



The Pollution Prevention Equipment Program (PPEP)



Pollution Prevention



PROGRAMS

P2 in Acquisitions

N451 represents N45/N4 ESH issues to Acquisition Program Managers (PMs) via the program IPT, ACT and ILA teams. Environmental, Safety and Health (ESH) planning in the design phase provides a significant opportunity to reduce a weapon system's pollution potential and make it more sustainable, affordable and deployable for the Fleet. N451 has developed tools for Acquisition PMs and OPNAV Requirements Officers including logistically relevant ESH goals, ESH requirement language for ORDs and a quick reference guide on ESH in Acquisition entitled "By Design".

EQI Implementation

"Aircraft Engine Effluent Pretreatment System" In 1996, the State of Florida Department of Environmental Protection (DEP) Agency cited NAS Jacksonville for a violation of the Florida hazardous waste statute due to the improper disposal of the T-56 aircraft engine wash effluent. The wash effluent contained high levels of cadmium and was deemed hazardous. It has been determined that the source of the cadmium is from the nickel-cadmium coating on the T-56 compressor blades which comes off during the wash process.

The standard operating procedure prior to the discovery of cadmium had been to let the wash water fall directly to the tarmac to be washed away with the rain. Upon discovery of the toxic characteristic of the wastewater, a method of handling the wastewater was required. Heavy fines were imposed by the Florida DEP and a long-term solution of phasing out the nickel-cadmium coated compressor blades was developed. The DEP agreed (after an initial fine was paid) to allow Jacksonville, in conjunction with the CNO N45 Pollution Prevention Equipment Program, to use their money to develop a workable solution to avoid continuing the fines until all engines are changed out, a process that will take several years.

NAS Jacksonville has developed a unit to capture the wash effluent. The effluent was then disposed of hazardous waste. In an effort to reduce the volume and expense of the hazardous wastes, Florida DEP has authorized a project to pre-treat the effluent prior to discharge to the POTW. Several pretreatment options were considered for this particular application, each using an entirely different technology to remove the heavy metals from the engine wash water. Chemical precipitation and ion exchange/adsorption were the leading systems, currently commercially available and used in similar if not identical applications. Dissolved air floatation, electrocoagulation and evaporation are the other technologies under investigation that may be considered at a later time.



The Pollution Prevention Equipment Program (PPEP)



EQI Implementation - Continued

"Aircraft Engine Effluent Pretreatment System"

The ion adsorption is the least labor-intensive of the technologies and the best able to handle different levels of contaminants in the influent. Because it is a passive system where the quality changes only occur for the contaminants present and cleanwater passes directly through unchanged, there is not the same propensity for under- or over-treatment as with some of the other systems where the influent must be more precisely known.

In accordance with the agreement the DEP, two technologies would be tested out for the treatment of engine effluent. The DEP approved the operation of an ion adsorption system and a chemical precipitation system. This agreement provided a short-term solution to a compliance issue and therefore permitted the continued engine washing for maximum performance. The operation reduced the toxicity of the wastestream, reduced the volume of the waste stream and reduced worker exposure to hazardous wastewater.

The ion exchange/adsorption pretreatment system has been in operation since March 1998 and has been very successful. The cost savings from implementation of this pretreatment system come almost entirely through savings on disposal of hazardous waste. Two scenarios were considered: 1) includes regulatory liability actually incurred at Jacksonville, and 2) omits these regulatory costs and therefore applies more for a different site (one not required to pay fines) considering implementation.

The net present value of the system as projected from actual data at Jacksonville (including first year liability savings) is \$304,406.00. Because the fines incurred were greater than the capital cost of the equipment, the payback period is 0.0 years.

The net present value of the system as projected from Jacksonville data not including regulatory fees is \$240,406.00. The payback period is 1.4 years.