FRCSW ALMANAC

Volume 7 - Issue 2

New Technology

Atmospheric Plasma Tool

Skipper's Corner:
Safety Awareness

Capt. Don B. Simmons, III

Fleet Readiness Center Southwest (FRCSW) is a world class MRO and as such has always been conscious of employee safety. FRCSW is currently on a mission to fortify the culture of safety consciousness throughout the command.

A cornerstone to any safety program is the reporting of potential safety hazards by employees. Employees working in shops and offices are best positioned to identify potential safety issues which may harm personnel or damage equipment.

Our safety instruction, 5100.1b CH9, requires all military and civilian employees to report hazards without fear of coercion, discrimination or reprisal and, if they wish, employees may remain anonymous.

A report may be filed in writing by using the "Unsafe/Unhealthful" reporting forms found on safety bulletin boards, or reported directly to the safety office.

Once the FRCSW safety office receives a report of an unsafe or unhealthful condition, the office has 10 days to respond and to explain what actions have been, or will be, taken to address the safety concern.

Each of you can play an important role in making sure we have a safe and healthful workplace by getting involved to create a culture of safety awareness.

Look for reporting forms on the FRCSW Horizon website under "Team Resources", or on safety bulletin boards. You can call the FRCSW safety office at (619) 545-3693, or stop by the office located in Building 334 on the first deck.

DON B. SIMMONS, III
Captain, U.S. Navy
Commanding Officer

Fleet Readiness Center Southwest

Commanding Officer
Capt. Don B. Simmons, III

Executive Officer
Capt. Timothy Pfannenstein

Command Master Chief
CDMCM (AW/SW) Pablo Cintron

Command Address
Commanding Officer
Fleet Readiness Center Southwest
P.O. Box 357058
San Diego, CA 92135-7058

FRCSW Website
http://www.navair.navy.mil/frcsw

FRCSW Public Affairs Office
619-545-3415
FRCSW_PAO@navy.mil

Ombudsman
Autumn Hohner Phone: (619) 301-7091
Arlette Mendoza
Email: FRCSWombudsman@gmail.com

Work Schedule Status & Special Instructions in Emergencies
1-866-269-6590

FRCSW Mission, Vision & Values

Mission
Deliver responsive maintenance, repair and overhaul products and services in support of Naval Aviation and National Defense objectives.

Vision
Be the provider of choice for aviation maintenance, committed to customers, partners, workforce and community.

Values
Honor, Courage, Commitment.

FRCSW ALMANAC

Staff

Public Affairs Officer	Mike Furlano
Editor	Jim Markle
Graphic Artist	Chuck Arnold
Public Affairs Specialist	Leandro Hernandez
Photographers	Joe Feliciano
	Scott Janes

FRCSW ALMANAC is an authorized publication for members of the Department of Defense. Contents are not necessarily the official views of, or endorsed by, the U.S. Government, the Department of Defense, or the U.S. Navy. Contributions are welcome, but the Commanding Officer and editor reserve the right to correct, edit, and omit material as necessary to conform to editorial policy. FRCSW ALMANAC is printed from appropriated funds in compliance with NPPR P-35 Rev. Jan. 1974.

America's Navy – A Global Force for Good

FRCSW
ALMANAC
Volume 7 - Issue 2 - December 2013

Features

About the Cover
Advanced composite fabricator Jakob Grant uses an atmospheric plasma device to remove hydraulic fluid from the carbon epoxy laminate on a F/A-18 *Hornet* main landing gear door. *Photo by Leandro Hernandez*

V-22 *Osprey* tilt-rotor aircraft on the flightline at MCAS Miramar. *Photo by Mike Furlano*

Atmospheric Plasma: Application in an Atmosphere of Innovation

By Mike Furlano

Advanced composite fabricator Jakob Grant uses an atmospheric plasma device to remove hydraulic fluid from an F/A-18 *Hornet* wing panel.

Photo by Leandro Hernandez

Fleet Readiness Center Southwest (FRCSW) personnel have been repairing and modifying aircraft for 95 years, making FRCSW the birthplace of Naval Aviation Maintenance.

As aircraft have changed so has the manner in which they are repaired and FRCSW has been at the forefront of this innovation.

NEW TECH

In the 1920s, it was the use of blacksmith benches allowing artisans to more efficiently perform engine repairs. In the 1990s the command created the F/A-18 center barrel replacement program. Today, it's the use of atmospheric plasma to clean and bond composite aircraft parts.

Plasma has been called the 4th element (solid, liquid and gas being the other three). Atmospheric plasma is simply plasma that can be used anywhere, including FRCSW maintenance shops.

"Plasma looks like a gas, feels like a gas but it's really the 4th state of matter…it's not liquid, solid or gas… its changed gas," said FRCSW materials engineer Justin Massey.

The idea of using this technology had its genesis in 2008 when Ed Harris, FRCSW senior materials engineer, was attempting to salvage aircraft doors that had been "bathed" in hydraulic fluid due to their proximity to landing gear.

Harris knew, in theory, atmospheric plasma could remove the fluid better than the current methods of sanding and grinding, while at the same time allowing for the improved bonding of parts.

"A cleaner surface on an aircraft part allows for a better, stronger, longer lasting bond," Harris noted.

Research funding was secured, and Massey, dedicated his time to making this technology work. He took advantage of the command's designation as a federal laboratory and entered into a Cooperative Research and Development Agreement (CRADA) with Surfex, a company with expertise in atmospheric plasma.

The two organizations began experimenting with gas solutions and discovered that using oxygen plasma improved artisans' abilities to remove the hydraulic fluid. Further experimentation identified nitrogen as the gas best used to improve bonding.

"The oxygen plasma hits the hydraulic fluid soaked surface and breaks it down much like what happens when clothes are washed with soap," Massey explained. "The nitrogen plasma hits the surface of the aircraft part and removes the things that reduce bond durability. Removal of these constituents allows for a better bond between parts."

Safety testing and employee training was performed prior to deploying the technology in command shops. The FRCSW Environmental, Industrial Hygiene and Safety Departments, as well as the San Diego County Environmental Office, found the use of atmospheric plasma to be completely safe. In fact, the only personal protective equipment required is eyewear to block the minimal light emanating from the unit.

"The system allows us to eliminate the use of HAZMAT chemicals while at the same time cleaning the part 10 times faster," stated FRCSW Code 93209 work lead Jakob Grant. "We can remove fluid in nine or 10 minutes instead of putting the part into the air circulating oven for one or two hours."

Training takes just one and one-half days to complete, as the two processes are fairly simple. Both require a variation of sanding the surface; wiping the part down to remove left over grit; applying the atmospheric plasma solution (oxygen for cleaning, nitrogen for bonding); and then either heating (cleaning) or curing (bonding) the metal surface.

The nitrogen plasma process improves the bond between two parts while reducing the amount of time between application and bond creation.

Once a part has gone through the nitrogen process, FRCSW artisans may secure the parts within one hour, instead of the four hours it currently takes. This allows the command to reduce turnaround-time, improve efficiency, decrease costs and ultimately provide a better product in support of the warfighter.

As naval aviation continues to change, this technology will be adapted to include additional uses including improved adhesion in the painting process and creation of a better transparency for canopies.

Utilizing atmospheric plasma will allow the command to provide a higher level of maintenance to the Navy and Marine Corps, further cementing FRCSW's reputation as the aviation maintenance innovation leader.

FRCSW Site Yuma Artisans Tackle JSF Modifications

As the Navy and Marine Corps prepares to activate the F-35B Joint Strike Fighter (JSF) aircraft, Fleet Readiness Center Southwest (FRCSW) artisans from Marine Corps Air Station (MCAS) Yuma in Arizona are ensuring that modifications to the airframe will be complete on the F-35s earmarked for Marine Fighter Attack Squadron (VMFA) 121.

An F-35B *Lightning II* from Marine Fighter Attack Squadron (VMFA) 121, conducts the first short take off and vertical landing at MCAS Yuma, Ariz. VMFA-121 is the Marine Corps' first operational F-35B squadron.
Photo by SSgt. Jessica Smith

Three F-35B Lightning II Joint Strike Fighters with VMFA-121 fly in formation during fixed-wing aerial refueling training over eastern California.
Photo by LCpl. Raquel Barraza

The single-seated stealth F-35 is a multi-mission fighter designed for use in naval, Marine Corps and Air Force assignments.

The JSF is intended to replace today's legacy F/A-18 *Hornets*, the vertical landing AV-8B *Harriers*, and the EA-6B *Prowler* electronic warfare aircraft.

The versatility in design makes it one of the most anticipated airplanes in the history of military aviation.

Lead developer Lockheed Martin manufactures three variants of the airframe: The F-35A, a conventional take-off and landing version intended for Air Force use; the F-35B which features a short take-off vertical landing (STOVAL) capability that is best suited for Marine Corps purposes; and the F-35C, designed for use on the Navy's aircraft carriers.

At MCAS Yuma, FRCSW artisans are installing modifications to the two auxiliary air inlet doors (AAID) located on top and each side of the F-35B fuselage.

"There was a flaw in that the actuators that allowed excessive door motion in the open position. So, we're providing the labor force for Lockheed Martin to beef up the structure around the door and the actuators," said Jamie Riddle, F-35 logistics management specialist.

AAID modifications are slated for all lot LRIP-4 F-35s that will be assigned to VMFA-121. Riddle said that FRC East initially began the modifications in January, and completed four of the aircraft by September 11 when FRCSW takes over and inducts its first aircraft.

"We are trained on the fourth aircraft and that one was considered our `on-the-job training' bird. The fifth will be considered training also, but we'll be doing all of the work with a subject matter expert while we install the mod," Riddle said.

FRCSW added seven artisans to its MCAS Yuma staff (four sheet metal mechanics, two aircraft mechanics and one electrician) to handle the AAID workload. Those artisans began training on June 25 and were joined by counterparts from Ogden Air Force Base where the modification will also take place.

Riddle said that FRCSW will complete the work in phases, so all seven artisans won't be detailed to the same aircraft at the same time. Installation of both AAID is estimated to take more than 1,000 manhours, with an approximate turn-around time of 30 days per aircraft.

Lockheed Martin, who is responsible for installing the modifications, will provide all materials required to complete the work including any engineering, planning or technical support.

Riddle said that Lockheed Martin might request FRCSW assistance for two more modifications pertaining to this particular lot of F-35s.

"The AAID problem prevents the aircraft from landing vertically. That extends to the roll control nozzle (RCN) doors. On the bottom there are little nozzles when the door opens, which enable the thrust vectoring so air comes in the top through the jet and out of the sides," Riddle explained.

Investigations into door failures during flight test concluded that the RCN doors do not have sufficient strength in numerous areas. Subsequently, the doors have been re-designed to stiffen forward and aft areas.

Riddle said that Lockheed Martin is currently developing roll control nozzle and landing gear door modifications and, that if selected, FRCSW would be handling the validation and verification of those procedures.

The Marine Corps anticipates full operation of the F-35B sometime in 2015.

An MH-60 Sea Hawk helicopter assigned to the Black Knights of Helicopter Sea Combat Squadron (HSC) 4 takes off from the flight deck of the aircraft carrier USS *Ronald Reagan* (CVN 76).

Photo by MC3 Timothy Schumaker

FRCSW EMPLOYEE RECOGNIZED FOR FLEET SUPPORT

Roger Ashcraft, sheetmetal mechanic, talks with Jodi Visosky, logistics management specialist for the FRCSW F/A-18 Fleet Support Team. Visosky won the 2013 Lasswell Award for Fleet Support.

Photo by Joe Feliciano.

Jodi Visosky, a logistics management specialist for the Fleet Readiness Center Southwest (FRCSW) F/A-18 Fleet Support Team, is the recipient of the 2013 A. Bryan Lasswell Award for Fleet Support.

Sponsored by the National Defense Industrial Association and named for Marine Corps Maj. A. Bryan Lasswell, the award recognizes individuals who provide exceptional support to the Navy, Marine Corps or Coast Guard forces based in San Diego.

In 1942, Lasswell, who was a translator and cryptologist, deciphered communications of the Japanese Navy, which proved vital to the American victory at the Battle of Midway Island.

In 1997, Visosky joined the FRCSW Industrial and Logistics Maintenance Planning/Sustainment Department and has worked as the F/A-18 High Flight Hour (HFH) logistics team lead for the past two years.

"My team monitors the results of 128 inspection locations on all of the (F/A-18 *Hornet*) aircraft inducted for HFH. These inspections are based upon the eight HFH bulletins. We currently have approximately 120 aircraft undergoing HFH inspections at eight different sites enterprise-wide. We track the inspection results and subsequent repair of those aircraft," she said.

The HFH program evolved from the Service Life Assessment Program (SLAP) that was developed in 2002 to determine the feasibility of the legacy Hornet airframe to surpass its initial 6,000 flight-hour service life.

A second phase of SLAP was created in 2005 and led to the basic HFH inspections one year later, which included disassembly of the aircraft to identify corrosion, cracks and fatigue-related issues.

To extend the Hornet service life even further, to 10,000 flight-hours, the Service Life Extension Program (SLEP) was created in 2008 using the basic HFH inspections and the Center Barrel Plus procedures.

In 2009, the basic version of six procedural SLEP inspection bulletins was released. Completion of the inspections and satisfactory disposition of all positive findings would permit an aircraft to exceed 8,000 flight hours, with a service life extension of 600 hours.

Visosky is joined by six other logisticians on the HFH team. They ensure that the documentation pertaining to the inspections is complete; including all inspection results and what, if any, dispositions were performed to repair all positive findings.

The data is packaged and forwarded to the air certification engineers for review and approval of a service life extension for each particular aircraft.

Meanwhile, she said the HFH logistics team targets other issues including supply and material requirements; tracking material usage in case there's an increase in demand; and considering the support of new repairs that may require the manufacture of new parts, and finding sources for those parts.

"Upfront, we developed a material forecast which included the parts we thought were going to fail, and that we needed the supply system to have available ahead of time," Visosky said.

"Unfortunately when these older aircraft were torn apart and inspected, we found parts that were failing at a higher rate or found parts that they were "over and above", or "collateral damage". This resulted in material requirements that we couldn't predict at the beginning. These parts have really become a logistics challenge."

"Jodi is very tenacious. Her determination to follow through and dedication has greatly increased the supply posture of the HFH program," said former Industrial and Logistics Maintenance Planning/Sustainment Division Head Michelle Gomez.

To deal with higher failure rate parts, the HFH logistics team created a "Bag List."

"The intent was to get those high usage items pre-positioned where they were going to be needed to facilitate moving the (HFH) aircraft through the depot sites quicker," said Visosky.

Large structural parts such as longerons and bulkheads are examples of high usage components that are replaced vice repaired, due to the time and expense involved in developing new repairs Visosky noted.

Purchasing non-repairable HFH parts is completed through the Defense Logistics Agency (DLA), and repairable parts through the Naval Supply Systems Command. Other parts suppliers include FRCSW/FRCSE manufacturing and local private machine shops.

"Our HFH logistics team participates in a weekly call for material shortages," Visosky stated. The call is supported by the original equipment manufacturers Northrop Grumman and Boeing, as well as FRCSW/FRCSE manufacturing.

Visosky said that the team occasionally helps in locating manufacturers or suppliers for parts. "For instance, if there's a special fastener required for a repair the engineers have designed and those fasteners aren't readily available in the supply system we actively look for a vendor who may have them so DLA can go to that source and procure them."

Keeping on top of the growing inventory of components needed to support the HFH program is an ongoing challenge for the program, Visosky said.

"We've looked at over 100 aircraft, so we know the real failure rates, and we've adjusted our forecast from predicted and real," she said. "But there are things we didn't expect to fail and parts we didn't expect to need and now we have to deal with the logistics lead time involved in getting those parts."

"We have some really good people here who are dedicated to fleet support and trying to get the aircraft back to the customer as soon as possible by thinking of innovative ways to make that happen. I just happen to be the HFH logistics team lead; I'm just one of those determined to make it happen", she said.

Visosky will be presented the Lasswell Award for Fleet Support Dec. 11 at the Sheraton Hotel and Conference Center in San Diego.

As of October, 97 legacy Hornets have completed HFH inspections and have been granted a service life extension.

FRCSW Holds Park Rededication Ceremony

Honors All Who Passed While in Service

Brian Frank, head of FRCSW Research and Engineering, gives opening remarks for the rededication ceremony on September 3, 2013.

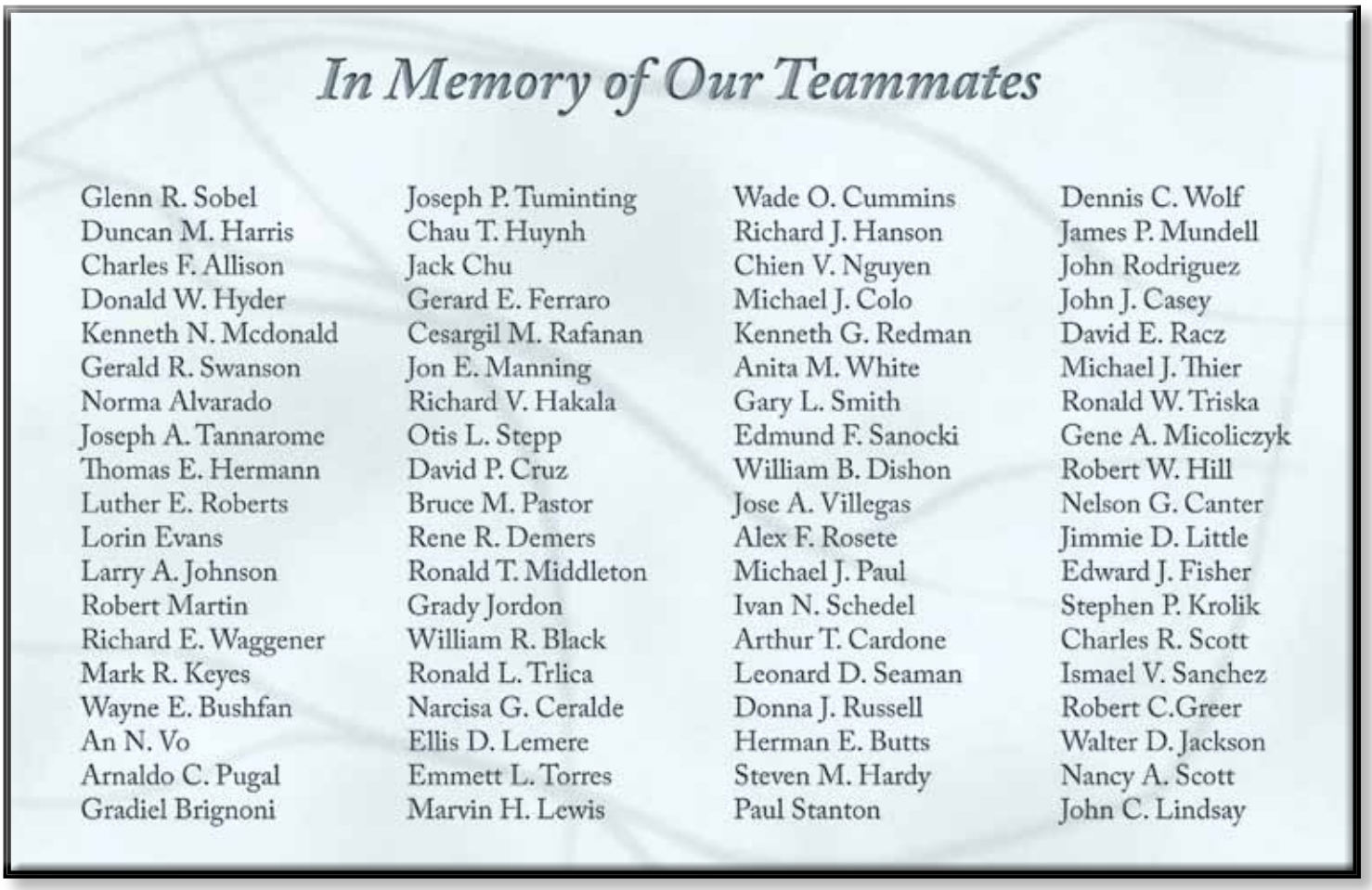
A video of the event can be found at: https://www.facebook.com/photo.php?v=558770994170475

Photo by Joe Feliciano

Lt. Mark Williamson, Naval Air Rework Facility F-14 Project Officer, for whom the park was originally dedicated. *Courtesy Photo.*

Fleet Readiness Center Southwest (FRCSW) active duty and civilian personnel gathered Sept. 3 for the rededication of the commands park adjacent to Building 94 to an inclusive memorial site honoring all FRCSW employees who lost their lives while serving their country.

Brian Frank, head of FRCSW research and engineering, opened the ceremony at 8 a.m. by recognizing Lt. Mark Williamson, for whom the park was initially dedicated.



The list of teammates that represented those that have passed while serving with Fleet Readiness Center Southwest.

A radar intercept officer (RIO), Williamson transferred from the aircraft carrier USS *Kitty Hawk* (CV-63) in 1983 to the then-Naval Rework Facility where he served as the F-14 *Tomcat* fighter project officer.

"Exactly 27 years ago today, on Sept. 3, 1986, our command suffered a tragic loss when one of our F-14s crashed while being delivered to Miramar. Killed in that accident was Lt. Mark Williamson. Later that year, the park we now stand in was dedicated to his memory," said FRCSW Commanding Officer Capt. Donald B. Simmons III.

Guest speaker and former FRCSW plant manager Bill Reschke, a close friend to Williamson, recalled some of the attributes and accomplishments of his colleague.

"Mark was a people person. He graduated from Montana State and majored in forestry. He was very personable and loved to fish, hunt and ski. And though RIOs aren't typically pilots, Mark was. He was a general aviation pilot," he said.

In his concluding remarks Reschke pointed out the inherent danger within the naval aviation enterprise, spoke of the value FRCSW work has to the fleet, and the importance of teamwork in meeting the fleet's needs.

Afterward, FRCSW safety director Mike Delrosal gave an update on the command's efforts to mitigate the risks production and support staff face in their daily routines.

"When you look around the plant and see people wearing safety glasses and hearing protection, it's not a culture of the safety office. It's how we do business," Delrosal said.

"In the future as our processes change and new commitments come about, we'll look at those issues to keep our people safe so we can do what we do best, which is to produce the aircraft to meet the requirements of the fleet," he said.

In her remarks, FRCSW aviation safety officer (ASO) Lt. Julie Forester reinforced the call for safety awareness throughout the command.

"As the ASO, I read safety investigations and hazard reports on a daily basis. Human factors or errors are what account for the majority of these accidents," she said. "One moment of inattention or complacency can cost us our lives."

The final speaker, Capt. Simmons, referenced two memorials that were displayed: A photo of Williamson, and a list of former employees representing all FRCSW employees in the history of the command who had passed while serving their country.

"In order to carry on Lt. Williamson's legacy and to remember the rest of our FRCSW heroes, I hereby rededicate this park as FRCSW Memorial Park," Capt. Simmons stated.

"FRCSW Memorial Park is more than just a reminder of our past," he said. "It is also a reminder that what we do is important for our country and that we must always adhere to our safety efforts."

"FRCSW has the best and most innovative personnel in the Naval Aviation Enterprise, and the best way to honor those that came before us is by continuing to be the best we can be."

The ceremony concluded with one minute of silence.

COMFRC Visits FRCSW Site Miramar

Photos by Mike Furlano

RDML Paul Sohl, Commander Fleet Readiness Centers (COMFRC), left, discusses maintenance with Major Eric Elliott, Aviation Maintenance Officer for Marine Air Logistics Squadron (MALS) 16, on the H-53 main rotor blade during a visit to Fleet Readiness Center Southwest (FRCSW) Site Miramar. RDML Sohl visited FRCSW September 12 and 13, 2013.

RDML Sohl talks with Ramon Marquis, Fleet Readiness Center Southwest (FRCSW) sheet metal mechanic, during a visit to FRCSW on September 12 and 13, 2013. Mr. Marquis conducts repairs on the V-22 *Osprey*.

RDML Sohl and Major Eric Sandberg (USMC), tour the V-22 *Osprey* hangar at Marine Corps Air Station (MCAS) Miramar on September 13, 2013. COMFRC is the parent command for Fleet Readiness Center Southwest (FRCSW) where avionics and in service repair work is performed on the V-22 aircraft. The V-22 Osprey is an American multi-mission, military, tilt rotor aircraft with both a vertical takeoff and landing (VTOL), and short takeoff and landing (STOL) capability. It is designed to combine the functionality of a conventional helicopter with the long-range, high-speed cruise performance of a turboprop aircraft.

FRCSW Captures Top SECNAV Energy Award

In view of its superb energy and water management program, Fleet Readiness Center Southwest (FRCSW) was named the Secretary of the Navy's (SECNAV) Fiscal Year 2013 Energy and Water Management Award winner.

The award was announced through a Navy message on Sept. 20, 2013.

Presented annually and divided into eight major categories (five shore and three ship) the SECNAV award is the highest level of recognition within the Navy's energy programs, and recognizes commands that have demonstrated "comprehensive efficiency programs with senior-level command involvement."

FRCSW was selected under the "tenant" command category.

During FY 12 and 2013, FRCSW's energy team directed the investment of more than $3.5 million of command and utility rebates to gain over $1,347,000 and 21,565 British Thermal Units (MMBTU) of annual energy and water savings and cost avoidance, while adding over 85,000 square feet of conditioned space.

MMBTU is an energy measurement for steam, electricity or natural gas.

The energy intensity dropped from 107.58 MMBTU/thousand square feet (KSF) to 99.18 MMBTU/KSF, and water intensity from 7.52 thousand gallons (KGAL)/KSF to 6.99 KGAL/KSF, generating more than $100,000 in additional utility rebates.

FRCSW uses an index of energy consumption called "energy intensity," which is based on BTUs, vice industrial floor space.

A similar index, called "water intensity," is used to measure thousands of gallons of water instead of industrial square feet.

By establishing indices of energy and water intensity, the actual energy or water used per square-foot is evaluated on a continual basis. This metric often identifies anomalies of energy and water usage which make it easier to remedy before increased costs are incurred.

"All projects and operational changes we complete have strict metering criteria behind them before and after completion. We have literally caught millions of dollars in billing errors over the years. Quite simply, if you can't measure it, you can't manage it," said FRCSW energy and water conservation manager Matthew Schreck.

The command's Building Energy Monitor (BEM) Program promotes energy awareness not only on the work floor, but through all levels of management.

FRCSW energy manager Sarah Tuley oversees the BEM. In addition to walkthroughs and educating artisans on what to look for and do if a possible source of energy waste is identified, Tuley helps to organize the command's energy projects.

"Making sure that the projects implemented are working correctly is part of our project management, but keeping a pulse on what is occurring on a daily basis in the buildings is crucial," she said.

"By tracking all of the buildings usage regularly, many leaks and inefficiencies come to our attention. A steam leak that is only one-eighth of an inch, costs about $3,800 a year. With the assistance of the artisans, we can locate leaks and other energy waste-streams to nip them in the bud before they hit the taxpayers' paycheck," Tuley said.

FRCSW's energy programs are funded through various sources.

In addition to command-funded projects, the Energy Conservation Investment Program (ECIP) enables access to Congressional funding for renewable technologies.

Under the ECIP, daylight harvesting projects were completed in Buildings 250 and 65, and the FRC's first renewable generation, or solar panels, were installed atop Building 65.

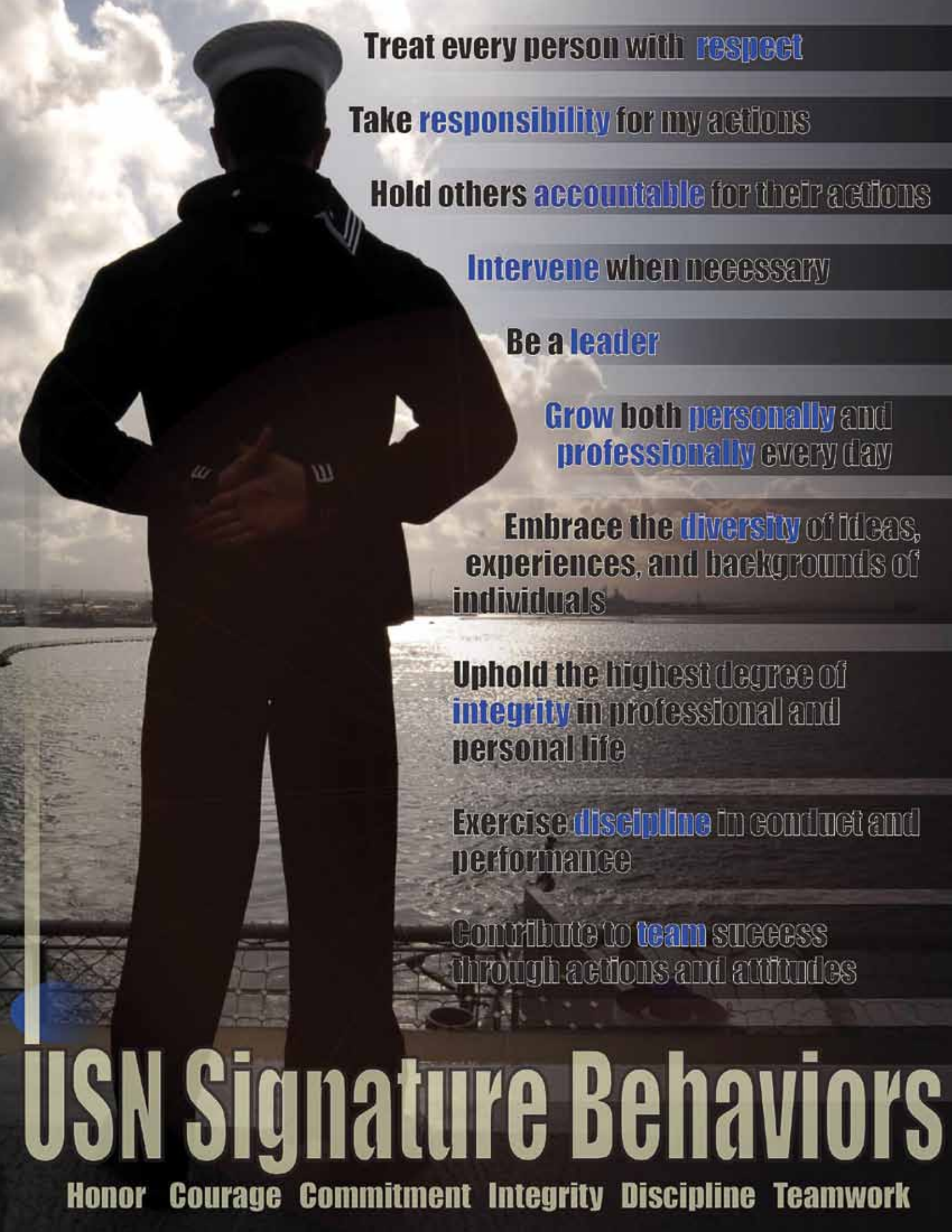
The command also receives funding through utility rebates that are strictly awarded by San Diego Gas and Electric's (SDGE) Energy Savings Bid program. The program encourages large, nonresidential, energy-saving natural gas and electrical retrofit projects.

Schreck cited lighting improvements to the metrology lab as an example of the SDGE rebate program.

"We put in a new lighting control system integrated with direct digital control which is saving about $30,000 per year in electricity; with another $20,000 rebate from SDGE. That was funded from FY 2012 rebates," he said.

For its SECNAV award selection, FRCSW will receive an additional $35,000 in funding toward energy improvements.

Looking ahead, the energy team plans to improve the operational energy standards of 20 FRCSW buildings. The plan will devote millions of dollars toward energy efficiencies and renewable projects using standard and advanced technologies.


Treat every person with respect
Take responsibility for my actions
Hold others accountable for their actions
Intervene when necessary
Be a leader
Grow both personally and professionally every day
Embrace the diversity of ideas, experiences, and backgrounds of individuals
Uphold the highest degree of integrity in professional and personal life
Exercise discipline in conduct and performance
Contribute to team success through actions and attitudes
USN Signature Behaviors
Honor Courage Commitment Integrity Discipline Teamwork