 1992. He is married to the former Jannine LeeAnn Cleveland. They have two children: Elaine Frances and Zachary Michael.

corps of scientists and technicians and begun developing guided weapons, which included everything from radio-controlled bombs to pilotless aircraft. As the war worsened, the NBS was expanded to include a naval ordnance detachment for testing, evaluation, and training. The best known of the weapons developed by NBS was the Navy's BAT, the first operational missile used in combat. The BAT, which homed on pre-selected targets, is credited with sinking several ships in the Pacific during the closing months of World War II.

Following its wartime success, the NBS detachment was renamed the Missile Development Division, and its weapons development and testing mission was expanded. Shortly thereafter, the division was moved to the West Coast and established near the site of a large Naval hospital, which had taken over the site of a luxury resort hotel. The subsequent assignment of analyzing shipboard firing tests of the Navy's Terrier guided missile in 1952 was a key event in the evolution of the Naval Warfare Assessment Division. The outstanding work of the NBS Corona laboratories led to a joint decision by the Secretary of Defense and the Secretary of Commerce to transfer the function of weapons research and development from the NBS to the military. The NBS activity at Corona was transferred to the Navy, renamed the Naval Ordnance Laboratory, Corona (NOLC), and assigned to the Bureau of Ordnance.

In the 1950s, the NOLC's missile evaluation program gradually eclipsed its research program, which resulted in the establishment of a separate evaluation department. This department added two related areas vital to production and overall evaluation of weapons: quality assurance, including the appraisal of a manufacturer's ability to produce a weapon; and design of surveillance programs to determine

the nature and extent of weapons deterioration, both in storage and in use. In accomplishing these missions, the department pioneered the use of large-scale digital computers in processing data. On February 24, 1964, the Missile Evaluation Department was separated from NOLC and established as the Fleet Missile System Analysis and Evaluation Group (FMSAEG). In a 1971 consolidation of related Navy activities, the FMSAEG became an annex of the Naval Weapons Station Seal Beach; in 1976, it was renamed the Fleet Analysis Center (FLTAC) to better recognize its full role. In the 1980s, the FLTAC, the Navy's Metrology Engineering Center, the Gage and Standards Center, and the Weapons Quality Evaluation Center were merged into a technical directorate, which was renamed the Naval Warfare Assessment Center, Corona (NWAC).

Focus Shifts to Acquisition Courses

In the mid-1970s, the predecessor of NWAD began offering a variety of courses specifically aimed at the acquisition workforce. The curricula included a civilian logistics intern program; product assurance training; and reliability, quality, and maintainability training for the Navy and foreign military sales customers. In 1991, NWAD became a member of the DAU consortium and was certified by the Acquisition Enhancement Program (AEP) Office (the forerunner of DAU) to instruct Quality Assurance (QA) Level II courses. Since that time, NWAD has offered on its own, and helped other schools teach, many courses that fulfill the training requirements for Level II and Level III certification, including the following:

QUA 201	Intermediate Quality Assurance
SYS 201	Intermediate Systems Planning, Research, Development, and Engineering
PMT 101	Basic Program Management
ACQ 201	Intermediate Systems Acquisition Management
LOG 304	Executive Acquisition Logistics Management
TST 202	Intermediate Test and Evaluation
TST 301	Advanced Test and Evaluation

The students attending NWAD courses represent all U.S. military services—Navy, Army, Air Force, Marine Corps—as well as the Defense Logistics Agency (DLA).

According to Ronald J. Weis, an instructor of DAU courses, a main strength of the acquisition courses offered by NWAD is its instructors, a cadre of more than 50 multidisciplinary, journeyman-level engineers, mathematicians, and scientists who are working experts in their fields. Based on the expertise of its training personnel, NWAD was tasked to co-develop a number of acquisition courses in 1994, including the following:

ACQ 101	Fundamentals of Acquisition Management
ACQ 201	Intermediate Systems Acquisition Management
PQM 201	Production and Quality Management
TST 202	Intermediate Test and Evaluation
TST 301	Advanced Test and Evaluation
SYS 201	Intermediate Systems Planning, Research, Development, and Engineering
SYS 301	Advanced Systems Planning, Research, Development, and Engineering
LOG 304	Advanced Acquisition Logistics Management

Weis, who is presently teaching SYS 201, explains that the number of students attending DAU courses at NWAD has varied depending on demand and availability of the workforce, as well as funding levels. The students attending NWAD courses represent all U.S. military services—Navy, Army, Air Force, Marine Corps—as well as the Defense Logistics Agency (DLA). Figure 2 shows the number of DAU students in NWAD-offered courses since 1992.

Facility

As with many military installations, the complex on which NWAD's predecessor was established became federal property under the exigency of war. The area originally was the site of a luxury resort, which had been built in 1928 by developer Rex B. Clark after his engineers uncovered hot mineral wells. Clark's resort hotel drew the millionaires and movie-star set from the Los Angeles, California, area until

Figure 2. DAU Students Attending NWAD Courses-1992 to Present

Service	1992	1993	1994	1995	1996	1997
Totals	450	480	990	450	570	250*

*Estimated students for winter term.

the Depression struck, devastating the economy. As war in the Pacific loomed, the U.S. Navy settled on the luxury resort as a site for a hospital. The facility was closed down from November 1949 until June 1951, when it was recommissioned to handle patients from the Korean War. At the same time, the Navy Ordnance Laboratory at Corona (NOLC) was established on lakeside property down the hill from the hospital in the former tropical disease wards.

State-of-the-Art Analysis and Assessment

Today, all that's left of the original NOLC is the metrology laboratory. Next to the old building, the Navy has built the Warfare Assessment Laboratory (WAL), a consolidated, high-security facility for analyzing Fleet readiness and combat systems performance. The heart of the WAL is an integrated operations (Ops) center with 12 workstation-controlled, large-screen displays and a seating capacity for more than 200 people. To assess combat systems and warfighting performance, NWAD employees use state-of-the art technology including—

- distributed graphical analysis workstations;
- multi-dimensional analytical models;
- parallel computer processing;
- large screen displays; and
- video teleconferencing facilities.

These systems are integrated using advanced computer networks and are coupled to Fleet commands and program offices via high-speed data lines and satellite links, allowing near real-time assessments of individual Ship, Battle Group, and Joint exercises, as well as weapons systems tests. Individual phone lines and computer LAN connections at each seat in the auditorium accommodate interactive war gaming. Four "sky boxes" overlooking the Ops center support individual warfare commanders during exercise play. The WAL also has extensive laboratory space for special projects, conference rooms, and a suite of Sensitive Compartmented Information Facilities (SCIF) certified to the Sensitive Compartmented Information (SCI) level.

From the Commanding Officer

Navy Capt. Michael G. Mathis has served as NWAD's Commanding Officer since June 1995. Mathis speaks with confidence of NWAD's vitality and ability to train the current and future acquisition workforce, charged with sustaining the momentum of acquisition reform. "NWAD's continuing mission of independent analysis and assessment provides it the unique experience and perspective sought for acquisition workforce training. As a consortium member of DAU, NWAD will continue to provide vital training to employees of both the United States and foreign governments as acquisition reform moves into the next century."

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