FY 2012 Chief of Naval Operations Environmental Awards Program
Environmental Excellence in Weapon System Acquisition - Small Program Team

AIR 1.6 Environmental Programs Department

Programmatic Environment, Safety, and Occupational Health Evaluation Document Authoring Tool Team

Program Description

The Naval Air Systems Command (NAVAIR) Environmental Programs Department (AIR 1.6 Team) is the environmental technical competency within AIR 1.0 Assistant Commander for Acquisition. Its mission is to create environmental excellence by applying smartly designed processes and tools to enable acquisition programs to deliver systems meeting fleet operational needs with reduced environment, safety, and occupational (ESOH) constraints. AIR 1.6 through AIR 1.0 competency works directly with Acquisition Category (ACAT) II, III, and IV programs to plan and execute cost-effective ESOH efforts. A primary method for accomplishing the mission is AIR 1.6's innovative application—Programmatic ESOH Evaluation (PESHE) Document Authoring Tool (DAT), which deployed in 2007. Initial deployment was just within the AIR 1.0 competency to demonstrate the usefulness of the application in furthering environmental compliance. The success achieved within AIR 1.0's use of the tool led to the progressive expansion to the other NAVAIR Program Executive Offices (PEOs).

PESHE DAT allows all ACAT Programs, Abbreviated Acquisition Programs, and Rapid Deployment Capability Programs to fulfill their ESOH requirements pursuant to acquisition implementing policies. Figure 1 depicts where PESHE DAT users are geographically located. PESHE DAT is a key integrator for assuring that acquisition programs adequately plan for ESOH analyses for the system's life-cycle and consider ESOH risks as part of the program's decision-making process.

Representative ACAT II–IV Programs Using PESHE DAT

ACAT II
- E-6B Airborne Strategic, Command, Control, and Countermeasures Program

ACAT III
- T-45 Virtual Mission Training System
- Distributed Targeting System
- Advanced Precision Kill Weapon System II
- Small Tactical Unmanned Aircraft System

ACAT IV
- Electronic Consolidated Automated Support System
- Multi-Static Active Coherent
- Direct Attack Moving Target Capability
- Military Flight Operations Quality Assurance
- Subsonic Aerial Target System

Acquisition Program Managers (PMs) can achieve greater certainty in ESOH compliance through the use of PESHE DAT, a powerful, collaborative ESOH risk planning and management process.

During the last two years, major enhancements were made to add robustness and to further ESOH risk assessment capabilities:
- Systems Engineering Technical Review (SETR) module
- Risk Assessment Module (RAM) as a standalone module
- National Environmental Policy Act (NEPA) Compliance Schedule module
- Automated Reviews
- Reporting Features
- Document Archiving

Figure 1: PESHE DAT User Locations

The AIR 1.6 Team developed 11 new program and corporate reporting mechanisms (e.g., review and document throughput times, risks across PEOs and the command, NEPA execution, etc.). This was a collaborative effort with acquisition program ESOH Coordinators and users, as well as NAVAIR ESOH subject matter experts (SMEs). Of note is the ability to capture ESOH data in the system on a real-time basis vs. the data being coupled to a document. With these enhancements, the AIR 1.6 Team was able to mandate the use of PESHE DAT across the command.

Figure 2 depicts usage related data since October 2010. Users increased 32 percent to 230, from 174; 25 percent of the new users (14 new) are ACAT II–IV programs, a 15 percent increase (to 105, from 91). Forty new programs were added since October 2010, a 31 percent increase (to 171, from 131), and there was a 20 percent increase of ACAT II–IV programs (to 66, from 55). Documents added to PESHE DAT increased by 58 percent (99 added for a total of 271) of which 34 documents added were ACAT II–IV programs resulting in an increase of 52 percent (104 documents, from 70). A similar increase was achieved in the standardized review and evaluation process of documents processed within PESHE DAT—from 9 to 33 (a 267 percent increase) of which there was a 200 percent increase (to 15, from 5) for ACAT II–IV PESHE documents processed during 2011–2012.

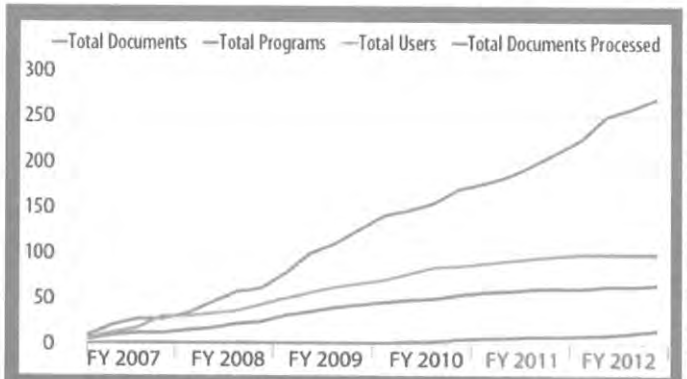

Figure 2: PESHE DAT Usage 2010–2012

Incorporating ESOH Integration into Systems Engineering

PESHE DAT does more than just automate the authoring of ESOH documents. Acquisition program milestone and gate review events as part of systems engineering (SE) are captured and tracked via the SETR module. This allows the AIR 1.6 Team and acquisition programs to work effectively together in assuring successful planning and execution of ESOH analyses throughout the system's life-cycle. Various features of PESHE DAT aid the user in inserting ESOH requirements into acquisition documents. Information within the document templates [e.g., the NAVAIR Chemicals of Concern List (CoCL) and List of ESOH-related Federal and Defense Acquisition Regulations] can be used to build the ESOH performance specifications and the system contract statement of work. The energy section, added to the template in 2011, is the first time an acquisition program has insight regarding energy considerations for systems and furthers implementation of Department of Defense (DoD) and Department of Navy (DoN) policies. The help feature provides invaluable information on how to execute an ESOH program, especially for authors with limited ESOH experience, as is the case with many NAVAIR ACAT III and IV programs. A series of ESOH questions for each acquisition phase in the Planning and Execution (P/E) portion of the RAM reflects what an acquisition program should address, which advances proper and efficient ESOH integration. ESOH risk planning is achieved through both the RAM and the NEPA Compliance Schedule modules. Programs can use the risk information to communicate with others on the hazards associated with a system, conduct proactive mitigation, and reduce risk to the program. The RAM improves the ability of acquisition programs and the AIR 1.6 Team to track and analyze ESOH hazards/risks, resulting in lower total ownership cost (TOC) by minimizing regulatory burdens and ESOH risks to the fleet. The NEPA Compliance Schedule maintains the status of scheduled NEPA actions, which results in reduced program costs and schedule impacts through the ability to forecast requirements into the out-years.

PESHE DAT Features

- Help - How To Plan & Conduct ESOH Analyses
- Checklists - PESHE Document Content & ESOH Execution
- References - Sources of Information
- Collaborative History - Query How Other Program Address Requirements
- RAM - Identify Risks & Prioritize Mitigation based on Risk Levels
- Template Boilerplate Language - Foundation for ESOH Considerations

ESOH Risk Management

The Risk Assessment Module (RAM) of PESHE DAT is a two-fold risk assessment process. It offers users the capability to assess and manage technical hazards, and conduct programmatic P/E assessments. Both assessment features allow for developing mitigations and a plan of action and milestones for each mitigation. The RAM data is exported and integrated into the PESHE document, and the risk data is presented in the four areas of ESOH compliance, NEPA, Safety and Occupational Health, and Hazardous Materials (HAZMAT) Management/Pollution Prevention (P2). Figure 3 depicts current risks by ESOH areas. This integration into the PESHE document, including a detailed technical risk and P/E risk assessment report in the Appendix, assures the communication of identified hazards and their risks to the PM and other echelon acquisition personnel.

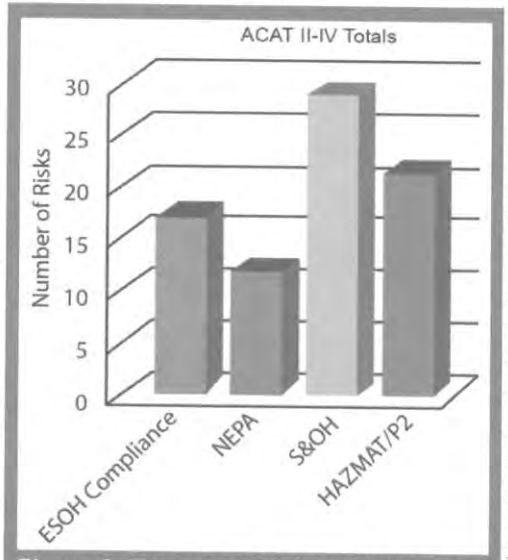

Figure 3: Technical Risk by ESOH Area

A large portion of FY 2011–2012 enhancements pertained to the upgrading of RAM capabilities. RAM, originally part of the document portion of the tool, did not allow for the active management and use of the risk data. The RAM was re-structured into a program-level module allowing ESOH Coordinators to track risks throughout the system's life-cycle, regardless of the current acquisition program milestone. The migration of the RAM to the program level enables risk management as a stand-alone capability for the life of the program, regardless of personnel turnover, while still providing the critical integration within the SE and program's risk acceptance processes. It also allows for early on, proactive ESOH risk mitigation to alleviate issues before the system transitions to the fleet, ultimately reducing TOC over the system's life.

The RAM also offers continuous evaluation of a program's "ESOH program health" through the P/E Assessment feature. The user answers yes/no questions and, through a weighted process based on the answers, a color-coded score for the five acquisition phases per ESOH area is derived for the program. This rating serves as an indicator in the success and/or potential problem areas in executing ESOH requirements pursuant to DoD and DoN policies. Results are used by the PM and AIR 1.6 Team to focus resources to deficient areas, thereby mitigating impacts to program costs and schedule.

The Technical Risk feature is a combination of Military Standard 882 and NAVAIR Instruction 5090.21B risk management processes where identified ESOH hazards are assessed based on risk consequence and probability. The Technical Risk Report (also Appendix A of the PESHE Document) automatically generates a description of the hazard, the risk levels including depiction in a risk matrix, and the resultant mitigation waterfall chart (See Figure 4).

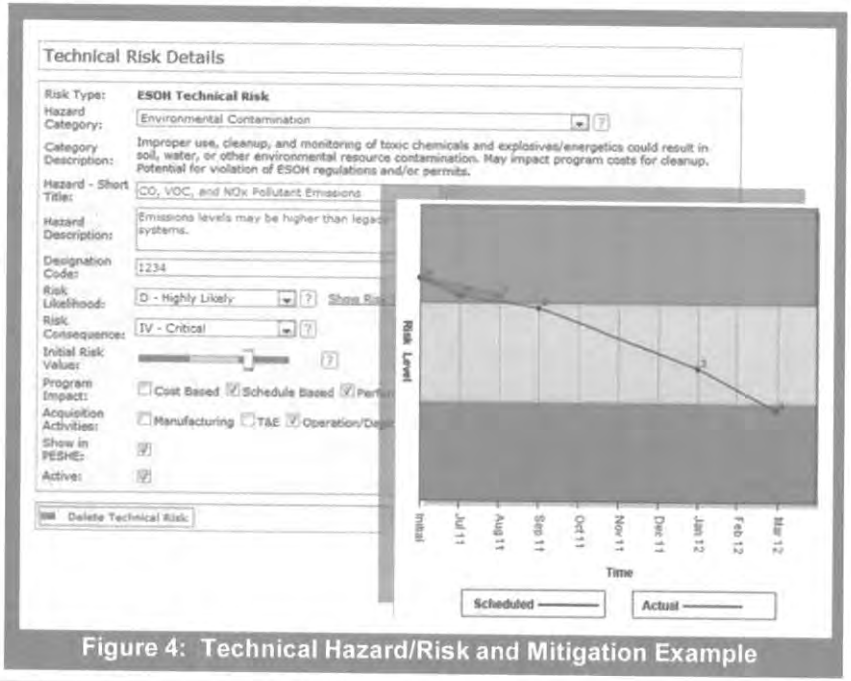

Figure 4: Technical Hazard/Risk and Mitigation Example

This information is used to identify alternative materials and P2 technology opportunities.

Internal Coordination and Documentation

PESHE DAT, as reflected in the preceding sections, is the enforcer for ESOH integration, NEPA compliance, risk identification, tracking effectiveness of ESOH mitigations, and ESOH risk communication. PESHE DAT's usefulness for cost effective, concerted ESOH integration/risk tracking is a result of the on-going, essential collaboration between the AIR 1.6 Team, program ESOH personnel, and NAVAIR ESOH SMEs. During 2011, the AIR 1.6 Team embarked on transitioning the ad hoc, paper PESHE document reviews into an automated comprehensive document review capability in PESHE DAT as reflected in Figure 7. A similar review process was developed in 2012 for the NEPA Compliance Schedule. An important aspect of the review process is the competency level review by NAVAIR ESOH SMEs, who not only assist the acquisition programs in addressing ESOH requirements, but can also use the program's data in support of their ESOH processes (i.e., Aviation and Shipboard HAZMAT management). The AIR 1.6 Team, via the ESOH Review Board, is the final forum for approval/disapproval of the document. Their evaluation validates the technical sufficiency of the document via a report prior to signature approval by the acquisition PM.

Efficiencies are gained in streamlined reviews and reduced paper usage. There was a 145 percent increase in review comments (573 comments) now 967, from 394; of which for ACAT II–IV programs there was an increase of 232 from 222 for a total of 454 comments of the PESHE documents reviewed (a 105 percent increase).

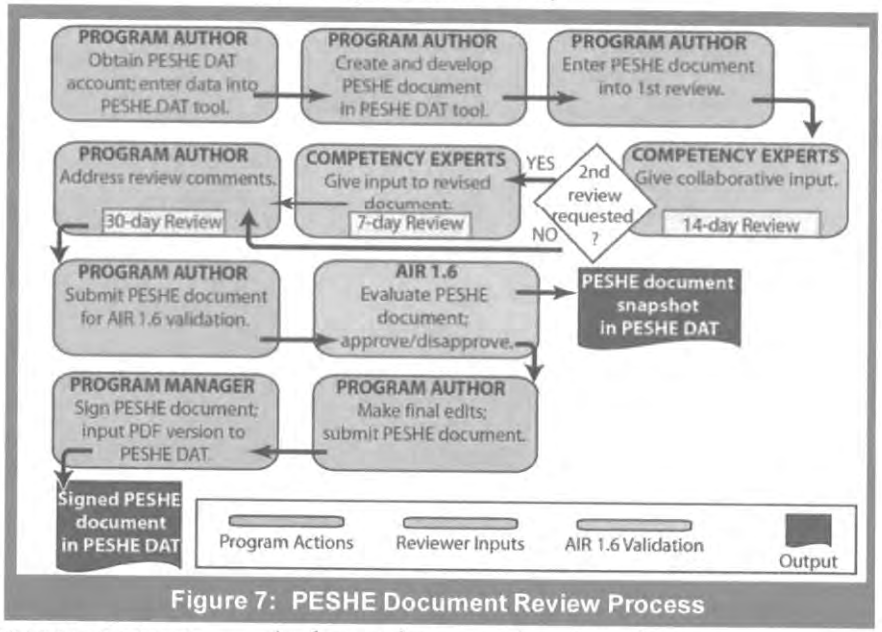

Figure 7: PESHE Document Review Process

mitigation. The result is a better synchronized process for ensuring that an acquisition program executes sound ESOH principles into SE planning and risk decision-making.

Additional risk avoidance is realized with the NEPA Compliance Schedule module, which assists acquisition programs and the AIR 1.6 Team to adequately forecast environmental planning triggers. Review of an acquisition program's schedule occurs initially when created in PESHE DAT, during each PESHE document review, and as required through the course of a fiscal year at the AIR 1.6 Team's discretion. These NEPA Compliance Schedules allow AIR 1.6 to assess compliance with NEPA, and forecast the command's environmental planning workload (See Figure 8). The NEPA

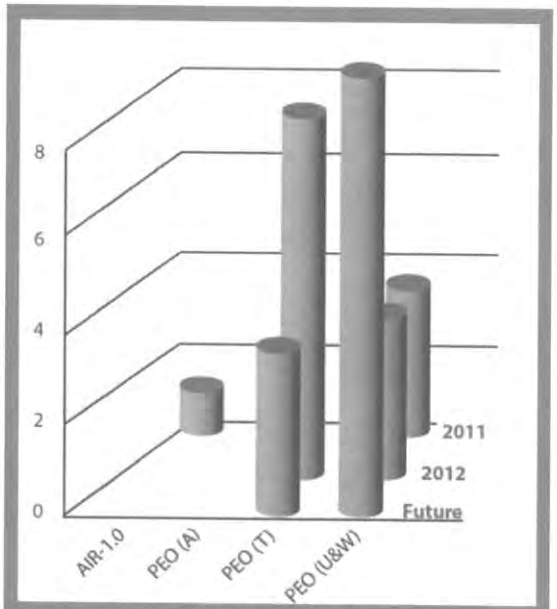

Figure 8: Future NEPA Actions for NAVAIR

program and technical reviews to ensure that risks are planned for and communicated, as well as accepted by program and user management representatives (especially during the safety release process for test and evaluation and fielding decisions). RAM is being leveraged by more than 55 percent of the ACAT II–IV programs in PESHE DAT and 71 percent of all technical risks have associated mitigation actions defined. There are mitigation plans for 303 risks of the 427 identified risks in the tool.

The AIR 1.6 Team can use PESHE DAT metric reporting features associated with RAM to conduct trend analyses. Determinations can be made on hazard types with the highest likelihood and consequence. Commonalities in environmental impacts can be determined across the command. Mutual problem areas that hamper environmental planning, compliance, and costs can be identified. See Figure 5 for a sample trend analysis of technical risk hazard categories.

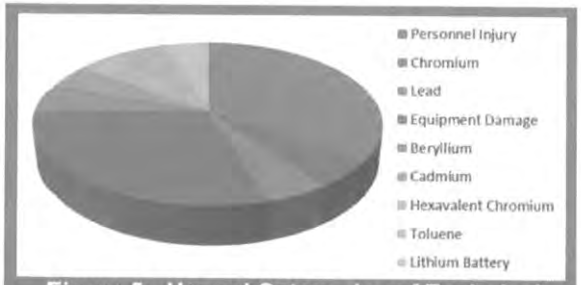

Figure 5: Hazard Categories of Technical Risk

AIR 1.6 Team's aggregation and analysis of RAM data allows for future ESOH readiness of environmental requirements as programs transition through the acquisition phases.

Hazardous Materials Management and Pollution Prevention

Several aspects of PESHE DAT promote HAZMAT Management and P2. The Chemicals of Concern List (CoCL) (an appendix in the templates) focuses the acquisition program's efforts within the SE process in eliminating or reducing the use of HAZMAT posing the greatest regulatory compliance burden and/or significant personnel exposure risks. The Help feature offers detailed information concerning the premises of HAZMAT/P2, such as what should comprise a HAZMAT Management Program (HMMP) Plan and HMMP Reports to include generation of a detailed HAZMAT List (HML) specific to the system (HAZMAT as delivered and for maintenance). A representation of the HML is required in the PESHE document. The HML is also the basis for addressing ESOH protective measures in demilitarization and disposal planning. For example, the Advanced Precision Kill Weapon System II Program and system contractor were able to identify where hexavalent chromium was specified in the drawings for the guidance section. An alternative, MIL-DTL-5541 Type II coating, is now being applied resulting in approximately 70 percent of the total systems procured during full rate production being hexavalent chromium free. This is one more step in the Program's and NAVAIR's efforts to reduce regulatory compliance and personnel exposure risks to the system users and maintainers.

Restricted HAZMAT on the CoCL

- Asbestos
- Class I Ozone Depleting Substances (ODS)
- Class II ODS
- Hexavalent Chromium
- Polychlorinated Biphenyls

PESHE DAT allows for a command understanding of HAZMAT and the risks posed in operation and sustainment. The AIR 1.6 Team can generate various reports to identify HAZMAT-related usage and hazards (See Figure 6).

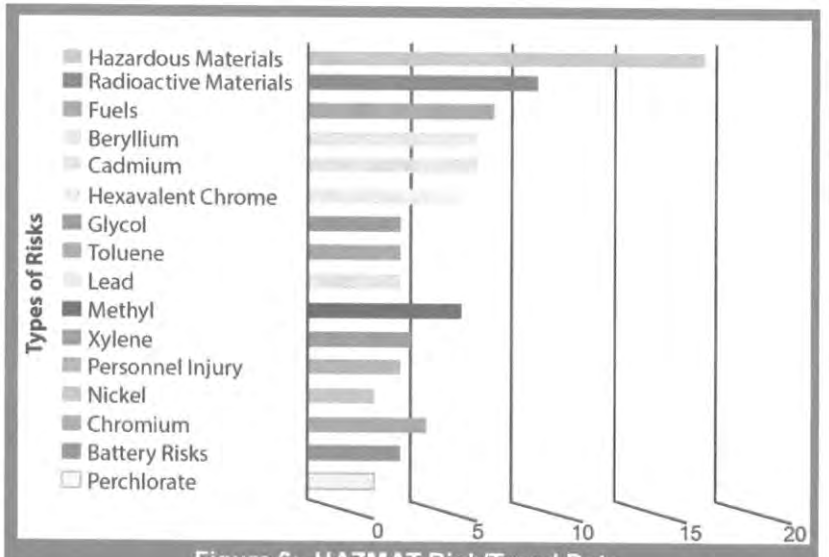

Figure 6: HAZMAT Risk/Trend Data

Compliance Schedule can also be used in support of the SETR process and integrated into an acquisition program's master schedule; thereby increasing awareness of resourcing needs and execution of requirements.

External Coordination of ESOH Risk Management

PESHE DAT facilitates open lines of communication and ESOH awareness through several avenues:

- Regularly scheduled user group meetings by the AIR 1.6 Team support dialogue among the acquisition programs on their ESOH initiatives and approaches to addressing policy.
- Integrated, online tutorials provide guidance to develop and execute an acquisition ESOH program.
- The ability to tag associated programs to a particular program within the tool (such as linking smaller acquisition programs used on an ACAT I system—Infrared Search and Track System Program to the F/A-18E/F Program) provides a holistic representation of ESOH risks that may impact both programs allowing for mutual endeavors to mitigate the risks as well as lessen the potential cost, schedule, and performance risks among the aligned programs.
- A search capability allows for conduct of comparative analyses among PESHE documents maintained in the archives. ESOH Coordinators can research the history of previous ESOH efforts and leverage data that may be relevant to their current requirements. It promotes sharing of approaches in using research and technologies to address ESOH risks, such as NAVAIR approved material alternatives for hexavalent chromium.

In addition, the ability to collect, analyze, and report data to measure risks and hazards has had an impact on program performance. PESHE DAT allows the AIR 1.6 Team to monitor and communicate ESOH risks across the command (See Figure 9).

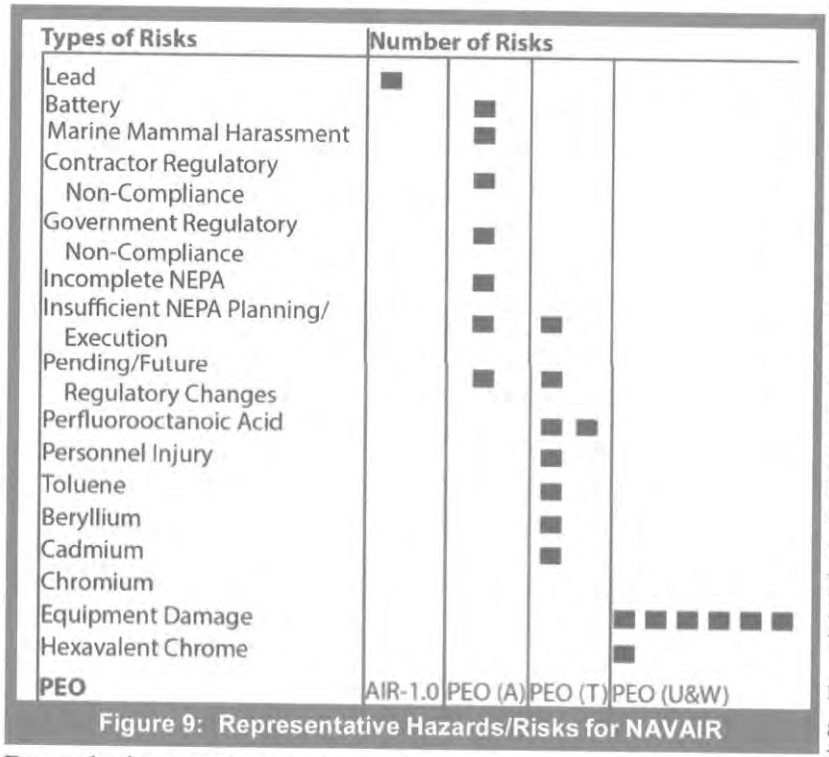

Figure 9: Representative Hazards/Risks for NAVAIR

By analyzing metric reports, the team can spot trends and recommend areas for process improvement. The AIR 1.6 Team can also quickly identify programs that have significant hazards or are behind in mitigation efforts working with them and NAVAIR ESOH SMEs to implement workable solutions. The risk data is also used in concert with the test community to identify needed tests to validate mitigation of risk (e.g., system noise measurements), but also to assure procedures are in place for protection of personnel and the environment. HAZMAT usage and data is used to verify inclusion of HAZMAT on the Aviation and Shipboard HMLs, which assures the fleet will be able to effectively and safely maintain NAVAIR systems. Data from PESHE DAT, such as risks, is also used to not only interface with acquisition integrated product teams but with other SYSCOMs, DoN, and DoD organizations to share information on ESOH issues, work collectively to identify solutions, and influence the policy and regulatory communities in understanding their impact to NAVAIR acquisition programs.

The testament on the merits of PESHE DAT is approval by the Chief of Naval Operations, Energy and Environmental Readiness Division (OPNAV N45) in 2011 for expanded development into a DoN-wide application.

This application will institutionalize a comprehensive and efficient PESHE process across all SYSCOMs. Overall, Navy PESHE DAT will improve the consistency and quality of PESHE documents, reduce the amount of time required to complete a PESHE document, and support a collaborative process among the SYSCOMs, ESOH SMEs, and acquisition programs. A centralized source of ESOH data and metric reporting capabilities will improve the ability of the DoN/ SYSCOMs to focus research and development projects based on validated trend analyses.

Summary of Accomplishments

The PESHE requirements for an acquisition program are complex and, at times, it is difficult to address all areas of ESOH risk adequately. While other DoD services may have standard templates and risk collection tools, none match the level of NAVAIR PESHE DAT in providing a "one-stop shop" for development of an ESOH compliant PESHE document, risk management and mitigation tracking, NEPA planning, and compliance/trend analyses. PESHE DAT is a powerful application that gives ESOH Coordinators the tools, processes, and guidance needed to assure ESOH planning is conducted early in SE. This greatly advances environmental readiness for the fleet by reducing ESOH risks and liabilities, achieving environmental benefits and cost savings, improving industrial processes, maintaining environmental compliance and achieving program missions at a competitive advantage. Enhancements during the reporting period included:

- An integrated NEPA Compliance Schedule review process to adequately forecast and resource 38 future NEPA efforts from September 2012–2019
- A document assessment capability, as the final review process feature, allowing the AIR 1.6 Team to ensure that NAVAIR ESOH SMEs' assessments are adequately addressed and to validate that documents are fully compliant prior to the acquisition PM's signature
- Reporting features and RAM enhancements allowing the AIR 1.6 Team to track ESOH progress, produce metrics, and conduct trend analyses to achieve increased command compliance with acquisition ESOH requirements.

The culmination of efforts over the past two years is the recognition by NAVAIR and acquisition PMs that PESHE DAT is an invaluable tool for effective and enhanced ESOH execution, as evident in the significant increase in users and greater functionality of PESHE DAT. The AIR 1.6 Team has a solid foundation for ESOH risk management, supporting centralized environmental business processes for the command to understand and help mitigate ESOH burdens for the end-user. Acquisition PMs can have higher confidence in ESOH compliance through the use of PESHE DAT—a standardized, streamlined, collaborative planning and ESOH risk management tool.

PESHE DAT Testimonial

–Fred Hepler, CAPT USN, Program Manager, Aviation Support Equipment (PMA 260)

"Environmental compliance is only as good as the due diligence of the acquisition documentation. PESHE DAT ensures reduced cycle time and standardization for ESOH acquisition documentation. The Aviation Support Equipment Program Office (PMA 260) Team is energized to collectively become cost-conscious warriors for promoting ESOH solutions for the greater good. This Tool contributes towards NAVAIR acquisition professionals to not only protect the environment but also protect the fleet."

Electronic Consolidated Automated Support System - A PMA 260 ACAT IV Program