



FLEET READINESS CENTER EAST

DOD Vertical Lift Center of Excellence



GENERATING COMBAT AIR POWER

FOR AMERICA'S MARINES AND NAVAL FORCES



Col C.T. Harper III
Commanding Officer

ESI Members Meeting

FRC East - Industrial Environmental Division

May 2019



CAPT M. E. Nieto
Executive Officer



What Do We Do?

- Fleet Readiness Center East (FRC East) provides our nation's war fighters the highest quality airframes, engines, components and services on time and at the best value.
 - FRC East artisans perform phased depot maintenance, planned maintenance intervals, integrated maintenance concepts, modernizations, conversions, overhaul or in-service repair on the AV- and TAV-8B Harriers, the V-22 Osprey, the AH-1W Super Cobra, the AH-1Z Viper, the UH-1N Huey, the UH-1Y Venom, the CH-53E Super Stallion, and MH-53E Sea Dragon, the F/A-18 Hornet, the F-35B Lightning II, the H-3 Sea King; the H-60 Seahawk; the EA-6B Prowler; and the C-130 Hercules. T
 - The depot is also the depot repair point for the drive and rotary systems of the MQ-8B Fire Scout.
 - Future workload includes the H-53K King Stallion
 - The depot overhauls, assembles and tests a number of aircraft engines including the F402 (AV- and TAV-8B), the T400 (AH-1W and UH-1N), the T64 (CH-53E, and MH-53E), and the T58-400B (in support of the Presidential VH-3D Sea King).
 - The facility's In-Service Support Center (ISSC) provides worldwide engineering and logistics management in both the maintenance and design fields, and works side-by-side with FRC East production artisans developing and refining overhaul, repair, test and troubleshooting procedures.
- Our customers include all Navy and Marine Corps aviation activities, 30 foreign nations, five Air Force activities, three Army activities, and two federal agencies



Who We Are

- Mission – **Generating Combat Air Power for America’s Marine and Naval Forces**
- Employ over 3,900 civilian, military and contract personnel making FRC East the largest industrial employer in eastern North Carolina
- Facilities include:
 - 119 buildings with a total of 2.1 million square feet
 - 1.6 million square feet is industrial space
- Off-site detachments include: Marine Corps Air Station (MCAS) New River, NC; MCAS Beaufort, SC; and, Joint Base McGuire-Dix-Lakehurst, NJ



Who We Are

- FRC East's Environmental Management System (EMS) has been in place and externally registered to the ISO 14001 Standard since 2003.
- Our EMS is one of three pillars supporting an Integrated Management System (IMS), which is embraced at all levels throughout the Command.
- The IMS includes:
 - Aerospace/Quality Management Systems (AS9110/ISO 9001);
 - Occupational Health and Safety Systems (OHSAS 18001) – soon to be certified ISO 45001; and
 - Environmental Management Systems (ISO 14001)



What Drives Us?

- Membership at Steward level within the North Carolina Department of Environmental Assistance and Customer Service (NC DEACS) Environmental Stewardship Initiative (ESI) – Aggressive EMS goals
- ISO 14001:2015 – Clearly established and monitored goals
- Executive Order (EO) 13693 established requirements to reduce potable water consumption, energy consumption and increase landfill diversion
 - FRC East opted to mirror these goals in the EMS program
- COMFRC (Headquarters) established goals to mirror the EO
- Local community has expectation that FRC East industrial activities will not negatively impact their way of life through pollution and natural resource degradation



Objectives

- Reduce Industrial Wastewater generation by 36 percent by 2025 (2 percent annual reduction from 2007 baseline)
- Reduce Energy intensity by 25 percent by 2025 (2.5 percent annual reduction from a 2015 baseline)
- Increase landfill diversion to 60 percent (2 percent increase from a 50 percent 2015 baseline)



Project for Water Reduction

- Water Quality Program Manager reviewed industrial spaces for areas where water savings were possible
- Next, identified that meters existed in this area and validated as functioning
 - Historically, it was thought no meters existed and any meters that were in place, did not work
- First area targeted was the Naval Engine Airfoil Center (NEAC) – B4225
 - Over 27 industrial processes including: welding, blending, painting, coatings, blasting, non-destructive investigation, cleaning, cooling towers, and furnace shop operations
 - Observations began in September 2016 revealing an average 79,000 gallons of potable water consumed per day



Actions

- Water Quality Program Manager established a working team of himself, artisans, the area supervisor and Facility Engineering personnel
- Two major areas identified with reduction potential
 - Closed loop air scrubbing system designed to neutralize acidic vapor emitting from cleaning, rinsing, de-plating operations. System was no longer operating on a closed loop and released continuously at 17 gallons per minute (gpm)
 - Overflow rinse tanks associated with the same cleaning process have potable water added to optimize rinse process. Hoses found to run at 52 gpm. Artisans were informed and shut off the hoses. The flow reduced to 37 gpm which indicated additional water sources. Faulty solenoid valves were found to be the culprit.
- Controls included:
 - Reduced flow rate *manually* from 17 gpm to 2 gpm
 - Generated an operating procedure to require valve adjustment for shop artisans
 - Engineering request to purchase and install automatic valves to eliminate manual adjustment
 - Increased shop level awareness and continued monitoring of water reductions
 - Replacement of faulty solenoid valves

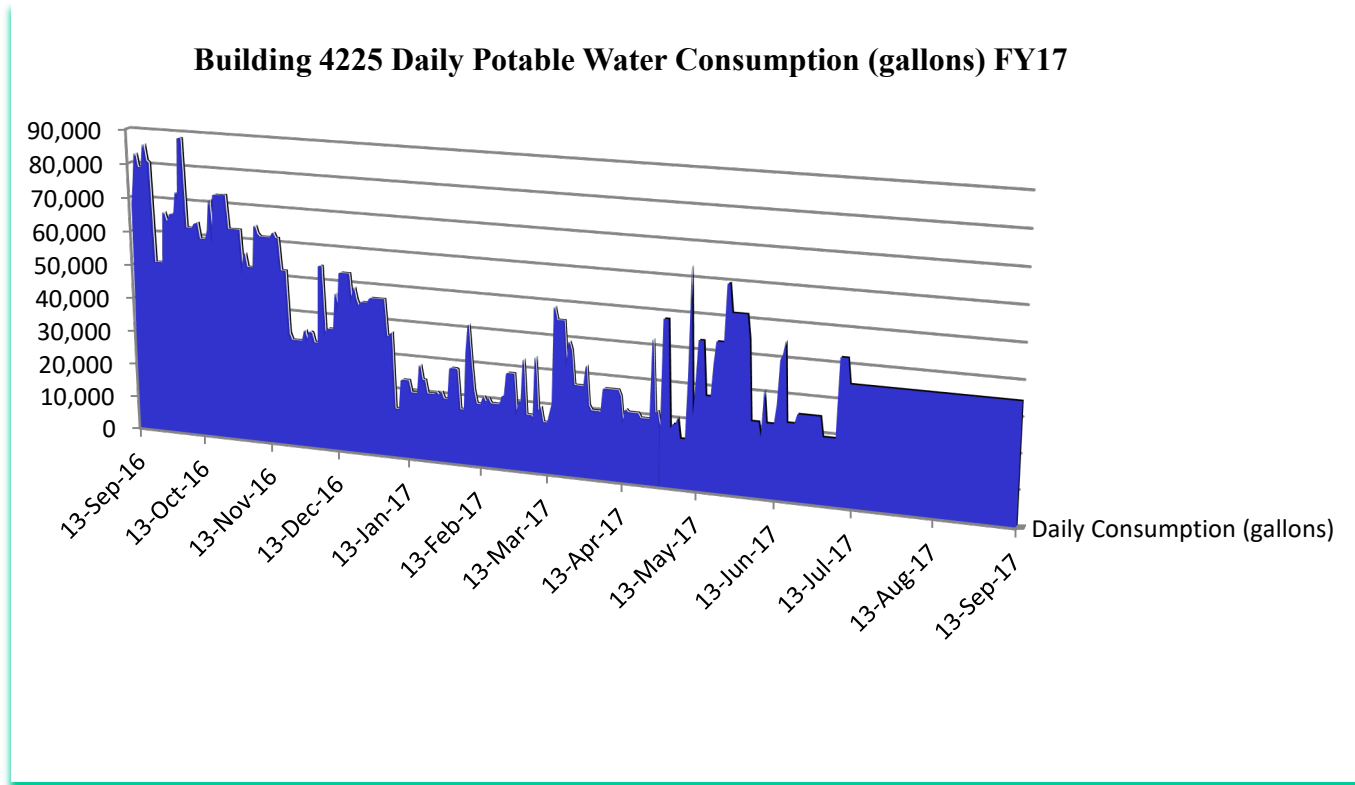


Reductions

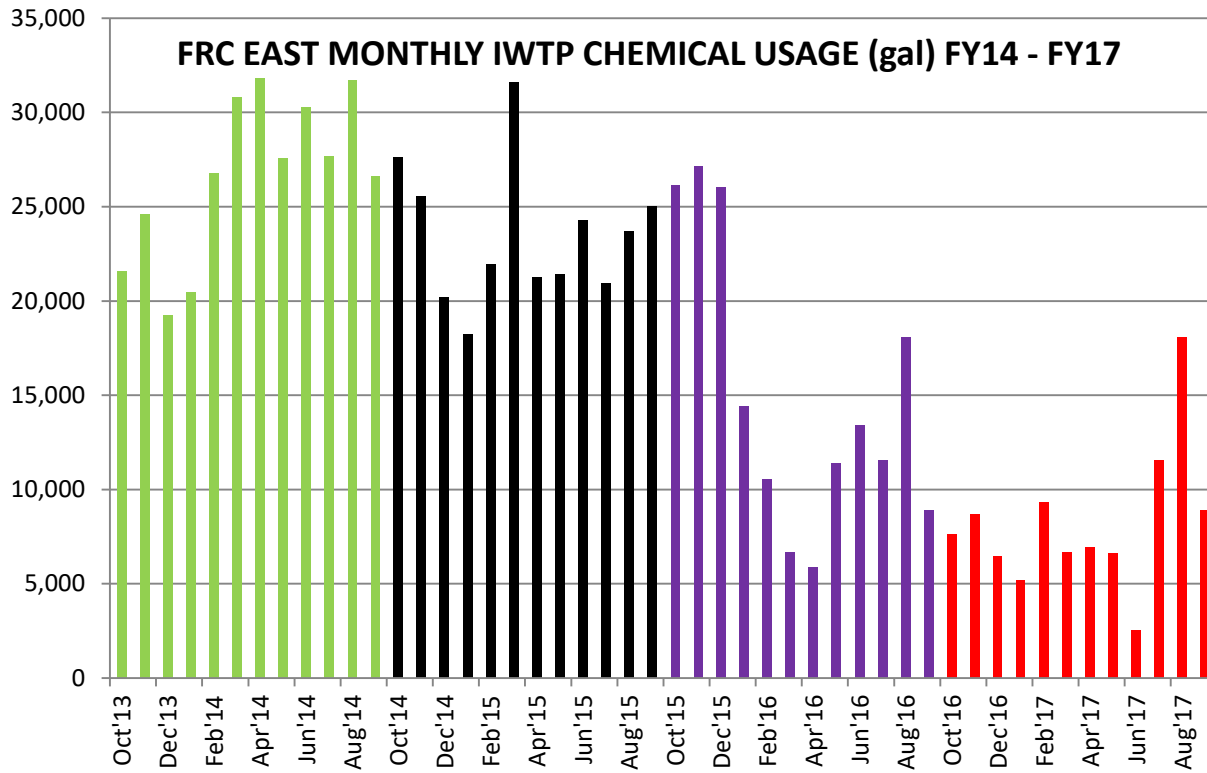
- With the two areas targeted for reduction and the work completed to correct the waste, FRC East was able to reduce the industrial waste contribution by 44,400 gallons per day. From 79,000/day down to 34,600/day (on average)
- The total cost savings per day is \$1,179.00
 - This includes the cost of potable water, industrial waste water treatment and sanitary sewer
 - We buy it, we dirty it, we treat it then treat it again
- The total cost savings per year is \$430,335
- More importantly than cost, although important, is resource savings. That is water that can be used elsewhere

Reductions

- Readings collected starting in 2016 show peaks and valleys for savings.
- Spikes account for increases in production and this data is just raw numbers, no normalization



Reductions





Incentives

- These employees who participated in this project were not motivated by incentives; however, the WQ PM published an internal newsletter article communicating the savings (both cost and resource) with the command.
- Additionally, the artisans were recognized with informal awards
- Their efforts were also written up and recently submitted to COMFRC (FRC Headquarters) for consideration for the Chief of Naval Operations (CNO) award
 - This project was not selected for the award but that just means another team, at another Naval facility did an even better job at reducing an environmental impact, so we do not view it as a negative
- What we learned over this experience is that while employees appreciate incentives (money, time off, etc.), they also appreciate being acknowledged, valued and educated
- The artisans involved in this project had no idea how much water they were using so simply sharing the information with them incentivized them to be better



Challenge/Culture

- The culture at any organization can be a challenge to overcome
- As stated previously, we found the artisans were interested in our efforts and they appreciated simply being made aware and engaged during the process
- Involving them in any process improvements is immensely valuable and necessary to change the culture because if you try to force “improvement” on them, without their input and buy-in, nothing will ever improve
- When we began sharing volumes of water used and translated that water into a cost, their eyes and ears perked up
- You’ll find a vast majority of your employees want to do well and want the company to be successful
- But you can’t make change in a bubble, from a desk



Additional Challenges

- Communication challenges
 - Large diverse workforce made up of both white- and blue-collar workers
 - Various communication mediums work differently for each group (40 percent of the workforce are artisans; have limited access to electronic communication and rely on face to face communication or displayed/printed materials).
 - If you don't target your communication, the message gets lost
- Culture
 - Older employees who are accustomed to "how things used to be" may not always appreciate changes that add or remove steps from their process
 - Example – Water conservation project added the step of turning off a valve they weren't used to checking
 - Rumors about recyclables being taken to landfill and trashed away, so why should they bother?
- Recycling Market
 - This is a pain everyone feels
 - FRC East is experiencing challenges with paper shredding/recycling due to overall drop in cost benefit to contractors
- Aging infrastructure – Some buildings are well past their service life, constructed in 1943
 - Leaking roofs, pipes, building envelope, open hangars



More to Come

- FRC East is actively engaged in other energy and water savings efforts in partnership with the host (Marine Corps Air Station Cherry Point) and Duke Energy – Utilities Energy Savings Contract (UESC)
 - Partnership brings Duke aboard both facilities to assess energy and water savings
 - Upgrades/updates funded through Duke and repaid with savings over a predetermined period of time
 - Many on-going assessments taking place currently to include options such as replacement of the current industrial waste treatment plant (IWTP) with a modern system, HVAC system upgrades, Steam system upgrades and additional emphasis on both water and energy metering to show reductions
- CAPSTONE project with ECU Engineering Department has designed a project to convert static rinse water tanks to overflow rinse and then reroute the water to be used as make up water for the processes air scrubbers
 - This one project is estimated to save 1 million gallons of potable water annually