FY2008 Secretary of Defense Environmental Awards

FMS 2 Pollution Prevention Team, North Carolina ARNG

Pollution Prevention, Individual Team

The North Carolina Army National Guard (NCARNG) Pollution Prevention (P2) Team at the Field Maintenance Shop #2 (FMS 2), located in Lenoir, N.C., provides the NCARNG with industrial and P2 support for five surrounding counties- Caldwell, Burke, McDowell, Ashe, and Watauga. While the team's primary mission is the maintenance and rehabilitation of rolling stock equipment, communications and electronics equipment, and weapons systems integral to the NCARNG's training mission, they also provide their supported units with hazardous material management, recycling, and compliance training programs.

The NCARNG is composed of approximately 10,250 Soldiers and maintains 122 facilities in 74 counties. The NCARNG's FMS 2 is a 27,942 square foot facility with five work-bays, and has 16 team members. Over the past two years, the team has achieved several program milestones, including the opening of a new, green facility for equipment rehabilitation and servicing, significant reductions in both hazardous and universal waste, and the implementation of new training and material inventory programs.

The NCARNG's FMS 2 is located in Lenoir, N.C. Lenoir is a city in Caldwell County in the Blue Ridge foothills. The city was named for Revolutionary War figure and early North Carolina statesman General William Lenoir, who lived nearby. There are also many outdoor activities and recreational opportunities in the area.

On this page: Sgt. 1st Class Cary Hathcock (center) and Sgts. David Cortes (left) and Fletcher Sargent, North Carolina Army National Guard, observe the border with Mexico in San Luis, Ariz., as part of their duties with the U.S. Border Patrol. (U.S Army photo by Tech. Sgt. Brian Christiansen)

JUDGING CRITERIA

- PM Program Management
- OM Orientation to Mission
- TM Technical Merit
- T Transferability
- SI Stakeholder Involvement

SUSTAINING THE ENVIRONMENT FOR A SECURE FUTURE

BACKGROUND

Key members of the NCARNG P2 Team include environmental specialists, mechanics, and a dedicated facility environmental coordinator to oversee day-to-day compliance and quality issues. Sgt. 1st Class Todd L. Lingerfelt, serves as the facility manager, program coordinator, and emergency management lead. Staff Sgt. Timothy S. Howell is the containment team leader, facility environmental coordinator, mechanic, and supervises the spill team. Staff Sgt. Robert A. Simonson is on the Containment Team and a mechanic. Staff Sgts. Terry Carswell, Conley L. Paige, and Sgt. 1st Class David E. Penley are on the security team and serve as mechanics. Donald E. Bentley, Henry C. Schaich, and Robert D. Swink work in the FMS 2 as mechanics. All other facility personnel as required are to report, contain, and coordinate spill recovery measures.

"During the last two years, the NCARNG FMS 2 pollution prevention team has successfully managed a new facility for equipment rehabilitation and servicing, achieved significant reductions in hazardous and universal wastes, developed new training and material inventory programs, and adopted the "gell-cell" battery, among other pollution prevention activities. The program is an exemplary operation with best practices that can be easily adopted at other Army facilities."

-Rachel Dagovitz,
Solid Waste Manager,
Army Environmental Command

Position Description

The P2 Team is responsible for all management associated with pollution prevention and equipment rehabilitation, including:

- Maintenance and rehabilitation of rolling stock equipment
- Maintenance of communications and electronics equipment
- Maintenance of weapons systems
- Hazardous material management
- Spill Team/Containment Team management
- Facility security
- Recycling
- Compliance training programs
- Supporting the overall military mission
- Soldier training

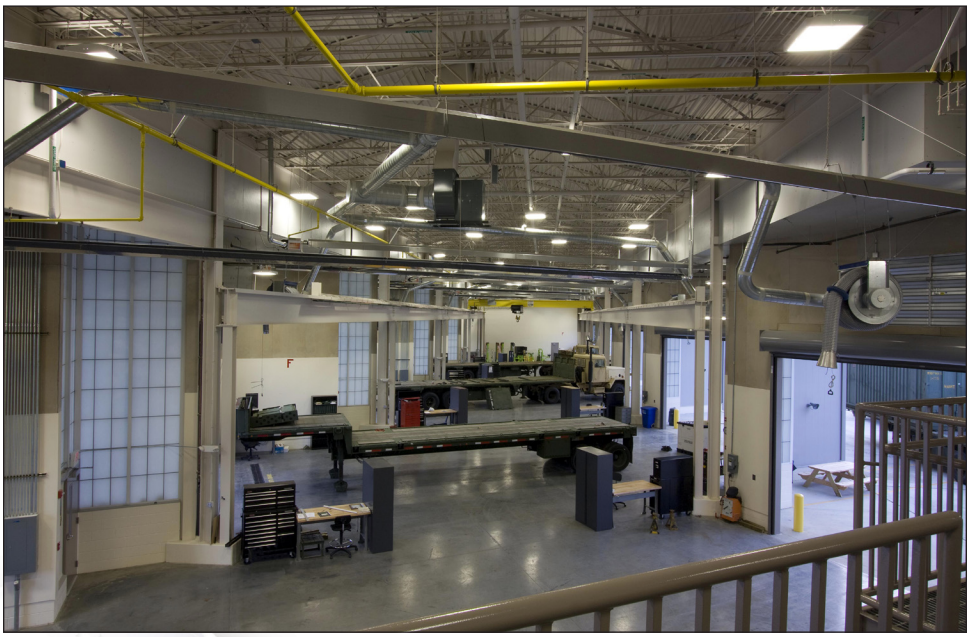
The team's dedication to environmental quality has helped it to do its job more cleanly and efficiently. Its record of full compliance ensures that training won't be interrupted by environmental issues in the shop. Sgt. 1st Class Todd L. Lingerfelt, the Facility Manager and Program Coordinator, has over 14 years of experience within the NCARNG and FMS 2. Staff Sgt. Timothy Howell, the Facility Environmental Coordinator has over eight years of experience, is involved at the support level for all FMS 2 supported units, and acts as a liaison between the facility and the state environmental office. Staff Sgt. Howell also serves as a trainer to new personnel embedded in supported units and serves as a monitor of environmental operational hazards that may occur during training. Additionally, some of the team members are active in other organizations in support of FMS 2. The team's attention to Soldier training helps to spread better environmental practices and awareness throughout the

The newly opened FMS 2 building was designed to meet Energy 10 standards. Its features include a geothermal heating and cooling system, water reducing facilities, occupancy sensor lighting systems, and tank-less water heaters. The green design sets a foundation for further pollution prevention efforts.

NCARNG organization and out into the Soldiers' communities. The P2 Team's commitment to environmental quality and stewardship has helped to cement the NCARNG's reputation as an environmental leader and good neighbor.

Awards and Services

In September 2007, FMS 2 received the "Best Field Maintenance Shop" award during the State Maintenance and Safety Conference in Atlantic Beach, N.C. This award is presented to one shop annually for sustained superior performance in all aspects of maintenance, safety, and environmental criteria. There are 18 FMSs that strive to attain this coveted award and FMS 2 is one that successfully achieved this. In 2008, FMS 2 received notification that they were winners in the Pollution Prevention Team award category of the Secretary of the Army Environmental Awards Program. The Secretary of the Army Environmental Awards represent the highest honor in the field of environmental science and sustainability conferred by the Army. FMS 2 has achieved high marks on all its Environmental Compliance Assessment System (ECAS) inspections and all its management plans and protocols are up-to-date and approved by the NCARNG environmental office. FMS 2 hosted the Regional Facility Environmental Course in August 2008, which included all Regional Facility Environmental Coordinators from 30 counties in western North Carolina. In the past six years, the team has operated with such high compliance standards, that it has received no negative marks, fines, or compliance findings in either internal or external regulatory reviews or inspections.



In addition to supporting the hazardous and waste materials management for its units in five counties, the P2 Team services and supports over 600 pieces of rolling stock, which represents 75% of all its units' equipment. Over 500 pieces come through their facility every year for servicing and rehabilitation. Without the team's support, the NCARNG would not be able to accomplish its military mission.

Program Management

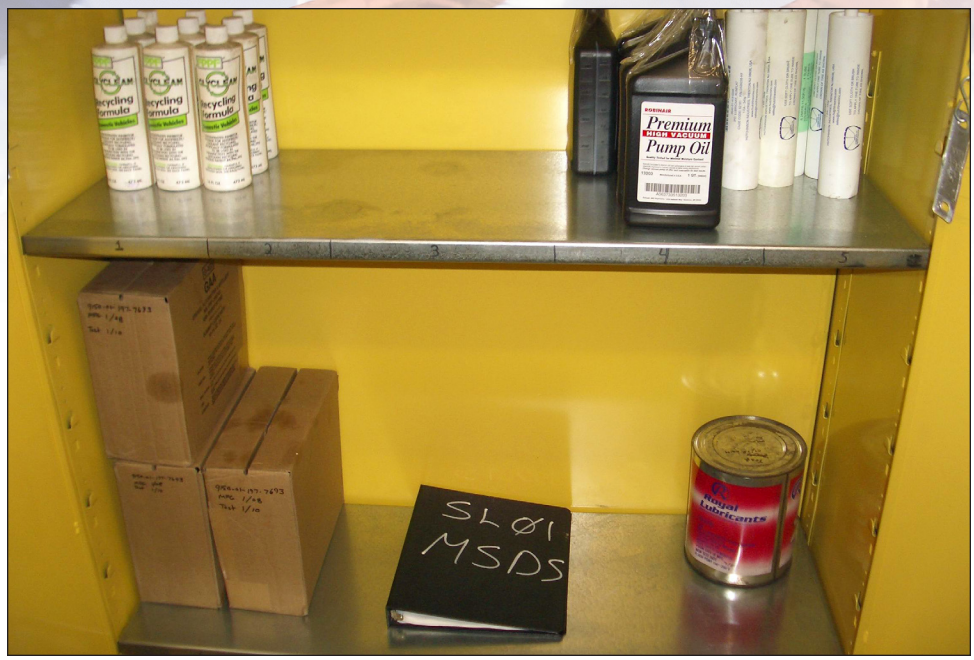
Quality program management techniques are key to the team's success, and they have contributed to the achievement of several program milestones, including the opening of a new, green facility for equipment rehabilitation and servicing, significant reductions in both hazardous and universal waste, the implementation of new training and material inventory programs, and ongoing compliance excellence in the Environmental Performance Assessment System (EPAS). All management plans are updated annually and revised every five years. These plans include P2, hazardous material management, waste management, and spill prevention and control. The team conducts sustainment training to incorporate any plan changes and provides this training to their supported units as well. FMS 2 is regulated to conduct annual inventories of paint, oil, and lubricant products, but instead, conducts these on a quarterly cycle to ensure accountability of manageable quantities and prevent excessive stock of unneeded materials. Budgeting for FMS 2 is controlled by the Director of Supply and Logistics (J4) with suggestions on regulatory requirements and compliance programs from the state environmental office, with a regional representative dedicated to the shop. Cost avoidance is achieved through the team's significant waste stream reduction via reduced disposal costs. Overall, the team's superior management and

support throughout its five-county region saves countless hours and NCARNG resources in compliance-related activity, freeing Soldiers to focus on their jobs without harm to the environment.

ACCOMPLISHMENTS

Material Substitutions

The team has implemented several significant material substitutions. They recently adopted the "Gell-Cell" battery, a battery which is completely sealed and poses no risk of acidic leaks. The battery offers a much longer lifespan that outweighs its initial cost (versus the older lead batteries that were replaced) and is air transportable as a non hazardous material. The battery can also be stored for up to 30 months, reducing the disposal costs associated with unused or expired batteries. If it is recharged every six months during storage it will last almost indefinitely. Older battery technologies, such as the lead-acid vehicle batteries have been replaced through attrition and reclaimed by the original contracted battery vendor to eliminate the possibility of environmental damage by controlled measures. The team has also substituted water-based paints for hazardous and toxic paints, which minimizes costs for storage and disposal while simplifying the shop's paint processes. They no longer need to use harsh solvents or chemicals in paint and washing processes. The team has also eliminated redundant products from the approved material lists and sought out green alternatives; they have successfully eliminated acetones and solvents in painting processes.



As part of an EMS initiative, the P2 team implemented an inventory standardization project for the NCARNG. As part of this effort, they set the guidelines for installing flammable cabinets and specialized storage, provided the environmental training in the system for all units, updated the material management plans for all facilities, set new threshold limits for certain materials, and reviewed all material acquisition practices to encourage adoption of green product alternatives. Within their shop, the team was able to reduce their stock of hazardous materials by half and drop below the 1300-pound storage threshold.

EMS Implementation

The P2 Team is part of the statewide adoption of the NCARNG's EMS program. They monitor all activities to maintain alignment with overall environmental goals and targets. Part of this was the implementation of a standardized inventory system for all other shops and units in the NCARNG. The team took the lead on this project, setting the guidelines for installing flammable cabinets and specialized storage, providing the environmental training in the system for all units, updating the material management plans for all facilities, setting new threshold limits for certain materials, and reviewing all material acquisition practices to encourage adoption of green product alternatives. The NCARNG's environmental targets and objectives include:

- 10 percent reduction in energy usage by 2010
- 10 percent reduction in water usage by 2010
- 5 percent increase in recyclables by 2010

Within their shop, the team was able to reduce their stock of hazardous materials by half and drop below the 1300-pound storage threshold. The team's inventory project has helped the NCARNG to reconsider the value of buying materials in bulk when storage and disposal costs are greater than the cost savings of large purchases. Establishing this management continuity across all NCARNG units has

not only streamlined the team's operations, but also simplified and improved material management throughout the state.

Waste Management and Reduction

In the case of hazardous materials, supported units contact the FMS 2 Team who in turn contact the Regional Environmental Coordinator to schedule the units for on-site pickup and transport, minimizing the risk for spills or accidents prior to disposal. The team coordinates with unit environmental representatives on a weekly basis, with open communication for any issues that need to be addressed immediately. Within FMS 2 itself, the team's hazardous material management is guided by storage and maintenance plans and an inventory system that identifies expiration dates and disposal needs. They have installed flammable storage cabinets to improve storage practices. In the event of a spill, the team is fully trained and equipped with absorbent socks, blankets, and reusable rugs for oil. The facility's central wash site captures any oil residue from vehicle washing in oil/water separators.

Improved Material Management

NCARNG FMS 2 has instituted facility management practices for pollution prevention, to reduce or eliminate the volume and toxicity of waste, material storage, recycling, and reclamation of used materials, and effluent discharges. Paint, oil, and lubricant wastes that are accumulated during the workday are segregated by type and placed in their designated containers for contractor pickup. Drain pans are emptied at the end of each task and contents are kept in designated holding area. All used oil filters are crushed using a filter press and then collected in a storage drum for contracted pickup. The facility recycled 80 pounds of used oil filters in fiscal year 2008. Inspections of controlled hazardous material and waste storage areas are conducted weekly to ensure program compliance. The generation of waste antifreeze has been negated with the utilization of a vehicle coolant filtering machine.

Process Improvement

The use of a vehicle coolant filtering machine minimizes the need to stock excessive quantities of replacement antifreeze. Petroleum products are dispensed via overhead pneumatic pump to negate the possibility of accidental release while transporting between storage and work stations. Fluorescent bulbs containing mercury are collected and placed in controlled storage until the contractor picks them up. The facility collected and turned in more than 22 pounds of bulbs during fiscal year 2008. FMS 2 conducts weekly sweeps of the vehicle parking areas to ensure that no leaks are present or left uncontrolled and vehicle oils do not enter the storm water run-off systems. Gell-Cell batteries are replacing the lead-acid batteries through attrition which are collected through the original battery vendor to eliminate the possibility of environmental damage by controlled measures. The battery offers a much longer lifespan and outweighs older lead-acid battery costs.

Recycling

The team runs its own recycling program for the shop and its supported units. Approximately 2,800 pounds of aluminum and one ton of cardboard are recycled by the team annually. The facility recycled 2,950 pounds of cardboard, 2,800 pounds of

Petroleum product recycling is accomplished with help from an outside recycling plant. The contractor pumps used vehicle motor-oil through a high-velocity recovery pump, returns the oil to a central facility for filtering processes with diesel fuel, and re-injects the fuel/oil mixture back into the retail system for use as residential and industrial heating oils, allowing for greater used oil reuse. The NCARNG no longer has to transport, store, or otherwise dispose of used oil products or purchase greater quantities of diesel fuel.

aluminum, 300 pounds of white paper, 3,800 pounds of heavy/light metals, and 520 pounds of plastic in fiscal year 2008. These materials are turned into either Fort Bragg via the NCARNG headquarters in Raleigh, N.C., or managed with local recycling contractors. FMS 2 participates in the Wood Pallet Reclamation and Restoration at Broughton Hospital in Morgantown, NC. Broughton is a state funded mental hospital that employs its patients in vocational rehabilitation programs. They use the pallets in reclamation and restoration work programs intended to give the patients a sense of accomplishment as well as provide a quality product which is reused to support movement and storage of assets belonging to the state of North Carolina. The Electronic Technical Manuals Library which houses Army manuals and forms on compact disks eliminates the need for paper. Mechanics rags, shop towels, and improved parts washers for vehicle brakes, are items currently on contract with local vendors to further control waste streams and minimize the possibility of environmental contamination. The team also turns in petroleum products and used antifreeze for recycling, which further reduces the waste stream. These recycling and waste management efforts have resulted in significant waste stream reductions (see chart below).

Education, Outreach, and Partnering

The team has already been tremendously successful at transferring its management improvements to other units within the NCARNG. One team member, Staff Sgt. Timothy Howell, conducts sustainment compliance training at the armories supported by FMS 2 and assists the Regional Environmental Coordinator in monitoring of the armory hazardous material management plans. In terms of outreach, public access at FMS 2 is unavoidably restricted, so the team focuses on communication with their state environmental offices, particularly regulatory agencies and emergency response contacts in the county. The NCARNG is required to host visits from county emergency management officials and regional environmental coordinators on an as needed basis. A commitment to environmental quality and stewardship has helped to cement the NCARNG's reputation as an environmental leader and good neighbor.

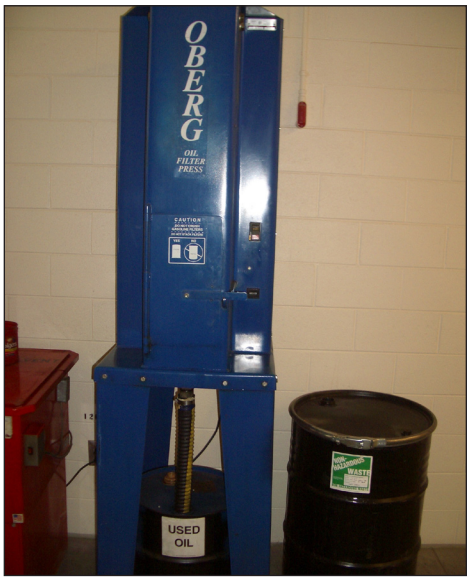
One program improvement that could be easily transferred to other units in the National Guard Bureau (NGB) or DoD is the team's transition to an electronic, non-paper-based communication and compliance system. This eliminates the need to order and stock paper forms by incorporating a component automation system that is linked to Pentagon and NGB databases. FMS 2 has received numerous "kudos" from Major General William Ingram, the Adjutant General of North Carolina; Colonel Beth Austin, the Director of Supply and Logistics; Colonel Bill Johnson, the Director of Facilities and Energy Management; and Ms. Vickie Dudick, the State Environmental Program Manager upon recognition of being awarded the Secretary of the Army Environmental Program Award.

YEAR	WASTE TYPE	TOTAL WASTE	REDUCTION FROM PREVIOUS YEAR
2006 *Old Facility (1940-2006)*	Universal	6,553 lbs.	**318 lbs.**
	Hazardous	1,443 lbs.	
2007 *Temporary Facility*	Universal	6,285 lbs.	**711 lbs.**
	Hazardous	1,000 lbs.	
2008 *New Facility (Recent consolidation of the FMS 2 with the FMS 3 resulted in an overall hazardous waste increase)*	Universal	54,41.5 lbs.	**843.5 lbs.**
	Hazardous	2,604 lbs.	

Compliance with E.O. 13423

Sustainable Design and Development includes the design, construction, and operation of buildings to reduce negative impacts on the environment, improve the comfort of the building occupants, and reduce operating costs while improving building performance. This

requires a multi-disciplinary approach that incorporates strategies and objectives set in Executive Orders, E.O. 13423, Strengthening Federal Environmental, Energy and Transportation Management into the design and construction process. The NCARNG's FMS 2 green building meets several objectives in water efficiency, energy and atmosphere, indoor environmental quality, and materials and resources due to its environmentally friendly design.



Fuel and oil filter crushers are part of recycling efforts at FMS 2. The crushers allow the P2 Team to reclaim petroleum products for recycling and allow used filters to be recycled as scrap metal rather than disposed of as hazardous waste. Antifreeze is also recycled with help from an outside recycling vendor.

Green Buildings

The technical merits of the team's P2 program span a wide range of environmental areas, beginning with the very design and construction of the FMS 2 building itself to Energy 10 standards. Opened for operation in April 2008, the new FMS 2 building has a number of green design elements including:

- A geothermal heating and cooling system that works on a closed loop system with on-site water wells. Pipes on the closed loop circulate cool water from the wells through the building's heat exchanger to the heating and cooling system, and back through the wells. The geothermal system is saving heating gas and electrical costs as well as reducing emissions. Annual estimates calculated CO2 emissions reductions of over 500 tons, SO2 emissions reductions of six tons, and NOx emissions reductions of two tons.
- Occupancy sensors automatically control lighting systems that use T5 fluorescent energy efficient lamps, and perimeter lighting uses solar indicators to minimize the time that lights need to be on. Waterless urinals contribute to the building's overall water conservation measures, saving approximately 40,000 gallons of fresh water annually.
- Contracted pickup of used petroleum products at the shop contributes to waste stream reduction. The contractor pumps used vehicle motor-oil through a high-velocity recovery pump, returns the oil to a central facility for filtering, processes with diesel fuel, and re-injects the fuel/oil mixture back into the retail system for use as residential and industrial heating oils, allowing for greater used oil reuse.

CONCLUSION

The NCARNG P2 Team's leadership in pollution prevention and their efforts to make their shop as green as possible while maintaining the highest degree of environmental quality has set them apart in North Carolina and in the region in terms of environmental excellence. Over 500 pieces of equipment come through their facility every year for servicing and rehabilitation. Without the team's support, the NCARNG would not be able to accomplish its military mission. The team's dedication to environmental quality has helped it to do its job more cleanly and efficiently. This P2 approach seeks to increase the efficiency of a process, thereby reducing the amount of pollution generated at its source. The NCARNG has achieved this by opening a new green facility for equipment rehabilitation and servicing, significant reductions in both hazardous and universal waste, recycling, and the implementation of new training and material inventory programs. The P2 Team's commitment to environmental quality and stewardship has helped to cement their reputation as an environmental leader and good neighbor not only in North Carolina, but also in the region and throughout its military structure.