



**FRCSW**

# ALMANAC

Volume 5 - Issue 6



**FRCSW Maritime  
Program:**

**New Lathes  
Spinning Up**

# Skipper's Corner: Helping Our Community



**Capt. John Smajdek**

For more than 90 years, from the time of Lt. Ellyson's first flight to today, Fleet Readiness Center Southwest has played a vital part in Naval Aviation.

Senior management and artisans alike understand that this command provides immeasurable support to the Navy and Marine Corps and that our mission is a vital cog in the national defense of the country.

However, many members of the San Diego community are unaware of the national asset that is in their own backyard. Thus FRCSW has created a number of robust community relations programs that are designed to benefit the San Diego community in many ways.

Whether it is working with children through our programs for mentoring at Perkins Elementary and science enrichment at Hancock Elementary schools, aiding the less fortunate through our Christmas in October participation, or spreading the word about environmental stewardship at Earth Day and the Coronado Flower Show, FRCSW personnel have continually demonstrated outstanding citizenship.

These programs not only allow the command an opportunity to help our fellow man, but they also give us an opportunity to inform the community of the importance of the FRCSW mission.

After all, the work done by Sailors and artisans at the command not only supports the Navy and Marine Corps, but ultimately benefits the American public.

Bravo Zulu and keep up the good work!

JOHN SMAJDEK  
Captain, U.S. Navy  
Commanding Officer



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### FRCSW MISSION, VISION & VALUES

**MISSION**  
DELIVER RESPONSIVE MAINTENANCE, REPAIR AND OVERHAUL PRODUCTS AND SERVICES IN SUPPORT OF FLEET READINESS AND NATIONAL DEFENSE OBJECTIVES.

**VISION**  
BE THE PREFERRED PROVIDER OF INNOVATIVE AVIATION MAINTENANCE SOLUTIONS, COMMITTED TO CUSTOMERS, PARTNERS, WORKFORCE, AND COMMUNITY.

**VALUES**  
INTEGRITY (HONESTY, ACCOUNTABILITY, PERSONAL RESPONSIBILITY),  
TEAMWORK (OPEN COMMUNICATIONS, TRANSPARENCY, INFORMATION SHARING), MUTUAL RESPECT, AND WORKPLACE DIVERSITY.

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**America's Navy – A Global Force for Good**

**FRCSW**

# ALMANAC

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### *About the Cover*

Machinist Ray Santos turns a water brake barrel using a new lathe in Building 65. One of two new lathes, the tooling is also used for machining catapult piston assemblies. *Photo by Jim Markle*

The engine intake of an F/A-18 Hornet fighter as viewed from the rear of the aircraft in Building 378. The aircraft's engines are removed as part of the center barrel plus procedure designed to prolong the life expectancy of the Hornet A-D legacy models.

*Photo by Jim Markle*



# NEW LATHES HELP FRCSW VRT CATAPULT TEAM MEET FLEET NEEDS

Story and photos by Jim Markle

**F**leet Readiness Center Southwest (FRCSW) Voyage Repair Team (VRT) artisans in Building 65 recently welcomed a much needed tooling upgrade with the addition of two new lathes designed to machine the primary components of the Navy's catapults: the water brake and catapult piston assembly.

"One of the old lathes wouldn't go in reverse, and we could operate it in only one gear," said machinist Phil Sanchez. "That one was built in 1966 and came to us from San Francisco Naval Shipyard at Hunters Point."

The new lathes were made by Lagun Manufacturing and cost about \$175,000 each. Three VRT machinists assigned to catapult overhauls completed training on the lathes in mid-April.

The four catapults of each Navy aircraft carrier routinely propel F/A-18 Hornet fighter aircraft to over 150 miles per hour in less than three seconds.

The catapults are powered by steam, and comprised of two piston assemblies made of two cylinders and two pistons per catapult. The aircraft are attached to a shuttle that moves on rails under the flight deck, and the pistons, which are shaped like spears, have connectors attached to the shuttle.

Machinists Phil Sanchez, left, and Ray Santos stand behind water brake barrels stored outside of Building 65. Once overhauled, water brakes and piston assemblies are inventoried under a ready-for-issue status for immediate use in the fleet.



Machinists Ray Santos, left, and Phil Sanchez turn a water brake barrel using a new lathe in Building 65. One of two new lathes, the tooling is also used for machining catapult piston assemblies.

The catapult fires when a launching valve opens allowing steam into the cylinders. The force of the steam pushes the pistons forward, moving the shuttle and aircraft to the point of launch speed.

The lathes are essential to the proper and very precise machining of the catapult components. Though weighing more than 2,300 pounds and about 12 feet long, the piston assemblies have only a .025 thousandths of an inch variance.

“Prior to reassembly of the catapult, the piston assemblies are sandblasted and tested using non-destructive inspection techniques and then weighed. We have a window of 10 pounds in terms of allowable weight differential,” machinist Ray Santos noted.

The launch sequence ends when the spear-shaped pistons enter the water breaks, which are cylinders filled with fresh water.

Though the water brakes hold fresh water, the harsh environment at sea takes a toll on both mechanisms.

“On a majority of the water brakes, we have to machine the end plugs because of corrosion caused by salt water. These weigh about 800 pounds, and it’s fairly time consuming,” Santos said.

The new lathes are used to turn and service the massive water brakes which, like the piston assemblies, require precise machining.

“There’s a set of rings that are part of the operation of the water brake to stop the catapult at the end of the stroke. We have to make sure the machine surface in the catapult is flush and that we have zero tolerance, and then we thread in a new choke ring,” VRT supervisor Tom Bryant said.

“The choke ring is a brass piece that’s threaded into the cylinder that acts like a speed bump. It helps the flow of water into the water break while the (piston) spear is trying to get in to stop it. While the spear’s trying to get in, the water is trying to get out. That area is where we’ll put the choke ring; and that’s where the stopping power is,” Bryant explained.



Machinist Ray Santos turns a water brake barrel using a new lathe in Building 65.

“There must be zero tolerance where the choke ring is threaded in against the seat. At the face of the choke ring, there’s another ring against it and that has a clearance of about .008 thousandths of an inch for when the spear comes in. And there’s an o-ring for a seal, as well. But there’s always a slight gap so the choke ring doesn’t crack,” he said.

If the choke ring gets worn, it begins to damage the water brake and the piston assembly.

The VRT catapult staff of 25 services the catapults of the aircraft carriers assigned to the West Coast as needed. Bryant said that 2,000 launches and 2,500 landings is the average life of a catapult water brake and piston before overhaul.

Because efficient service to the fleet is of paramount concern, water brakes and piston assemblies that are replaced are overhauled and held in a ready-for-issue (RFI) status. RFI funding is provided by the ship or Commander, Naval Air Forces Pacific.

“The RFI makes for a faster turn-around time for the ship if the asset is ready,” Bryant said. “When a ship returns from deployment, we install four sets of water brakes and pistons, and if there are a lot of launches from training, we put another RFI set of water brakes on and a new set of piston assemblies prior to deployment. This way, they won’t have to swap any of them out after they deploy. But if necessary, the ship can do it; they would replace the piston assembly and put the water brakes back in.”

When traveling to service catapults on aircraft carriers undergoing maintenance at the Naval Station (NAVSTA) Bremerton, Wash., shipyards the VRT staff brings a stand designed to hold water brake cylinders, along with an RFI cylinder. The cylinders on the ship are switched with the RFI cylinders.

“We put the new one back in the catapult the next day vice trucking the old one back here and doing the overhaul



An F/A-18C Hornet assigned to the Blue Diamonds of Strike Fighter Squadron (VFA) 146 launches from the aircraft carrier USS *Nimitz* (CVN 68).

Photo by MC3 Jacquelyn D. Childs

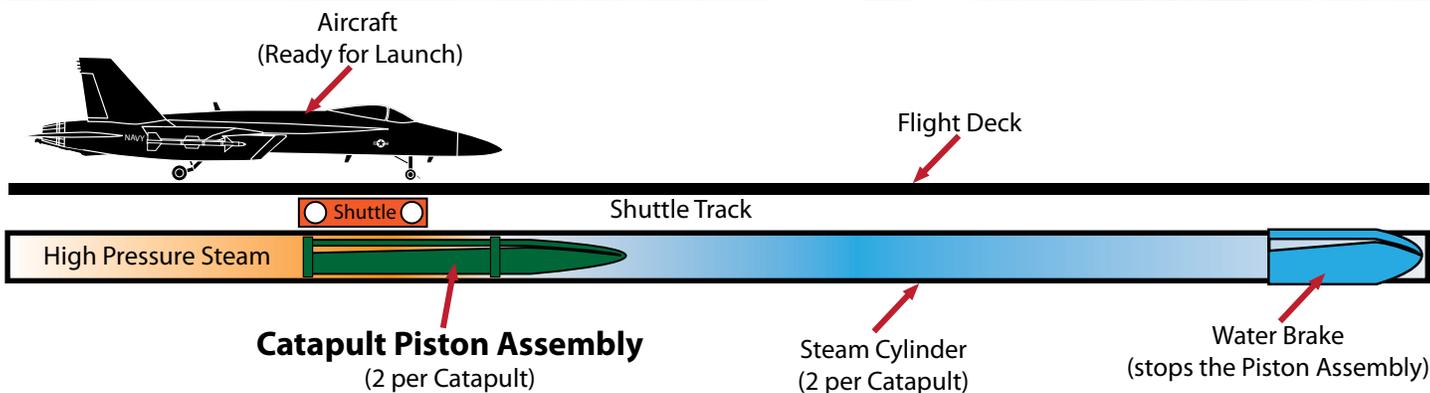


Illustration by Chuck Arnold

and reinstalling it; that would take three weeks. This way, we reduce our turn-round time to one week from three weeks,” Bryant explained.

For shipboard services, the VRT staff is usually comprised of one rigger and a minimum of two mechanics for water brakes per catapult. Removal, overhaul and assembly are about 350 hours per water brake, and the staff overhauls about 12 water brakes per year.

“We recently completed the catapults on USS *John C. Stennis* (CVN 74), and did all four water brakes in about 10 days,” Santos said. “The USS *Ronald Reagan* (CVN 76) is next. It’s in Bremerton now.”

The VRT catapult staff deployed to Reagan in April. ▲

### How an Aircraft Catapult Works

The effectiveness of an aircraft carrier depends upon the speed of its airplane launching operations. This requirement is met by the modern carrier catapult.

The principle component of the steam catapult is a cylinder-piston assembly with two power cylinders and two pistons per catapult. The spear-shaped pistons are forced at high speed through the cylinders by steam pressure. The pistons are attached to the shuttle. The shuttle is a small roller-mounted car, which moves on tracks installed just under the flight deck.

Prior to launch, the aircraft’s engines must be operating at full power. A holdback device is used to prevent the aircraft from moving forward from the thrust of its own engines. The holdback device hooks into a fitting in the flight deck.

The catapult is fired by opening the launching valve assembly and permitting steam to surge into the cylinders. The force of the steam pushes the pistons in the cylinders, breaking the holdback, and forces the pistons forward, towing the shuttle and aircraft at ever-increasing speed until takeoff is accomplished. The pistons and shuttle are stopped by the water brake.

(Sources: *Principles of Naval Engineering*, NAVEDTRA 12960, *Catapults*, NAVAIR 51-15ABD-1, USS *Nimitz* (CVN 68) *Ship Information Book Vol 2 Pr 1 Bk 3 Piping Systems* and <http://www.navy.mil/lakehurst/nlweb/fact-figures-02.asp>)



# Technology Partnerships Lead the Way

Photos by Joe Feliciano

**C**ollaborate to Innovate. That was the tagline for the 2012 Commercial Technologies Maintenance Association (CTMA) symposium held at Naval Air Station North Island March 26-28, 2012.

The conference was co-hosted by Fleet Readiness Center Southwest (FRCSW) and National Center for Manufacturing Sciences (NCMS). The CTMA program is a joint Department of Defense (DoD)/NCMS effort promoting collaborative technology development between industry and DoD maintenance and repair facilities.

More than 200 people from the DoD and the technology industry participated in this year's CTMA Symposium, which brought together leaders from each of the services, maintainers, industry users, and technology providers.

The Plenary Sessions heard perspectives from John Johns, Deputy Assistant Secretary of Defense for Maintenance Policy & Programs, Lorna B. Estep,

CTMA Symposium attendees listen as Fleet Readiness Center Southwest (FRCSW) engineer Gabriel Dragicevich discusses additive manufacturing systems that assist in the creation of innovative tooling. These systems allow FRCSW to prove out composite layups like those required for the creation of a "hat stiffener" which is used to replace a door on an F/A-18 E or F model aircraft at a savings of more than \$700,000 per door.

Air Force Deputy Director of Logistics/Directorate of Logistics and Sustainment, Chris Lowman, Army Assistant Deputy Chief of Staff/Director of Maintenance, and Tony Guarino, Enterprise Logistics Solutions at Lockheed Martin. Each of them discussed how their organizations are finding more efficient and effective ways of doing business in a time of fiscal challenges, including their perspective on where technology can increase their effectiveness and reduce costs.

***"Technology is one of the key enablers in our toolkit."***

*- John Johns, Deputy Assistant Secretary of Defense for Maintenance Policy and Programs*



Mr. John Johns, Deputy Assistant Secretary of Defense for Maintenance Policy & Programs, addresses CTMA Symposium attendees on March 26, 2012 at NAS North Island.

***“One of the ways to address this and continue to maintain the high levels of production, quality and capability in force structure is to drive technology into our processes.”***

*- John Johns, Deputy Assistant Secretary of Defense for Maintenance Policy and Programs*



Fleet Readiness Center Southwest Commanding Officer Captain John Smajdek talks to CTMA Symposium attendees about innovations created at the command. The specific innovation being discussed is the F/A-18 center barrel replacement program.

At a time when demand on U.S. ground forces is diminishing, an increase in requirements in North Korea and through the Asian corridor, as well as renewed worldwide interest in African resources, are creating an added emphasis on the U.S. Navy’s ability to project power across the world. At the same time the U.S. government is advocating a reduction in force structure and budget. These two realities seem at odds with each other and thus place added significance on the ability of the U.S. military and the technology industry to create beneficial partnerships in order to keep military readiness at necessary levels and within budget.

The command’s Advanced Aircraft Technology Integrated Program Team has been doing this very thing for the past three years with the Advanced Measurement Systems and Reverse Engineering Lab as the most visible centerpieces of the program. In November 2010, FRCSW was designated a Federal Lab by the Office of Naval Research. This designation allows the command to enter into

Cooperative Research and Development Agreements (CRADA) which enables FRCSW to develop, identify and champion transition technologies which are innovative, cost-effective solutions to meet the evolving needs of the Navy.

“As a Federal Lab, FRCSW has the opportunity to leverage our unique value to speed the development and transition of innovative technologies that reduce ownership cost, drastically improve aircraft turnaround times, and lower the burden of maintenance on our maintainers” said Chris Root, Advanced Aircraft Technologies IPT Lead.

Going forward, the command will continue to develop these relationships with industry technology companies such as Perfect Point EDM, Boeing Research Technologies and many others. These relationships will enable FRCSW to continue meeting the needs of the warfighter well into the future, which will allow the U.S. Navy to continue to be a “Global Force for Good.”

# FRCSW Artisans, Engineers Solve LM2500 Engine Vibrations



**F**or the past eight years, artisans and engineers from the Fleet Readiness Center Southwest (FRCSW) LM2500 engine program have been trying to solve a nagging problem: How to stop engine vibrations from exceeding industry standards.

Now, they have found the answer.

“By tightening or decreasing the tolerance of the measurement of the compressor rotor, we have a lower vibration rate which means a better reading in the test cell,” said aircraft engine mechanic Peter Solari.

The engine’s compressor rotor controls the flow of air that mixes with fuel to cause combustion.

LM2500 supervisor Thanh Lai said that prior to the new tolerance adjustment, vibration issues caused a failure rate of about one in every four engines.

“We tried just about everything to eliminate the vibration. But through the perseverance of our artisans and engineers, they were able to determine that the higher tolerance of the rotor compressor was the solution,” Lai said.

“We had two spare engines built before using the older tolerance; when we tore those down and adjusted the higher tolerance for the compressor, both passed with flying colors,” he said.

First used to power the *Spruance* and *Kidd*-class destroyers in the 1970s, LM2500 production began in 1969. The engines proved so reliable that their use expanded in the 1980s to include *Oliver Hazard Perry*-class frigates, *Ticonderoga*-class cruisers, and *Arleigh Burke*-class destroyers.



The future USS *Michael Murphy* (DDG 112) during a combined builder's and acceptance super trial. The *Arleigh Burke*-class destroyer is powered by four LM2500-30 marine gas turbine engines. The new destroyer honors the late Lt. Michael P. Murphy, who was posthumously awarded the Medal of Honor for his actions as leader of a Navy SEAL team in Afghanistan. *U.S. Navy photo courtesy of General Dynamics Bath Iron Works*

The engine is manufactured by the General Electric Co., and for the past 36 years, FRCSW remains the only naval facility to provide repair and overhaul services to the two types of LM2500: single and twin shank, and low power turbine.

Engines are repaired for significant cause and are not serviced on a maintenance schedule.

While engine vibration issues have never been a concern in the low power turbine, Lai noted that the suspected vibration cause in the single and twin shank was due to the alignment of the rotor.

"In the past, from the day the engine failed to going back up for overhaul was about two months. That's the hours in between assembly, disassembly, and balancing the engine. And that includes coordination between

engineering, the artisans, and evaluations," Lai said.

"Now, anything that's being overhauled has to be with the high tolerance, not the GE specifications. Working with engineering, we try to reduce the rotor compressor tolerance by about half of what is provided by GE in their manuals," he said.

"Though only four engines have been tested, we're hoping this will potentially save hundreds of manpower hours annually in terms of no longer having to trouble shoot vibration issues in the engines," he said.

The 18 artisans assigned to the LM2500 engine program service up to 22 engines annually. ▲

# FRCSW FINISHES SECOND IN MILITARY DIVISION OF MAINTENANCE SKILLS EVENT



Advanced composite mechanic Jeff Mullin of Fleet Readiness Center Southwest performs a repair to a Boeing 767 cockpit window during the Aircraft Maintenance Professional Society's 5th Annual Maintenance Skills Competition in Las Vegas, Nev.

Photos by Jack Braun

**F**or the fourth consecutive year, Fleet Readiness Center Southwest (FRCSW) placed a strong showing at the Aircraft Maintenance Professional Society's (AMPS) 5th Annual Maintenance Skills Competition March 7-9 in Las Vegas, Nev.

Despite minimal preparation hours, the five-member FRCSW team finished in second place in the military category of the competition, and sixth place overall in a field of 25 teams from 14 organizations.

The AMPS promotes the craft of professional aircraft maintenance technicians, and opens the event to student and licensed airframes and power plant mechanics and military personnel.

Competitors were permitted more than one team. Participating civilian organizations included Alaska and Southwest Airlines, Boeing, and FedEx.

Of the 10 teams competing in the military category, FRCSW was the only Navy entry. The Air Force team placed third and the Coast Guard captured first place in both the military and overall category.

"They (Coast Guard) convincingly beat everybody, including the major airlines. In fact, the Coast Guard team had met each other for the first time just three days before the competition. They came from different air stations throughout the country," said Jack Braun, FRCSW technical training director and command facilitator for the event.

The competition covered 17 maintenance events, and each event lasted 20 minutes. Scoring was based upon the amount of time it took to complete the task and the number of errors recorded during that time.



AM2 Brian Zacha tries his hand at the hydraulic test stand event. The test stand challenges each team's ability to complete hydraulic tasks in diagnosis, theory, and safety procedures.

Events were sponsored by the participating organizations, which also provided judges. As it did last year, FRCSW sponsored an advanced composite materials repair event. Chief Aircraft Structural Mechanic Shadrack Goad and advanced composite instructor Tim Moore served as judges.

"FRCSW did take first place in the advanced composites event, as well as the technical publications research, and the external power receptacle simulator event that was sponsored by Alaska Airlines," Braun noted.

Other events included a bond and ground event sponsored by Boeing; auxiliary power unit sponsored by Southwest Airlines; avionic troubleshooting event by CAE; and a safety wire event by Spartan College of Aeronautics and Technology.

FedEx sponsored a JT9 engine repair event, and a written test on the life Charles E. Taylor, designer and builder of the first engine used by the Wright brothers, was sponsored by the AMT.

"We struggled on a couple of events. The safety wire event was changed this year, and though we didn't log any errors, we didn't finish the FedEx engine event; it's the type of engine that we don't really see," said Braun.

The JT9 engine is commonly used to power large passenger aircraft and first appeared on the Boeing 747-100.

"One thing we learned is that you can be extremely fast and error free, as the Coast Guard was. We always look at what we can bring back and share with the workforce; and that is if you have enough preparation, you can be very fast at what you do and reduce cycle time and log zero errors as the Coast Guard did," Braun said.

"I'm hoping we'll participate next year. It's a great way to motivate the employees because it tells them that if they want to do this, they need to be really good at their job in order to get on the team," he said. ▲

# NEW STRAIN SENSOR CALIBRATION SYSTEM TESTED AT FRCSW



One of the tools the Navy uses to assess the service life of its aircraft and components is the fatigue life expectancy (FLE) value.

The FLE reflects the use history of an aircraft and is based upon stress-related factors affecting areas of the airframe, such as wing attachment points.

FLE data may be gathered through the measurement of strain sensors that are installed on the aircraft. The sensors reflect the state of an aircraft's components, making it possible to avoid unnecessary repair or replacement.

To improve the accuracy and efficiency in calibrating strain sensors, F/A-18 engineers from Fleet Readiness Center Southwest (FRCSW) provided technical and logistics expertise to ATA Engineering, Inc., in developing a new calibration system for the sensors: the FlashCal™ Calibration System.

A prototype of the system was successfully tested on an F/A-18 Super Hornet at FRCSW's flight line in early February.

The portable system uses an electromechanical actuator to move aircraft appendages and equipment to measure the strain sensors' output. A mating connector directly accesses the aircraft's sensor signals, and custom adapters enable the system's actuator to safely exert force on the aircraft at key locations.

By monitoring the strain sensor output and the applied force, the system determines the "sensitivity" of each sensor. The entire process is done automatically through a software interface on an attached computer.

The test program also showed that the new system enables a two-person team to calibrate an aircraft's strain sensors within one shift. A preliminary set of calibration factors was documented which may be



used by the Naval Air Systems Command (NAVAIR) structural health assessment team to adjust the flight-measured data and ultimately the FLE for the aircraft.

“With the FlashCal™ system we will be able to control and correct for the aircraft-to-aircraft differences in sensor response, which will provide an economic benefit to the fleet while retaining current levels of safety on the aircraft structure,” said Tim Fallon, NAVAIR’s directing engineer on the program.

Continuing development of the system is underway for use on other aircraft, such as the Joint Strike Fighter. Future systems will be designed with the durability required for use at the squadron level so that strain-sensor prognostics can be performed after damage or repair in theatre.

“Developing this capability was an excellent way to solve a long standing issue we have had with using the

strain sensors for accurate FLE calculations,” Fallon said.

“We truly thank the FRCSW engineering and support personnel for their outstanding contribution. Their support was paramount to this successful initial test of the system,” he said.

*(Editor’s note: Joshua T. Davis of ATA Engineering, Inc., contributed to this report.)* ▲

# Out & About



Alyson Martinez



Arlette Mendoza

## FRCSW Welcomes Two New Ombudsman

Fleet Readiness Center Southwest (FRCSW) welcomed two new Ombudsman on May 4.

Alyson Martinez, wife of Chief Aircrew Survival Equipmentman Simon Martinez will serve as Ombudsman for Sailors and their families assigned to shore duty.

Arlette Mendoza, wife of Aviation Electrician's Mate 1st Class Jesus Mendoza, will provide Ombudsman services to Sailors and their families who are assigned to Sea Operational Detachments (SEAOPDET) and Individual Augmentees (IA).

Mrs. Martinez and Mrs. Mendoza assumed the Ombudsman role from Mrs. Cari Goad, who had held the role since May 2010.

The Navy's Ombudsman program was created in September 1970 by then Chief of Naval Operations, Admiral Elmo Zumwalt. The program strives to improve and strengthen family readiness through command communications, and provides information and referral services to military families.

You can contact the FRCSW Ombudsman at:

**Alyson Martinez:** 619-253-3487

**Arlette Mendoza:** 619-243-4038

**Or email:** [FRCSWombudsman@gmail.com](mailto:FRCSWombudsman@gmail.com)

*Photos by Joe Feliciano*

## FRCSW Opens First Industrial Safe Zone

Commander, Fleet Readiness Centers Rear Adm. Jeffery Penfield, background right, and FRCSW Commanding Officer Capt. John Smajdek, background left, look on as safety specialist Felicia Garcia, center, and painter/Senior Union Steward John Peairs prepare to cut the celebratory ribbon opening the first industrial safe zone aboard the command in Bay 1 of Building 466. The safe zones will include hygiene stations and cabinets stocked with PPE such as gloves and Tyveks, and brochures on lead, cadmium and hexavalent chromium.

*Photo by Scott Janes*



## FRCSW Chiefs Expand Team-Building Skills

Story by Leandro Hernandez

**F**leet Readiness Center Southwest (FRCSW) military personnel held a team-building event for 23 senior and master chief petty officers in Julian, Calif., on May 3. The event was part of the U.S. Navy's 119th anniversary celebrating the creation of the chief petty officer rank on April 1, 1893.

The exercise took place at Camp Stevens, an Episcopalian camp and convention center that was founded 60 years ago.

At the start of the day, the camp's ropes course coordinator, Joe Kiefer, gave a preview of the activities when he announced: "There are all sorts of challenges in store for you today, and I ask that everyone seek and overcome their own personal hurdles."

The Camp Stevens staff facilitated team-building exercises by laying the foundation of the activities with rules and guidelines, while assessing to the chiefs' feedback during and after the activities.

In one event, a group of senior chiefs worked together by using each other for physical support to cross two cables suspended between three trees. The exercise exemplified teamwork, trust, and conflict resolution skills.

FRCSW Command Master Chief Teresa Carroll joined her fellow chiefs as she traversed a difficult ropes course that was suspended 30 feet in the air. The course was made of ropes, steel cables and telephone poles.

"FRCSW is so vast and our chief's mess is so spread out that the goal was to give them an opportunity to build relationships, communication skills, and trust," Master Chief Carroll stated.

Feedback following the event was unanimously positive, said Chief Aviation Electronics Technician Steven Porretta.

"I've been hearing only positive things about the program and everyone gained some key takeaways about teamwork, how to lead, and how to listen," he said. ▲

Chief Mineman Kelly Mayer ascends high ropes course apparatus in Julian, California as part of a team building event for chiefs held on May 3, 2012. *Photo by Scott Janes*



A Global Force for Good



Aerospace engineer Cesar Martin shows students at Hancock Elementary School, a small solar-powered fan. FRCSW/NAVAIR engineers used the fan as a demonstration during their annual Science Enrichment Day March 8, which introduced the students to solar energy.

## NAVAIR Engineers Hold Annual Science Enrichment Day

Story and photo by Jim Markle

**W**ith a little help from the sun, Commander, Naval Air Forces (NAVAIR) engineers introduced 32 fifth-grade students from Hancock Elementary School to the nature of solar energy March 8 during NAVAIR's annual Science Enrichment Day.

The six NAVAIR engineers are assigned to Fleet Readiness Center Southwest, and their visit to the school marked the 20th consecutive presentation to the children through the Navy's Partnership in Education program.

Metrology engineer Jessica Gore kicked off the nearly two-hour long event with an overview of the basic forms of energy and the three types of solar energy: thermal, photosynthesis and photovoltaic.

Afterward, the students joined the engineers in the school's courtyard for hands-on demonstrations to better understand the principles and applications of solar energy.

Gore was joined by aerospace engineers Cesar Martin and Amado Aviles to oversee an experiment which showed the reaction of ultraviolet rays on Solar Paper. The children arranged and laid out letters and shapes on the paper, which blocked the light to create designs when the chemically-treated solar paper was exposed to sunlight.

"We really like these experiments," said 10-year-old Tamara. "The sun can do everything."

Using a concave mirror and a magnifying glass, aerospace engineer Dan Nguyen demonstrated how focusing infrared rays can generate enough heat to warm water or scorch dried leaves.

To demonstrate the more popular image of solar energy and its photoelectric effect, the engineers brought a car and fan that were powered through small silicon-based solar panels.

"The whole idea is to inspire these kids and get them to realize that science is fun and not that hard; we want to interest them in science and engineering. After all, they just maybe the future engineers for the Navy or the industries of our country," said aerospace engineer Dan Newell. ▲

# Awards

## Applause

### Retirements

Steven Abercrombie  
Timothy Amerine  
Danny Bermoy  
Larry Bratton  
Leon Brillon  
Sylvia Buhay  
Benjamin Bunag  
Randy Burkard  
Arnel Cabrera  
Nelson Canter  
Cesar Caramanzana  
James Carranza  
Manuel Castro  
Harold Celeste  
Hazel Childress  
Kathy Cobb  
Dennis Crowley  
Willard Delagardelle  
Dean Delano  
Olimpio Denina  
Teresita Dionisio  
Webster Dizon  
Richard Emms  
Douglas England  
Basilio Firme  
Quirino Gutierrez  
Peter Guzman  
Alan Helton  
Michael Howard  
James Hudson  
Hung Huynh  
Frank Inga  
Rogelio Izon  
James Jagers  
Marcus Kelly  
James Klein  
Ronald Laughlin  
Soai Le  
Walter Loftus  
Carlos Martinez  
Leonard Martinez  
Danilo Mercado  
Shawnie Meeks  
Noah Miller  
William Oker  
James Page  
Saturnino Penalosa  
Jennie Pierron  
Francis Pitman  
James Pollard  
John Proffer  
Ely Ramos  
Raymond Ransome  
Bobby Robershaw  
Steven Robles  
Holly Roehl  
Gary Rolling  
Frank Saludado  
Larry Sandstede  
Richard Thompson  
Michael Tong  
Ngoc Trieu  
Elizabeth West  
Kevin Wholey  
Cynthia Zimmerman

### Promotions

Michael Bennett  
Gregory Binde  
William Bridges  
Jeff Buckingham  
Kenneth Caliver  
Restyx Catalasan  
Dorothy Cedillo  
David Chavez  
Steven Coffey

Luis Colon  
William Comute  
Ernesto Dacooycoy  
Jose Del Real  
Allan Diaz  
Larry Duncan  
Lino Ecle  
Lydia Ensor  
Edward Fisher  
Peter Fonte  
Robert Frasier  
Earl Frazier  
Michael Furlano  
Ricky Gabrielson  
Michael Galaz  
Felicia Garcia  
Garrick Garcia  
Eric Geilenkirchen  
James Gilbert  
Jeffery Glover  
Scott Ha  
Michael Hall  
Devon Harmon  
Barbara Heath  
Shawanda Henderson  
Michelle Hoeschen  
Thomas Honeycutt  
Cory Jagger  
Jose Jimenez  
Chau Ke  
Ciry Kerr  
Luke Laroya  
Anthony Leffert  
Larry Lewis  
Rhea Linck  
Jorge Gutierrez-Lopez  
Garrett Lovell  
Michael Luster  
Michael Lyons  
Matthew Macelt  
Keyon Marshall  
Dwayne Martin  
David Martinez  
Justin Massey  
Jaime Mata  
Joseph McConville  
Arthur Morton  
Henry Mundwiler  
Larry Nelson  
Stephen Pacheco  
Jose Padilla  
Jeri Perez  
Christopher Pinson  
Michael Plank  
Jason Price  
Leizel Reyes  
Robert Reyes  
Robert Reynolds  
Brian Rice  
Carmen Ricoschlegel  
JoAnn Rodgers  
Anubis Rodriguez  
Janet Sanchez-Roberts  
Edgar Romero  
Dana Rowe  
Timothy Russell  
Yarin Sanchez  
John Sheppard  
Kristin Shott  
Jennifer Showalter  
Vladimir Sinaniz  
Denzel Sipes  
Matthew Stanley  
Vickyann Struthers  
Stephen Swall  
Michael Tilton  
William Thibedeau  
Nancy Thompson

Rodney Thompson  
Francis Tuchowski  
Dennis Turner  
Juana Valdez  
Ruben Valdez  
Martin Vargas  
Phillip Vu  
Kyle Zust

### Years of Service

#### 5 Years

James Cady  
Nelson Donado  
David English  
Carson Fanning  
Felicia Garcia  
Steven Galvin  
David Heck  
Ryan Kane  
Jorge Gutierrez-Lopez  
Jason Rice  
Ryan Delos Santos  
Kurt Saunders  
Ashley Young

#### 10 Years

Adam Gergen  
Dan Ha  
Adam Kimmerly  
Steven Lopez  
Jimmy Luu  
Matthew Pendleton  
Francisco Reyes

#### 15 Years

Todd Casagrande  
Chinh Dang  
Alister Horton  
Vilma Johnson  
Richard Krick  
Sarunas Landys  
Derek Urch

#### 20 Years

Patel Ghanshyam  
Gerardo Lorenzo

#### 25 Years

Allen Allen  
Ruben Basuel  
Vanessa Jackson  
Stephen Robert  
John Reyes  
Frederic Schneeberger  
Stephen Swall  
Deborah Warburton  
Laura Workman

#### 30 Years

Mcduffrie Allen  
Julio Deunamuno  
Michael Grice  
Edward Harris  
Rodney Hogue  
Lawrence Lai  
Philip Ross  
Miriam Salcedo  
Carmen Rico-Schlegel  
Charles Scott  
Eugene Shade  
Kevin Suarez  
Albert Tereul  
Linda Urich

Mark Yarrow  
Craig Young

#### 35 Years

Meandro Abueg  
Alfredo Alvarez  
Bernardino Bolanos  
Michael Cooper  
Robert Drew  
Kathleen Fava  
John Fielding  
James Goble  
Richard Gray  
Winston Jones  
Kris Larson  
David Martinez  
Nancy Morgan  
Michael Robinson  
Robert Tucker  
Cornelius Wiley

#### 40 Years

Thomas Frye  
Berti Humphrey  
James Klein  
Lawrence Mccann  
George Turner  
Sammie Williams

#### 60 Years

Dennis Clevon

### On the Spot

Carl Byrd  
Roger Castillejos  
Daniel Crist  
Cyril Dalmida  
James Gilbert  
Orlando Irwin  
Gary Johnson  
Matthew Pendleton  
Raymond Ransome  
Patrick Runk  
Joseph Sorrells  
Mark Vezzani

### Time-Off Award

Carmelita Devera  
Lakeyta Edwards  
Donald Hill  
Carol Martinez  
Alejandro Reyna  
Griselda Santa Maria

### Beneficial Suggestion

Robert Ferrell  
Charles Greer  
Luis Quiambo

### Productivity Recognition

#### Quarter

Alejandro Alejo  
Victor Baez  
Joseph Bailey  
George Blas  
Charles Brown  
Napoleon Calimquim  
Manuel Camitan  
Larry Castillo  
Henry Castrencia

Joselito Cervantes  
George Chevalier  
Keith Clemente  
Mark Corbilla  
Cyril Dalmida  
Manuel Dial  
Larry Duncan  
Daisy Duong  
Leo Duran  
Gary Frazier  
Karen Garipey  
Teresito Generoso  
Cody Gholston  
Norman Gomes  
Tim Gritton  
Edward Gutierrez  
Eric Hilderbrand  
John Holliday  
Shelia Hubbard  
William Icban  
Jathaniel Johnson  
Harvey Jones  
Richard Juarez  
Morrell King  
Michael Korpai  
Huy Le  
Isaac Llamas  
Bartolo Lopez  
William Ly  
Gavin Mackenzie  
Randal McClellan  
Dean Nelson  
Thanhlan Nguyen  
Ian Okada  
Michael Oliver  
Terry Parker  
Neil Pennington  
Richard Pfeiffer  
Richard Pledger  
Mark Pohlman  
David Powers  
Jennifer Prew  
Kenneth Redman  
Jeffrey Reiman  
Joseph Rodri  
Hector Romero  
Larry Sandstede  
Shamira Smashe  
Earl Smith  
Alice Taylor  
Rolando Telebrico  
Michael Tena  
Melchor Trajano  
Ngoc Trieu  
Renato Velunta  
Maria Villagomez  
William Wooldridge  
Gisele Zeffaro

Edgardo Abbellar  
Ronald Avera  
William Baughman  
Jake Bedon  
Darren Benjamin  
William Bernard  
Steve Brown  
Kevin Brunson  
Cynthia Bucaro  
O.C. Campbell  
Todd Casagrande  
Joselito Cervantes  
Jeffrey Clem  
Julian Dela Cruz  
Christopher Davis  
Diana Delgado

# Awards

## Applause

Gabe Draguicevich  
 Gil Duenas  
 Henry Ellis  
 Rex Ellis  
 Douglas England  
 Rick Farmer  
 Daniel Fischer  
 Carol Flanagan  
 Stephen Gamblerale  
 Patrick Garcia  
 Edwina Gobasco  
 James Goble  
 Craig Graham  
 Scott Ha  
 Bradley Hallock  
 Sinh Han  
 Larry Hayes  
 Marty Hernandez  
 Michael Isyasa  
 Walter Jackson  
 Manuel Jotie  
 Sean Lee  
 Michael Lindke  
 Colby Lindsey  
 Greg Mccalester  
 Douglas Mason  
 Timothy Moore  
 Mitchell Morris  
 Robert Oxley  
 Dennis Paige  
 Mark Pelayo

William Penn  
 Gene Peters  
 Florentino Quisay  
 Anthony Richardson  
 Tommy Rocha  
 William Ross  
 Charles Rufi  
 Mona Russell  
 Danny Sanares  
 Phillip Sanchez  
 Thomas Sapien  
 Steve Schabel  
 Maziar Sefidan  
 Soams Shifflett  
 Donald Sturman  
 Robert Szuba  
 Hao Thai  
 JB Thurmond  
 Quyen Tonnu  
 Patrick Walker  
 Curtis Witherspoon  
 Joseph Yuzon

### Special Act

Danny Abbott  
 Ali Adams  
 Jeffrey Athof  
 Royce Amuan  
 Ismael Arabaca  
 Arsenio Arce

Charles Arnold  
 John Atlas  
 Ronald Avera  
 Andres Avila  
 Steven Baker  
 Thomas Balgrave  
 Kimberly Barber  
 William Bernard  
 Rolando Beronilla  
 Juan Blount  
 Travis Boecker  
 Bernardino Bolanos  
 Paul Breniser  
 Denise Brent  
 Leon Brillon  
 Donald Brown  
 Richard Brown  
 Cynthia Bucaro  
 Emitterio Bumbasi  
 Vu Buu  
 Gerald Childers  
 Brnadette Chudy  
 Keith Clemente  
 Thomas Clutter  
 John Coffey  
 Victor Concepcion  
 Thomas Considine  
 Michael Corbin  
 Diane Cordero  
 Michael Cossey  
 James Craig  
 Maria Cruse  
 Daniel Cummins  
 Billy Daniels  
 David Dao  
 Alberto Delmar  
 Samuel Delrio  
 Teddy Dial  
 Dennis Doleshal  
 Pedro Duran  
 Joshua Duryea  
 Joseph Eldridge  
 Douglas England  
 Edward Evers  
 Roy Fabio  
 Timothy Fertig  
 Dean Frazine  
 Kenneth Freeman  
 Gregory Gemlo  
 Robert Gijon  
 Jeffery Glover  
 Michael Godwin  
 Scott Goldberg  
 Michael Gomez  
 Conor Goulding  
 Michael Grice  
 Steven Gustin  
 Carol Hammell  
 Aaron Hansen  
 James Hardie  
 Barbara Heath  
 Richard Heinrich  
 Liwayway Hernandez  
 Eric Hilderbrand  
 Roger Hirst  
 Martha Hoffman  
 Timothy Hoffmann  
 Richard Howard  
 Lori Hughes  
 Garrett Huguley  
 Tracie Huguley  
 Robert Izumihara  
 David Jarvis  
 Vilma Johnson  
 Matthew Jones  
 Winston Jones  
 Reynaldo Julian  
 Charles Kelly

Gregory Kerr  
 Inthavo Khounborine  
 Adam Kimmerly  
 Jeffery King  
 James Klein  
 Jeffrey Koehler  
 George Kozlik  
 Miles Kurashima  
 Denton Labar  
 Irma Letchaw  
 Brittney Levalley  
 Mavis Lewis  
 Andrew Lima  
 Walter Loftus  
 Bartolo Lopez  
 William Ly  
 Joshua Malish  
 James Markle  
 Ramon Marquez  
 Rowell Mateo  
 Merry Marthlamb  
 Jorge Martinez  
 Lisa St. Mary  
 Roger Maury  
 Larry Mccbrayer  
 Anne Mccoy  
 Gregory Mccalester  
 Shawn Mcsweeney  
 Rick Megginson  
 Danilo Mercado  
 Rolando Mercado  
 Joe Metzendorf  
 Jo Montgomery  
 William Moore  
 Jessie Moreno  
 Jeffrey Moore  
 Terrie Mortensen  
 Ryan Multerer  
 John Munnock  
 Joseph Munz  
 Kirkland Myles  
 Cheryl Nelson  
 Hai Nguyen  
 Khanh Nguyen  
 Jose Noverola  
 Brian Oakes  
 Bryan Ochoa  
 Kevin Odel  
 Bruce O'Dell  
 Mark Ohler  
 Edward Oliveira  
 Primitivo Ovalle  
 Gregory Pane  
 Kenneth Passerrelli  
 Larry Payoyo  
 Aaron Pendley  
 Neil Petkow  
 Dung Pham  
 Liem Phan  
 David Phillips  
 Robert Picklesimon  
 Tracy Pineiro  
 Teotimo Posas  
 Max Prince  
 John Proffer  
 Edward Quinteos  
 Florentino Quisay  
 Remigio Ravallo  
 Bruce Redlin  
 Josile Reigle  
 Clarence Resendez  
 Michael Rigney  
 David Ringle  
 Julia Rivera  
 Bobby Robershaw  
 Debra Rodr  
 Scott Rollins  
 Jeffery Ross

William Ross  
 Ricky Roy  
 Patrick Runk  
 James Russell  
 David Sanchez  
 Amado Santiago  
 Rodamar Santiago  
 Anthony Sardina  
 Gerald Schrader  
 Michael Schultz  
 Duane Sesma  
 Arlene Sexton  
 Michael Shea  
 Timothy Sinclair  
 Robin Sluder  
 Karen Sommers  
 Fredelita Soriano  
 Paul Stauffer  
 Roger Stensland  
 Alexander Sykes  
 Tanya Tang  
 Charles Tanner  
 Rolando Telebrico  
 William Thayer  
 Derrico Thomas  
 Steven Thomas  
 Kimberly Tomasino  
 Jose Torres  
 James Trowsdell  
 Jaime Truong  
 Tanya Valenzuela  
 Renee Veasey  
 Merissa Venegas  
 Dean Vo  
 Amir Walker  
 Mark Watts  
 Dennis Weddle  
 Wade Wendell  
 Matthew Williams  
 Sharon Williamson  
 Donald Willis  
 Eric Wilson  
 Dan Witko  
 Timothy Woods  
 Ronald Word  
 Merissa Venegas  
 Denzil Younce  
 Cynthia Zimmerman



Photo by  
 Joe Feliciano

The Almanac staff would like to wish Mass Communication Specialist Petty Officer 3rd Class Destiny Cheek a fond farewell as she moves forward in her Navy career. MC3 Cheek was assigned to work with the PAO during her time at FRCSW, and served as a photographer and writer for the Almanac. Her professionalism, dedication and her positive demeanor inspired us all. Her next assignment is Mass Communications "C" School at Ft. Mead, MD. Fair winds and following seas!



Aircraft engine mechanic Peter Solari hand tightens one of the fuel tubes in an LM2500 engine in Building 472. **See story on page 10.**  
*Photo by Jim Markle*