

Current Readiness & Enterprise AIRSpeed Newsletter



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CH-46Es going, going, but not gone: Current Readiness in a sundowning platform

By the CH-46E Community

The CH-46E Sea Knight, affectionately known as the "Phrog," has a long and illustrious career spanning almost five decades. Beginning with the Vietnam War, the CH-46E has flown in every clime and place where the United States Marine Corps could take a helicopter. The Sea Knight served as the workhorse of the Marine Corps aviation fleet and the core squadron for the Marine Expeditionary Unit (MEU) Aviation Combat Element (ACE).

The time has come for a new era in Marine aviation and for the service of the CH-46E to end; however, this aircraft is not ready to throw

in the towel just yet. Not only is the CH-46 still flying relevant real world missions, but this airframe will continue to do so for a number of years to come.

By now Marines know the CH-46E is retiring as Marine Medium Helicopter Squadrons transition to Marine Medium Tiltrotor Squadrons. The transition to the MV-22 Osprey started back in fiscal year (FY) 2005 at Marine Corps Air Station (MCAS) New River, North Carolina. The East Coast units completed the transition process *(Platform continued on Page 3)*



Welcome!

Maj. Gen. John Croley, Deputy Commander, U. S. Marine Corps Forces Command; and Commander, United States Marine Corps Forces South, joined the Current Readiness Cross-functional Team as one of its co-leads in November.



Maj. Gen.
John Croley

From the desk of Vice Adm. Al Myers:

BoGs are opportunities to encourage passion and enthusiasm among all ranks

Editors' note: Following the November Boots-on-the-Ground site visit to NAS Lemoore, Vice Adm. Al Myers sent a recap to the NAE's flag and general officers. Below is an edited version of the note, printed here to share across the Enterprise.



Vice Adm.
Al Myers

I recently attended a "Boots-on-the-Ground" (BoG) site visit at Naval Air Station Lemoore. I was joined by Executive Director for Commander, Naval Air Forces, SES Jim Beebe and a cast of talented representatives from key resource sponsors, and warfighter and provider organizations.

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Vice Adm. Al Myers, Commander, Naval Air Forces and co-lead of the Naval Aviation Enterprise, takes a moment during “Boots-on-the-Ground” to speak with junior Sailors at Naval Air Station Lemoore. He acknowledged their contributions to Naval Aviation readiness and encouraged them to “stay Navy.” Fleet Readiness Center – West hosted the site visit on Nov. 8. Photo by Jacquelyn Millham, NAE Public Affairs



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As my first BoG event, I came away with several observations that I wanted to share with the Executive Committee membership:

1. These are worthwhile events that give each of us an opportunity to connect one-on-one with young Sailors and Marines. We are all passionate about Naval Aviation and participating in these events is a great way to encourage a similar passion and enthusiasm at the deckplates and straight through to the O-6 leadership. I encourage you to find some time in your schedules to do one of these events.
2. Continuous process improvement (CPI) is a mindset as much as it is a set of projects and actions. At Fleet Readiness Center West (FRCW) and Aviation Supply Department (ASD) we saw several great examples of performance improvement within divisions/work centers and achieved efficiencies/cost avoidance. Within FRCW and ASD, it is clear that CPI is an accepted part of their culture. Broader application of our proven AIRSpeed tools across the enter-

prise would yield even greater effectiveness and efficiencies.

3. Enterprise principles include transparency, collaboration and coordination. There is a functioning triad in place between Commander, Strike Fighter Wing, U.S. Pacific Fleet, FRCW and ASD. Its effectiveness is evident in the stellar performance of the Strike Fighter Squadron (VFA) community.

Functioning within this construct is of great benefit to the larger organization but also adds complexity. I noted at times during the day that issues in one area were not always well known in a connected area. We need to encourage the larger process view in which information sharing and seam resolution are focus areas for leaders in every organization.

4. Aircraft Armament Equipment (AAE), nose landing gear and generator control units are challenges within the VFA community. While these are significant obstacles fleet-wide, I found it encouraging that an enterprise solution is at work. Naval

Inventory Control Point representatives are aware of the issues (transparency), are engaged with industry as well as within DoD lifelines (collaboration) and are communicating the way forward with the fleet (coordination). I appreciate the senior leaders' leaning into this to ensure a timely resolution.

In my opening and closing remarks, I emphasized that Naval Aviation is about delivering combat effects, and the Naval Aviation Enterprise supports our ability to do this. This is a message I believe in and will continue to share whenever I have the opportunity. I'm looking hard at my schedule to be able to attend the Boots event at Marine Corps Air Station Yuma on Jan. 12.

Fight to fly, fly to fight, fight to win!

Mad Al ■

Editors' note: Two articles on Naval Air Station Lemoore's "Boots-on-the-Ground" site visit will be published in the next issue of the newsletter.



(Photo above) A CH-46E at sunset. Photo provided by the CH-46E community. (Photo, cover page) A CH-46E *Sea Knight* helicopter assigned to Marine Medium Helicopter Squadron (HMM) 774, embarked aboard the multi-purpose amphibious assault ship *USS Iwo Jima* (LHD 7), conducts aerial damage assessments of Haiti after Hurricane Tomas made landfall in this photo dated Nov. 6. The mission was part of Iwo Jima's preparation to support the government of Haiti, the United Nations Stabilization Mission in Haiti and the United States Agency for International Development (USAID). (U.S. Marine Corps photo by Sgt. Samuel R. Beyers/Navy NewsStand)

(Platform continued from Page 1)

last year. All six of the previous active duty CH-46E squadrons at MCAS New River are now MV-22 squadrons. The West Coast started the transition last year in Marine Aircraft Group 16 (MAG-16) at MCAS Miramar, Calif. MAG-16 is scheduled to complete the transition late next year after their last CH-46E squadron (Marine Medium Helicopter Squadron 163) returns from deployment. According to the current Aviation Plan, MAG-36 will follow MAG-16 in the transition order and should be completed in FY14. MAG-39 should complete the West Coast transition in late FY15, the reserve squadrons in FY16, and Marine Helicopter Squadron 1 in FY18.

Despite the transition process, the CH-46E continues to forward deploy in real world contingency operations and perform beyond expectations. One currently deployed CH-46E squadron has operated in a split Amphibious Readiness Group capacity for a majority of their current deployment. The ACE has executed a variety of missions ranging from combined

exercises with the Australian Army and East Timorese Defense Force in East Timor, to combined exercises with the Indonesian Marines in Sumatra. To maintain currency, they conducted sustainment training in Djibouti while simultaneously supporting national tasking. Most notable and visible is their Humanitarian Assistance & Disaster Relief (HADR) support in response to the monsoon/flooding that recently occurred in Pakistan. During their HADR missions, the squadron flew in excess of 4 million pounds of supplies to several locations through the low lands of Pakistan as well as mountainous regions.

CH-46E squadrons will continue to be the ACE for MEU deployments for the next three to five rotations with continued involvement in real world missions. The CH-46E may be experiencing its twilight years, but the training and deployment tempo is not any less. The "Phrog" community will maintain a high state of combat readiness while deactivating units and aircraft.

There are challenges as the Marine Corps continues CH-46 deactivation while the MV-22 transition progresses. Of primary concern to the type/model/series (TMS) team is the effective distribution of qualified maintainers and aircrew personnel. As the MV-22 transition continues, we must find ways to balance the ongoing personnel requirements for the MV-22 community while keeping the best possible Marines for the continuing Phrog mission. The last CH-46E squadron to train and deploy must have the best possible aircrew to fly this combat ready and relevant aircraft. This balance of trained and qualified people is crucial to our success.

Although the CH-46E is the oldest platform in the Marine Corps inventory, they were the last TMS team to join the Current Readiness (CR) process. The CR process is a vital tool to ensure the most efficient use of dwindling resources while also making sure the CH-46E remains relevant and combat ready for the coming years like the Phrog is now in Pakistan. These are challenges the TMS team intends to take on as we keep a vigilant eye on the state of readiness by monitoring personnel, equipment, supplies, training, and ordnance.

The Program Management Office, a vital member of the TMS team, initiated a Geriatric Aircraft Safety and Sustainment Program (GASSP). The GASSP targets reliability, maintainability, and safety issues to guarantee the aircraft can remain safe and tactically relevant for the remainder of the CH-46E service life. Highlights include new generators, composite airframe components, and intercommunications systems. The GASSP is funded incrementally through FY15 which will carry the platform through the deactivation.

The "Phrog" is the most cost effective, combat proven and tactically successful Marine Corps platform executing real-world missions today and will continue to do so for its few remaining years. The CR process will continue this vigilance and make sure the "Phrog" sundown is professional and the airframe goes out in style. ■

HSMWP combats H-60 corrosion

By Helicopter Maritime Strike Wing Pacific

Corrosion repair costs for SH-60B aircraft during depot-level Prescribed Maintenance Intervals (PMI) have proven to be expensive and unsustainable. The Helicopter Marine Strike (HSM) community is engaging with all their stakeholders to tackle corrosion at the organizational level (O-level).

The corrosion problem is ubiquitous across the Department of Defense and Naval Aviation. The high humidity and tropical environments in which the helicopters operate coupled with the harsh sea environment have had a significant corrosion impact on their aircraft. The current projections estimate costs of \$3 billion per year for Navy and Marine Corps aircraft.

Helicopter Maritime Strike Wing Pacific (HSMWP) realized a behavioral shift would be required to reverse the trends of not sufficiently caring for aircraft and the transference of the problems and costs to depot repair facilities. They used their continuous process improvement (CPI) department to address the problem. The team began addressing this issue first by engaging Fleet Readiness Center Southwest (FRCWS) depot-level artisans, the H-60 line supervisor and the H-60 wing maintenance officers to identify the “hot spots” on the aircraft – areas most prone

to corrosion. These hot spots accounted for the majority of corrosion damage accrued during the MH-60R’s 36-month PMI cycle.

Additionally the team constructed a focus area list (FAL) for the MH-60R and legacy aircraft. Working with H-60 engineers and Field Service Team (FST) personnel, they created a reference guide that lists areas on the aircraft where corrosion most frequently occurs and the impact to the aircraft.

Squadron personnel coupled with wing inspectors collaborated on compiling the best practices to examine susceptible areas on their aircraft. The wing inspection team also engaged the FST to receive training on mitigating the H-60’s most corrosion prone area, the main gearbox (MGB).

The support for shifting to an aluminum main gearbox has received attention from all levels from the Office of the Chief of Naval Operations to Commander Naval Air Forces. It is the H-60’s number one cost driver with expenditures for this component exceeding \$70 million over the past two years. The reality of an aluminum MGB being installed in fleet aircraft is eight to 10 years away.

(Corrosion continued on Page 11)

(At right) Two Helicopter Maritime Strike Wing Pacific (HSMWP) representatives receive instruction on how to identify corrosion “hot spots” on H-60 aircraft using a focus area list (FAL). The FAL for each TMS were a requirement defined by the Naval Air Systems Command Corrosion Prevention Team (CPT). The FAL is comprised of data from corrosion discrepancies detected at the depot during phase maintenance inspections. Corrosion can now be identified at the squadron level and mitigated sooner. (Bottom left) A depot-level artisan points out where to inspect for corrosion in the aircraft’s frame. (Bottom right) A depot-level artisan explains where corrosion is most frequently found in the airframe’s rotors. Photos from HSMWP.



NAE leadership makes two-day stop at MCAS Cherry Point

Articles and photos by Jacquelyn Millham, NAE Current Readiness/Enterprise AIRSpeed Public Affairs

More than 100 senior Naval Aviation Enterprise (NAE) leaders attended “Boots-on-the-Ground” (BoG) at Marine Corps Air Station (MCAS) Cherry Point on Oct. 14 and 15 – the first BoG site visit in more than six years.

Marine Aviation Logistics Squadron (MALS) 14 and Fleet Readiness Center East (FRC-E) hosted the event. While they are at very different points in

their AIRSpeed journeys, they share the expectation that every Marine and artisan will own and use continuous process improvement (CPI) as they produce warfighter readiness. What follows on Pages 6-13 are four complementary articles that include recaps of the two-day site visit and the back stories on the engineer and Marine who played a major role in their commands’ successes.



Brig. Gen. Gary Thomas, Assistant Deputy Commandant for Aviation (center), talks with Cpl. Jennifer Bottomlee, MALS-14 cryogenics equipment operator (left), on how her work center decreased its time to reliably replenish (TRR) by more than 94 percent in four months by improving training, troubleshooting skills, and implementing an improved parts ordering processes as Rear Adm. Richard O’Hanlon, Commander, Naval Air Force Atlantic and Naval Aviation Enterprise (NAE) Current Readiness Cross-functional Team (CFT) co-lead (right), listens in. Bottomlee also spoke on how organizational-level squadron’s liquid oxygen (LOX) servicing times were reduced by 50 percent through support equipment licensing of Marines and relocating the LOX servicing cart directly on the flight line. O’Hanlon and Thomas, along with Maj. Gen. Jon Davis, Commanding General, 2nd Marine Aviation Wing, led the site visit at Marine Corps Air Station Cherry Point. They were joined by representatives from the Deputy Under Secretary of the Navy, Business Operations and Transformation Office, Deputy Chief Management Office; Defense Logistics Agency; U.S. Marine Corps Forces Command; Naval Inventory Control Point; Naval Air Systems Command; Headquarters, Marine Corps Aviation Logistics Support Branch; NAE Future Readiness Cross-functional Team; Marine Air Group 26; MALS-26; MALS-24; MALS-13, Fleet Readiness Center Mid-Atlantic; Center For Naval Aviation Technical Training; Program Executive Officer for Strike Weapons; and contractor support.

[\(Click here to go to the first article in the series\)](#)

ILS elements, CPI sustainment get top billing at MALS-14 BoG

“We call it ‘Getting your mind right,’” said Col. Russell Sanborn, Marine Air Group (MAG) 14 commanding officer, of driving the culture of continuous process improvement (CPI) throughout the MAG.

“This mindset has to get down to the lance corporal level. Every Marine must understand what he or she is producing – combat capable aircrew and aircraft – and that we are all rowing in the same direction.”

Sanborn made his comments during “Boots-on-the-Ground” (BoG) on Oct. 14. Marine Aviation Logistics Squadron (MALS) 14 hosted the first day of the site visit.

Lt. Col. Clarence Harper, MALS-14 commanding officer, echoed Sanborn’s comments. “I want to take aviation supply, maintenance, avionics and ordnance Marines and turn them into aviation logisticians,” he said. “They need to be able to troubleshoot broken Integrated Logistics Support (ILS) elements that mask themselves.”

After learning of Harper’s focus on ILS elements, Staff Sgt. Scott Scudder, CPI manager for MALS-14, knew CPI could enable MALS-14 to meet the commanding officer’s (CO) goals. “[MALS-14 CPI practitioners and I] discussed with the CO how the ILS elements could be used to focus our improvement efforts and how CPI could help minimize the effects of those constraints,” he said. (See accompanying article on Scudder on Page 7)

With Harper’s go-ahead, MALS-14’s site core team began to tackle the constraints negatively affecting the ILS elements. As a part of this effort, each work center supervisor now briefs the command on time domain metrics and critical assets, tying the ILS elements to system constraints each month. With the increased focus, the number of items with times to reliably replenish (TRR) that were “in the black” (meaning the item in work exceeded the timeframe established for its maintenance) decreased from more than 1,400 items to 410 items in 90 days.

Other successes highlighted during Boots-on-the-Ground included:

- A cost avoidance of \$1.1 million in the Squadron Support Division (SSD) by applying CPI to their deficient ILS elements. Under the old process, squadrons used



Michael Dyer from Deputy Commandant for Aviation, Headquarters Marine Corps (center with jacket), asks Cpl. Cory Lankford, MALS-14 aviation ordnance system technician (far right), about material availability for the GAU-12 Harrier gun as Marine Corps Capt. Mark Morgan from MALS-24 (left) and Col. Scott Loch, Fleet Readiness Center East commanding officer, (center) listen in.

to turn in components for repair directly into the Fleet Readiness Center East (FRC-E). Amendments to increase bulk-funding documents were created by MALS SSD, which increased the cost of repairs. Funding dollars were not tracked by the item repaired and in fiscal year 2009, the division ended up with more than \$1.8 million in high expenditures. Now there is a single-point of entry through MALS production control and increased coordination with FRC-E Squadrons also receive an estimate of how much a repair will cost and know how the component is being serviced throughout its repair. This enabled the allocation of funding for the purchase of more components.

- A reduction in TRR from 14 days to 7 days in Aviation Life Support Systems (ALSS). Maintainers removed and relocated sewing machines to the point of use, reducing their traveling distance by 25 percent. They also consolidated their digital technical publications into one reference library, eliminating the need to reference multiple publications as they conduct repairs. Additionally, coordinating scheduled inspection times with the Nondestructive Inspection Branch reduced the work center’s TRR by another 10 percent.
- ALSS also had a cost avoidance of more than \$20,000 in three months in the Oxygen Regulator and Equipment Shop. By analyzing their processes, maintainers learned that oxygen switches requiring repair were inducted for a bro-

(MALS-14 continued on Page 10)

ILS elements include:

- Maintenance planning
- Manpower and personnel
- Support and test equipment
- Facilities
- Design interface
- Training and training support
- Computer resource support
- Technical data
- Packaging, handling, shipping and transportation
- Supply support



Staff Sgt. Scott Scudder: Getting MALS-14 back on track

When the Marine Aviation Logistics Squadron (MALS) 14 commanding officer (CO) began the intermediate maintenance activity's (IMA) focus on Integrated Logistics Support (ILS) elements to improve its inputs to flight line readiness almost a year ago, Staff Sgt. Scott Scudder knew that continuous process improvement (CPI) would play a vital role in MALS-14's effort to meet the CO's goals.

Three years ago, the staff non-commissioned officer for the intermediate-level electronic countermeasures work center knew the IMA had system constraints. The ILS elements, Scudder told Commanding Officer Lt. Col. Clarence Harper, could be used to help focus MALS improvement efforts. And once the deficiencies were identified, said Scudder, the CPI office and MALS Marines could seek to minimize their effects. The commanding officer agreed and told them to proceed.

Six months later, work center times to reliably replenish (TRR) have significantly decreased. Total inductions were reduced from 2,800

to 927 pieces of gear. The number of inductions that exceeded their TRR was reduced from 1,500 to 401. (See accompanying article on MALS-14 on Page 6 for more information.) Scudder, now MALS-14's CPI manager, was recognized for his work with the Naval Aviation Enterprise (NAE) Boots Site Visit Enterprise Excellence Award during "Boots-on-the-Ground" on Oct. 14.

One of the first projects Scudder took on as a member of the site core team was integrating the Buffer Management Tool into each work center. However, the 1-1/2 hours it took to access the application thwarted its use in the command. "No one used it because it took too long to load," he said.

"We [MALS] got together with the PIB [Maintenance and Supply Integration Performance Improvement Branch] and NMCI [Navy Marine Corps Intranet] and discovered the network settings between the computers and the switches on NMCI were different, which was the root cause of the slow transfer rate," said Scudder.

Scudder coordinated with the PIB and NMCI to change the baud

rates. He also moved BMT off a shared drive onto its own server and authored an automatic script to map BMT. This enabled MALS-14 users to access the application anywhere in the world through their profile. The software changes were then pushed out to all MALS-14 NMCI assets.

"What use to take an hour-and-a-half now takes 30 seconds at all work stations throughout the MALS," he said. "Using BMT put us on a time domain and gave us a goal – reduce and achieve your TRR."

Now every work center's non-commissioned officer in charge (NCOIC) briefs the commanding officer, maintenance officer and supply officer on their work center's performance to established metrics each month. "Once we were held accountable to the new metrics, we really started to look at what the problems were and what we could improve. Ultimately, the result is a sustained reduction in TRR and an increase in the validity of the supply officer shelf. That means we repair it faster, and most importantly, we repair what the customer needs when they need it," said Scudder.

The affects of Scudder's ingenuity and hard work goes beyond his IMA - MALS-26 and 13 have adopted the software changes. The PIB has the changes for study and possible replication.

Applying CPI to ILS elements by the site core office has not only changed MALS-14, but has also influenced the organizational-level (O-level) as well. One event that Scudder considers part of his unit's successes is the CPI work conducted on the 412 gas turbine starter (GTS).

With the help of the O-level subject matter expert, he said, the office mapped out the squadron's maintenance and trouble-shooting processes on the 412 GTS and learned they were self-inducing failures.

Before the start of the event, MALS-14 had an A799 rate (meaning the item was tested and found to be

(Scudder continued on Page 11)



Fleet Readiness Center East artisans (left and right) discuss level 3 maintenance on an H-46 airframe with Navy Capt. Greg Munning director, Engineering & Product Support Directorate Code 07, Naval Inventory Control Point, Philadelphia (center).

BoG attendees get close up look at a level-3 maintenance-only facility

Phase maintenance intervals, sustainability of the workforce and parts availability were the main topics of discussion at Fleet Readiness Center East (FRC-E) during the second day of “Boots-on-the-Ground” (BoG) on Oct. 15.

Naval Aviation is at a time of transformation and FRC-E is in the forefront of that change, said Col. Scott Loch, FRC-E commanding officer, to BoG attendees. “Except for the V-22 Osprey, all of our maintenance is on legacy platforms. Even when the population of an aircraft’s obsolescent parts gets low and its production of parts by commercial manufacturers is no longer feasible, Naval Aviation still needs those widgets. That manufacturing is what keeps us in business. We do whatever is needed to keep the aircraft flying,” he said.

The 10 H-53 pulled from Aerospace Maintenance and Regeneration Group and returned to the fleet is one exam-

ple of the work performed by FRC-E. “The demand for the H-53 is going up so we pulled them from the desert. One airframe hadn’t flown in more than 19 years and required a lot of modification,” said Loch. (For more information on the refurbishments, go to: <http://tinyurl.com/26vwxbp>.)

In addition, FRC-E recently returned seven AV-8B Harriers that were stricken due to crash damage and has begun converting V-22 “A” models into “B” models. The first one was completed just days before the site visit.

FRC-E will continue to see an emerging workload for the F-35 Joint Strike Fighter (JSF), the H-1 Huey and Cobra type/model/series (TMS), H-60 components, CH-53K Super Stallion airframe, engine and components; and the MQ-8B Fire Scout in the years ahead.

“Work like that doesn’t just happen,” said Loch.

Sustaining the knowledge base in the level-3 maintenance activity is one of Loch’s primary concerns. “It’s

(FRC-E continued on Page 12)

Richard Borcicky: An integrator of ergonomics and continuous process improvement

By NAE Public Affairs
Photos from Fleet Readiness Center East

Richard Borcicky was recognized for his work with the Naval Aviation Enterprise (NAE) Boots Site Visit Enterprise Excellence Award during “Boots-on-the-Ground” on Oct. 15.

As an ergonomics engineer, Borcicky’s job is to incorporate ergonomics (the science of designing user interaction with equipment and workplaces to properly fit the user) into Fleet Readiness Center East’s (FRC-E) work areas. Borcicky evaluates each area – whether in the aircraft maintenance area or office spaces – for physical risk factors, such as force, posture, vibration, repetition, compression, duration and noise.

“Why is ergonomics working at FRC-E?” said Borcicky. “Because of our employees and support I receive.” That support comes from FRC-East Commanding Officer Col. Scott Loch; FRC-East Executive Officer Col Mitch Bauman; FRC-East Executive Leadership Committee; Ergonomics Program Manager Col. Myrna Callison from the United States Army Center for Health Promotion and Preventive Medicine; Cathy Rothwell, Navy ergonomics subject matter expert; Mark Geiger, from Office of the Chief of Naval Operations Safety Liaison Office; and Elisabeth Holland, Naval Air Systems Command Safety Manager.

Borcicky also said that having the right principles in place, safety first, quality in everything the workforce does, and recognizing that people make the difference are also key to why ergonomics work in FRC-E. This, he said, builds a working relationship with co-



Pictured above: Richard Borcicky. The photos that follow are examples of his work. **(Below left)** Before ergonomics was introduced to FRC-E, artisans working on the CH-46 would frequently kneel on the facility’s hard cement floor to perform maintenance. Today, motorized saw horses (Below, right) are installed in the work areas, enabling artisans to adjust the height of components they are fixing.



Above: An artisan squats to work underneath an AV-8B. Right: The same artisan now uses equipment that reduces ergonomic risk factors.



workers that last a lifetime. If you take a walk around Fleet Readiness Center East (FRC-E), you’ll find evidence of Richard Borcicky’s handiwork – on the shop floor where tabletops can be tilted, raised or lowered; to the comptroller office where budget analysts sit on chairs that adjust to their body types, use trays that tilt computer keyboards forward 12-15 degrees and emulating a person’s natural hand pose.

Safety is a major component of ergonomics. “They

go hand-in-hand,” he said. “If you have a safety issue, 99 percent of the time you’ll have an ergonomics issue.”

What does ergonomics and safety have to do with continuous process improvement (CPI)?

Everything, said Borcicky. “Ergonomic solutions have decreased safety issues and fatigue (head, neck, back and hand problems working at a computer station or

(Ergonomics continued on Page 13)

ken handle 99 percent of the time. Due to a lack of repair capability, the MALS incurred a beyond capable maintenance (BCM) cost of \$2,100 each time a switch was inducted for repair. After reviewing publications, the Marines discovered that they could purchase the handle for \$400, but could not test it. Coordinating with MALS Hydraulics Shop, a test set hose was manufactured, giving the Oxygen Regulator and Equipment Shop testing and repair capability.

- A drop in TRR in Cryogenics from 21 days to three days since the work center began using the Buffer Management Tool (BMT) in March. Its physical pool buffer status has gone from 29 percent to 100 percent in the same timeframe.

- A reduction in TRR to one day in the Avionics Micro/Miniature Repair Shop. Before applying CPI, the work center had a first pass yield (FPY) rate of 80 percent and defect rate of almost 20 percent. The work center was performing significant amount of rework, due to insufficient pass down instructions that were not detailed or accurate enough and due to multiple handoffs between technicians. The work center reduced the number of steps to process incoming gear from 16 down to eight, and eliminated handoffs between technicians by establishing a policy of “one Marine one job” at a time. After six months, the work center’s FPY rate increased to 91 percent and its defect rate dropped to 8.6 percent. The shop also installed video monitoring capabilities to enable several maintainers to



(Above) Col. Mitchell Bauman, executive officer, Fleet Readiness Center East (left) and CWO2 Daniel Pruitt from Marine Aviation Logistics Squadron 26 look at a maintenance table that provides Marines with enough room to break down and rebuild gear in MALS-14’s Aviation Armament Equipment “Rack Shop’s” maintenance bay. (Below) Brig. Gen. Gary Thomas, Assistant Deputy Commandant for Aviation (right) talks with Sgt. Nathaniel Crowley, MALS-14 Ordnance non-commissioned officer-in-charge about his experiences with continuous process improvement in his shop.



see repairs performed under the microscope during technical training, this has increased the technical knowledge of the Marines and further reduced the shops failure rates.

- An increase in the FPY rate of the AV-8B Avionics Consolidated Automatic Support System (CASS) shop. The work center standardized its toolboxes, consolidated and relocated publications, and centralized its pass down logbook. During the first quarter of 2010, its TRR was 21 days and FPY rate was 62 percent; during the fourth quarter, its TRR was 13 days and FPY rate was 73 percent.

- A reduction in the 402 Engine Shop’s TRR by 50 days – from 189 days to 90 days. The work center streamlined its processes by dividing the floor into maintenance sections, a pre-induction section and a tear down station. Maintainers also built point of use carts, organized bin storage, right-sized its pre-expenditure bins (PEB), and created a team approach to repairing engines. Now each engine is assigned one crew from its tear down to its reassembly by a team comprised of maintainers, crew leaders, and collateral duty inspectors. This also gives junior Marines more time learning their

- craft alongside more experienced team members.
- An increase in Supply Consumable Management Division’s pre-expenditure bins (PEB) effective rate – from 68 percent to 97 percent by realigning and training its workforce, creating consolidated pack up units to support its PEB items, adding National Item Identification Numbers based on average monthly demand and

(MALS-14 continued on Page 11)

(Corrosion continued from Page 4)

In the interim, HSMWP is currently working on independent solutions with the H-60 FST and Cherry Point material engineers to introduce new technologies that will aggressively mitigate corrosion and reduce premature removal of this vulnerable component. For example, Helicopter Anti-submarine Squadron Light (HSL) 51, assigned to Atsugi, Japan, has installed a commercially-available urethane sealant on all their aircraft to directly mitigate gearbox replacement.

HSMWP is also working directly with Cherry Point Materials Laboratory to leverage the use of cold spray technology to mitigate corrosion on the most affected areas of the H-60. Robert Kestler, FRC East material engineer, has included the H-60 aircraft in his new technology initiative targeted at arresting corrosion.

The Naval Aviation Enterprise has created a working

group specifically for introducing solutions for arresting corrosion across all type/model/series (TMS). Subject matter experts from several aircraft maintenance organizations are collaborating on solutions to improve aircraft material condition. They have fielded the Automated Data Capture System (ADCS) in the F-18 TMS; the H-60 will be the next TMS to implement this capability. (ADCS is a software application that gives companies the ability to accurately capture corrosion discrepancies.)

HSMWP is taking an active stewardship role to address corrosion in the MH-60R aircraft. They are engaged on many fronts to combat corrosion at the beginning of their newly-assigned MH-60R aircraft service life. The initial results of HSMWP's CPI project are encouraging. These efforts are expected to increase availability of this game-changing asset and reduce overall total ownership costs. ■

(Scudder continued from Page 7)

in working order) of approximately 29 percent. "Almost one out of every three GTSs removed from the aircraft and sent to the I-level [intermediate level] for maintenance were not defective," said Scudder.

This had three major impacts: One, the squadrons were performing unnecessary work to remove and install GTSs; Two, excess demand was placed on the supply officer shelf and the ready for induction buffers were depleted; and three, the I-level was required to treat inducted GTSs as an expeditious repair (EXREP). These actions expended excess man-hours by forcing repairs on items already in work to stop to give first priority to the EXREP.

The fix was increased collabora-

tion. "The MAG-14 commanding officer issued a policy letter that directed the squadrons to contact the GTS shop prior to a GTS removal. I-level technicians go to the O-level to assist in the troubleshooting and/or repair of the GTS while it is still on wing.

"This has reduced the A799 rate to zero since March of 2010," said Scudder.

Scudder said that the biggest change he has seen in his command is the shift from being reactive to being proactive. "Rather than being 'fire-fighters,' we now have a central focus of effort," he said. "Every work center supervisor and most of the Marines understand why they are doing things differently. Most of the improvements we are seeing now are not found during value stream maps, rapid improve-

ment events, or other projects. The Marines here have really taken it upon themselves to change their processes whenever they see an opportunity. We are seeing the benefits from this paradigm shift every day."

Scudder, who has been in the Marine Corps for more than 12 years, wants to share his expertise beyond the I-level and sees himself working in this field in some capacity even after he retires. "CPI has become a part of me. It is easy to come to work and do it everyday.

"I want to change the way Marines, Sailors and artisans think," he said. "Most importantly, I don't want CPI to become the new way we do business, but THE way we do business." ■

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(MALS-14 continued from Page 10)

squadron requests, and replenishing PEBs daily.

- Seventy-five percent of the Repairable Management Division's deliveries are now made within an hour or less. Ninety-six percent of its deliveries are made within two hours or less. Before, only 70 percent of deliveries were being completed within two hours. MALS-14 trained additional personnel to drive tiger trucks and established three new delivery routes – one to the Harrier squadrons, one to the Prowler and C-130 squadrons and one to the intermediate maintenance activity.

NAE and MALS-14 leaders also discussed certifications of Marines coming out of Advanced Initial Training; the Harrier Integrated Supply Support Performance Based

Logistics and "F" condition assets (units located at depot maintenance in a non ready for issue status); the difference in the cost to repair a combustion exhaust diffuser (\$317,000) as opposed to its purchase (\$135,000); how to promulgate best practices throughout the fleet; where in the training pipeline should CPI instruction be institutionalized; incorporating changes to BMT throughout the fleet; the career paths of CPI Marines; Improved Capability I, II and III; Program Related Logistics and Program Related Engineering funding.

NAE representatives took these and other action items back to their commands for further discussion and possible resolution. ■

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(FRC-E continued from Page 8)

important to have a relevant workforce,” he said. “The average age of an artisan is 45 years. What happens when the skilled workers retire? We need to work to drive that age down.” Looking ahead to the future, FRC-E is participating in an engineering initiative that reaches out to school-age children to pique their enthusiasm for math and to grow local talent.

A rapid response team was another solution FRC-E implemented to ensure quick responses by the command to the needs of the fleet. To date, more than 650 aircraft have been repaired by deployed FRC artisans “We are able to get a subject matter expert deployed to the fleet within 48 to 72 hours,” said Loch.

Keeping the artisans safe and healthy is another focus in the command. “If we say people are a critical asset, we must act that way,” said Loch. FRC-E partners with Occupational Safety and Health Administration (OSHA) as part of its Volunteer Protection Program to proactively prevent fatalities, injuries, and illnesses. FRC-E regularly undergoes rigorous onsite evaluations by a team of OSHA safety and health professionals.

FRC-E is also a part of OSHA’s Commander’s Safe Site Program which recognizes units for their for safety improvements.



“Boots-on-the-Ground” attendees listen to an FRC-E artisan (right) describe how the point of use tool box helps the H-1 line lower its turnaround time.



Lt. Cmdr. Jason Adams (right) from Naval Inventory Control Point, listens to an FRC East Industrial Specialist describe the modifications needed to convert an AH-1W to an AH-1Z

The command has also taken action to improve the health of its workforce. Safety and continuous process improvement touch each other, said Loch.

Leadership identified four major injury categories and applied CPI methodology to them: sprains, strains and tears; cuts and lacerations; deafness/hearing problems; and ergonomics. [\(See accompanying article on how Ergonomics Engineer Richard Borcicky applies this science to FRC-E on Page 9.\)](#)

Loch also touted FRC-E’s four-fold decrease in internal reject and discrepant work. “We produced 20 402 engines in 2007; in 2010 we produced 40 – a 100 percent increase in engine production,” he said. FRC-E also avoided beyond capable maintenance costs of \$19.5 million.

Other improvements and successes include the following:

- The turnaround times (TAT) for the AV-8B Phase Maintenance Interval (PMI) 1 Line have been reduced from an average TAT of 227 days in FY 08, to an average of 186 days in FY09, to its current average TAT of 177. This was accomplished at the same time the number of modification hours increased, from 1,056 hours in FY 08 to 2,155 in FY10. Improvements included sequencing operations, implementing a cell maintenance concept, work-in-progress optimization, and parts kitting. It is managed by the AV-8B Strategic Business Team, which is currently focusing on in-house materials and ensuring demand signals to Defense Logistics Agency (DLA) are correct.
- At an average cost of \$3.6 million per aircraft, FRC-E Crash Damage Line has returned an estimated \$320 million worth of aircraft back to the fleet since its inception in February 2007.
- Artisans credit the UH-1 panel carts with improving H-1 Line’s TAT. Each panel is labeled with its parts number and stored on the carts. Hardware installation kits are [\(FRC-E continued on Page 14\)](#)



Work in the Rotor Head Shop often requires artisans to rotate components to fix them. The table pictured here is adjustable, moves like a Lazy Susan and will hold up to 700 pounds. Borcicky, far right, works alongside artisans in order to understand the challenges they face.

(Ergonomics continued from Page 9)

head, neck, back leg problems associated with production) with our artisans and at the same time, our artisans increase quality and productivity because of the ergonomic corrections.”

During his four years in civil service and two years as a contractor at FRC-E Borcicky’s efforts resulted in a 97 percent reduction in documented back injuries and carpal tunnel injuries (from 74 cases in 2006 to only 2 cases in 2010). “Each carpal tunnel injury can

cost \$35,000 a piece,” he said. “The claims can get quite expensive.”

Problem-solving frequently requires Borcicky to develop innovative solutions to resolve issues due to the type of work performed (aircraft overhaul and repair) at the level-3 (aircraft) maintenance facility. Some of the examples are: electrical height adjustable Lazy Susan tables, three wheel creepers, cart caddies,

(Ergonomics continued on Page 14)



Far left: Access to supplies was a far reach for many at FRC-E. **Middle:** Mobile scissor lift table with battery lift operation that enable operators to place loads at a convenient working

height are now available throughout the facility. Ergonomics aren’t just applied on the shop floor, but to the office as well. FRC-E employees work at adjustable workstations and desks (**Near right and above**) that allow users to work standing up or sitting down and also gives them faster and easier computer access. Wireless headsets and angled keyboard trays also are used, increasing productivity and reducing injury in the workplace.



(FRC-E continued from Page 12)

matched to the panel and used on the floor to assemble them. Five point of use boxes – three for sheet metal and two for airframes (Huey and Cobra) – are centrally located for easier access and inventory. Artisans can check out hazardous materials carts for use on the floor, eliminating time spent waiting at the Tool Room.

- Because of their different work cells and induction dates, FRC-E created separate CH-53 and MH-53 maintenance lines and assembly teams to improve throughput.
- Artisans' work on the V-22 has yielded several lessons learned, including changing the sequence of modifications, streamlining kitting, and expanding the number of steps to prepare the aircraft for modification. To date 47 changes to the instructions have been submitted for inclusion into the V-22's maintenance publications.

FRC-E and Naval Aviation Enterprise leadership also discussed: the skills artisans will need as materials used on aircraft transition from metal to composite; military construction and requirements for testing the JSF lift fan; energy conservation mandates; V-22 electronic technical

manuals; how Marine Aviation Logistics Support Plan II will change the strategic locations of shop replaceable assemblies; applying solutions created at other FRCs to FRC-E processes; and the cost of "G" code inventory (repairable components suspended from depot-level rework due to a shortage of one or more repair parts).

Loch said that the artisans are fully cognizant of their role in Navy and Marine Corps readiness. "The people who work here understand they are tied to the fleet, impacting the lives of those in Afghanistan," said Loch. "They are driven by that. Thanks, [Naval Aviation Enterprise] for being there to support us."

Brig. Gen Gary Thomas said in his closing remarks that he saw how FRC-E's work positively affected the warfighter and that NAE gives leadership support in resolving issues such as the ones they encounter. "The whole team works together to resolve problems and not to let just one person bear them alone," he said. "I've seen the improvements here and throughout Naval Aviation. The results speak for themselves." ■

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(Ergonomics continued from Page 13)

electrical height adjustable saw horses, electrical height adjustable with 90 degree tilt top shop tables, potting compound guns, ergonomic work stands, riveting vibration reduction tools, drillless drill, ergonomic shirt (a shirt designed to lay inside a wing for back support) and more.

"We are not a typical manufacturing company. A lot of our equipment is not standardized so we can't just pull the ergonomic items we need off a shelf and purchase it. It has to be developed to our specifications, he said"

While the cost-savings and increased productivity caused by ergonomics is readily visible in the near-term, it may take up to several years to see the full benefits of ergonomics.

"Some people feel relief within a couple of days after we change a process. But the real relief will not come until 15 to 20 years from now when they are not disabled. It used to be called 'old age' – syndromes such as 'boilermaker's ears,' 'washerwoman's knees,' or 'furnace man's cataract' – when in fact it was a result of the work they had



Above, left: An artisan bending over a component shows several ergonomic-related risk factors – posture, repetition, compression, and duration. Above, right: Now artisans work on tilt top and height-adjustable tables to mitigate those factors.

performed repeatedly for years. This should dramatically decrease our worker compensation costs," he said

"Walking a mile in their shoes" helps Borcicky develop solutions. "I like to interact with the artisans on the floor, often asking to let me perform their job," he said. "I will crawl where they crawl to better under-



stand and appreciate the work they are doing and find a better solution of performing their duties and looking at safety, quality and productivity."

"Initially, there wasn't any money for ergonomics," said Borcicky. Once I demonstrated what ergonomics can do then "FRC-East provided some funds, and once they saw what it could do for the workforce, they then allocated additional monies"

Borcicky's dream is to start an Enterprise AIR-Speed Ergonomics Team and replicate the improvements implemented at other (aircraft) maintenance sites. He believes injury rates would significantly decrease while increasing quality and production.

"A win-win for all commands," he said. ■

Links of interest

1. **DoD Performance Matters – Fall 2010** (#)

This edition of *Performance Matters* features articles from the Defense Finance and Accounting Service, Joint Base San Antonio, Letterkenny Army Depot, Tobyhanna Army Depot and the Lean Six Sigma Program Office.

https://www.portal.navy.mil/comnavairfor/Naval_Aviation_Enterprise/AirSpeed%20Newsletters/Newsletter%20repository/Performance%20Matters/DoD_Performance_Matters_Fall_2010.pdf

2. **Navy's Centennial** (#)

Read about one of the first events held to celebrate the Navy's first flight.

http://www.navy.mil/search/display.asp?story_id=57190

3. **COMFRC Community News** (#)

A compilation of good news and events at Fleet Readiness Centers.

https://www.portal.navy.mil/comnavairfor/Naval_Aviation_Enterprise/AirSpeed%20Newsletters/Newsletter%20repository/COMFRC/COMFRC_SITCOM_12-01-10_FINAL.pdf

4. **Rhumb Lines** (#)

Aircraft Carriers: Expanding America's Reach

The second in a series of four Rhumb Lines leading to the Centennial of Naval Aviation, this issue focuses on aircraft carriers and their abilities to expand America's reach.

https://www.portal.navy.mil/comnavairfor/Naval_Aviation_Enterprise/AirSpeed%20Newsletters/Newsletter%20repository/Rhumb%20Lines/Aircraft_Carriers_Expanding_Americas_Reach_16_Nov_10.pdf

Tactical Air Dominance

This issue, the third in a series of four leading to the Centennial of Naval Aviation, focuses on tactical air dominance. TACAIR platforms enable carrier strike groups to execute the full range of core capabilities defined in the Maritime Strategy.

https://www.portal.navy.mil/comnavairfor/Naval_Aviation_Enterprise/AirSpeed%20Newsletters/Newsletter%20repository/Rhumb%20Lines/Tactical_Air_Dominance_29_Nov_10.pdf

Helicopter Contributions to the Maritime Strategy

The final of a series leading up to the Centennial of Naval Aviation, this issue focuses on the vital role rotary-wing aircraft, both manned and unmanned, play in naval operations.

https://www.portal.navy.mil/comnavairfor/Naval_Aviation_Enterprise/AirSpeed%20Newsletters/Newsletter%20repository/Rhumb%20Lines/Helicopter_Contributions_to_the_Maritime_Strategy_1_Dec_10.pdf

5. **Fire Scout operates across the U.S.**

The Navy's Fire Scout Vertical Take-Off and Landing Tactical Unmanned Aerial Vehicle operated in four different locations ashore and afloat, including taking off for the first time from the Navy's Freedom class of Littoral Combat Ships, Nov. 18.

http://www.navair.navy.mil/press_releases/index.cfm?fuseaction=home.view&id=4454

(Links continued on Page 16)

- Site is CAC enabled. Some readers may not be able to access the link.

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6. Navy Tests New Fuel in Sea Hawk Helicopter

An MH60S Sea Hawk tested a fuel mixture made from the Camelina seed.
http://www.navy.mil/search/display.asp?story_id=57298

7. EA-18G Growlers Take to Fallon Skies

Read more about two EA-18G Growlers that recently began validation with Naval Strike and Air Warfare Center's newest training department, the Airborne Electronic Attack Weapons School.
http://www.navy.mil/search/display.asp?story_id=57213

8. DoN CPI-Gram – November 2010 (#)

Learn more about leading vs. lagging indicators in this issue.
https://www.portal.navy.mil/comnavairfor/Naval_Aviation_Enterprise/AirSpeed%20Newsletters/Newsletter%20repository/CPI%20News/DoN_CPI_Gram-November_FY11.pdf

9. NAE Air Plan (#)

This issue focuses on Naval Aviation's world-class maintenance facilities, the Fleet Readiness Centers.
https://www.portal.navy.mil/comnavairfor/Naval_Aviation_Enterprise/Air%20Plans/14%20-%20Nov10%20Air%20Plan.pdf

10. Navy receives new Joint Standoff Weapon

Another step toward initial operational capability of the latest variant of the Joint Standoff Weapon was taken recently when the Navy accepted 11 production rounds.
http://www.navair.navy.mil/press_releases/index.cfm?fuseaction=home.view&id=4448

11. FRCSE installs spar mill to improve maintenance support to Fleet

The new \$4.5 million gantry-style milling machine will fabricate 42-foot P-3 Orion wing spars, the main structural support in fixed-wing aircraft.
http://www.navair.navy.mil/press_releases/index.cfm?fuseaction=home.view&id=4451

12. AH-1Z approved for full rate production

The H-1 program's goal is to replace AH-1W helicopters with new and remanufactured AH-1Z which provide significantly greater performance, supportability and growth potential over their predecessors.
http://www.navair.navy.mil/press_releases/index.cfm?fuseaction=home.view&id=4453

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