

Defense Standardization Program JOURNAL

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Standardization Stars

Occupant-Centric
Protection for Military
Ground Vehicles
(MIL-STD-3058)

Driving Cost and Risk
Out of the Navy's
Technical Standards

VIP Special Airlift Mission
SLCS Integration Team
Upgrades Communication
System

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Director's Forum

Standardization Stars

The Defense Standardization Program Achievement Awards recognize individuals and teams who have significantly improved technical performance, increased operational readiness, enhanced safety, or reduced cost through their contributions in standardization.

Raindrops on roses and whiskers on kittens—and presenting the DSP Achievement Awards. This year marks the 30th anniversary of the Achievement Awards. I've been at every ceremony and it has been my honor to preside over the last 19 ceremonies, and it truly is one of my favorite things. The nominations submitted for this award are a demonstration of the effectiveness of the Standardization Program, and they showcase the resourcefulness and hard work of those who are a part of the standardization community.

These awards honor personnel and organizations of the military departments and defense agencies for outstanding performance in the implementation of the Defense Standardization Program. The recipients have made singular improvements in technical performance, greatly enhanced safety for DoD personnel, and provided millions in cost savings. For FY17, three teams were selected to be particularly deserving of the recognition.

The winners are as follows:

- **Occupant-Centric Protection for Military Ground Vehicles (MIL-STD-3058).** There is hardly anything more important to focus on than the protection of our men and women in uniform. MIL-STD-3058, "Occupant-Centric Protection for Military Ground Vehicles," was developed for the Occupant-Centric Platform Technology-Enabled Capability Demonstration (OCP TECD) program due to the need for a single-source document to provide information for designing military ground vehicles to accommodate the space required by soldiers, their gear, and underbody blast protection. The U.S. Army Tank Automotive Research, Development, and Engineering Center led the initiative, which was partnered with numerous organizations throughout DoD, industry, and academia. The OCP TECD standardization team persisted through the program complexity and magnitude of data to publish this standard, along with six performance specifications. This reduced the cost in unique requirements for each system and has improved performance, operational readiness, interoperability, safety, reliability, and quality related to soldier accommodation and underbody blast protection. MIL-STD-3058 and the performance specifications may be applied to future new vehicle



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Director

Defense Standardization Program Office

acquisitions, legacy system upgrades, modifications to deployed military ground vehicles, and research activities related to occupant accommodation and survivability during an underbody blast event. Overall, developing this standard and its supporting specifications has improved survivability of the warfighter and the future force.

- **Driving Cost and Risk Out of the Navy's Technical Standards.** The Defense Standardization Council has recently focused attention on the number of specifications and standards in our system that have exceeded their 5-year review status without action. Naval Sea Systems Command (NAVSEA) 05Z4, the Hull Deck and Auxiliary Systems Division of NAVSEA 05, focused efforts on addressing overage documents to increase the safety and reliability of equipment and systems, incorporating technological improvements and lessons learned, eliminating ambiguous requirements, and reducing the overall cost and risk to the U.S. Navy. NAVSEA 05Z4 reviewed documents to determine which, if any, could be easily and quickly addressed by way of validation, cancellation, inactivation for new design, or reaffirmation, based on use in recent and future procurements. The completion of 74 documents in FY17 has constituted nearly a \$3 million cost savings for the Navy, with the savings applicable across Navy surface ships and submarines. Of the 389 specs and standards owned by SEA 05Z4 Division technical warrant holders, more than 214 (55 percent) are now compliant with DoD Manual 4120.4 requirements, and 59 specs and standards are undergoing a maintenance action with estimated completion dates by July 2018.
- **VIP Special Airlift Mission SLCS Integration Team Upgrades Communication System.** The U.S. Air Force's 645th Aeronautical Systems Group, also known as "Big Safari," took on the task of modernizing, upgrading, and sustaining the efforts of the Very Important Person Special Airlift Mission (VIPSAM) Senior Leader Communications Systems (SLCS) on the VIPSAM C-37, C-32, C-40, and VC-25 Air Force One fleet. The primary objective was to consolidate all mission communications modifications under one program office to achieve a common passenger experience and operator interface regardless of aircraft. The system provides high reliability and interoperability to afford our nation's senior leadership the connectivity required to perform all business functions from daily tasks to matters of national leadership command capability. The operational requirements for the mission communication system upgrades yielded a single-system common passenger experience solution to be implemented across the Operational Support Airlift/Executive Airlift fleet. This modernization effort included the upgrade, modifications, sustainment, and logistical support for operational missions. The SLCS modernization upgrade gives the Air Force and DoD ultimate flexibility and improved capability without increasing budget requirements. The benefits of this standardization will be felt for decades across multiple commands, platforms, locations, and senior leaders.

Congratulations to all of our award winners. Your hard work and dedication are certainly appreciated by DoD leadership and the standardization community. These standardization awards help call attention to the significant contributions that standards and standardization make toward supporting our men and women in uniform, helping to multiply capability through interoperability, and saving taxpayers' money.

This issue of the *DSP Journal* highlights the accomplishments of the FY17 award winners. I hope that reading about their successes will inspire you to submit an award nomination for the work you are doing in standardization for the FY18 awards.



Occupant-Centric Protection for Military Ground Vehicles (MIL-STD-3058)

Award Winner: U.S. Army Tank Automotive Research, Development, and Engineering Center

MIL-STD-3058, "Occupant-Centric Protection for Military Ground Vehicles," was developed for the Occupant-Centric Platform Technology-Enabled Capability Demonstration (OCP TECD) program due to the need for a single-source document to provide information for designing military ground vehicles to accommodate the space required by soldiers, their gear, and underbody blast protection. The U.S. Army Tank Automotive Research, Development, and Engineering Center (TARDEC) led the initiative, which was partnered with numerous organizations throughout DoD, industry, and academia. The OCP TECD standardization team persisted through the program complexity and magnitude of data to publish this standard, along with six performance specifications. This reduced the cost in unique requirements for each system and has improved performance, operational readiness, interoperability, safety, reliability, and quality related to soldier accommodation and underbody blast protection. MIL-STD-3058 and the performance

specifications may be applied to future new vehicle acquisitions, legacy system upgrades, modifications to deployed military ground vehicles, and research activities related to occupant accommodation and survivability during an underbody blast event.

BACKGROUND

In the face of evolving threats and a changing soldier population, the Army issued a challenge to its scientists and engineers: to formulate a science and technology program to make improvements to existing platforms or develop new platforms that provide the appropriate increased protection from current and emerging threats and optimal space allocation for soldiers and their gear, while decreasing platform weight and maintaining or increasing maneuverability during full-spectrum operations. To help address this challenge, the Assistant Secretary of the Army (Acquisition Logistics and Technology) Science and

Technology Advisory Group/Working Group process chartered the OCP TECD program in 2011, and the initiative was led by TARDEC.

The goals of the OCP TECD program were to develop, design, demonstrate, and document an occupant-centered Army ground vehicle design philosophy that increases force protection by mitigating soldier injury due to underbody improvised explosive devices and underbody mine blast events. OCP TECD provided further mounted force protection and injury mitigation by first standardizing and then employing an occupant-centric or “inside-out” approach that focuses on defining the optimized space required by the encumbered soldier.

The OCP TECD program delivered four products:

- The Concept for Advanced Military Explosion-Mitigating Land demonstrator
- A light platform demonstrator based on an existing Mine-Resistant Ambush Protected variant
- A heavy platform demonstrator based on an existing Bradley variant
- A suite of occupant-centric documents, including design standards, processes, and tools.

PROBLEM/OPPORTUNITY

As the OCP TECD program formed, the subject matter experts (SMEs) noted that there was no single source document that provided the information needed to design military ground vehicles for the space required by the soldiers, their gear, and underbody blast protection. Therefore, it was identified that there was a need for standardizing an occupant-centric design, which was added as a program deliverable. The OCP suite of occupant-centric documents included design standards, specifications, processes, and tools necessary to implement the new occupant-centric philosophy onto new and existing military ground vehicle platforms.

APPROACH

The team published one military standard and six performance specifications to improve performance, operational readiness, interoperability, safety, reliability, and quality related to soldier accommodation and underbody blast protection.

The OCP TECD standards documents were created from the multitude of technical activities conducted during the program time frame, December 2011 to December 2015. The OCP TECD team and partner organizations conducted technical activities such as requirements development, analysis of alternatives, trade studies, down-selects, optimization and integration, voice of the customer (VoC) activities, modeling and simulation, and test and evaluation.

The data gathered, measured, and recorded are housed on the TARDEC Advanced Collaborative Environment Windchill database. More than 500 data entries reside on this database. From this work, more than 100 technical reports have been published to the Defense Technical Information Center (DTIC), a DoD knowledge-sharing platform for scientific, technical, engineering, and business-related documents. These documents were subjected to various levels of review including peer review by the OCP TECD program team, its partners, and the larger community. Depending on the document type, it may have been submitted for an operations security review and/or coordination through the TARDEC Standardization Office, resulting in publication either in DTIC or in ASSIST (a website used by standardization management activities to develop, coordinate, distribute, and manage defense and federal specifications and standards).

OUTCOME

The publication of MIL-STD-3058 and the six performance specifications reduced the cost in unique requirements for each system and improves performance, operational readiness, interoperability, safety, reliability, and quality related to soldier

accommodation and underbody blast protection. The standards may be applied to future new vehicle acquisitions, legacy system upgrades, modifications to deployed military ground vehicles, and research activities related to occupant accommodation and survivability during an underbody blast event.

These standards documents may be used within organizations across the Department of Defense—by program executive officers (PEOs), program managers (PMs), and research, development, and engineering centers (RDECs)—as well as by the defense industry, military ground vehicle manufacturers, and academia. PEOs, PMs, and RDECs may integrate these documents or extract information into contracting documents as appropriate.

Overall (and the No. 1 consideration in the payoff), developing this OCP standard and its supporting specifications has improved the survivability of the warfighter and the future force.

CURRENT STATUS

The team developed, wrote, coordinated, adjudicated comments for, and published one military standard and six military performance specifications:

- MIL-STD-3058, "Occupant-Centric Protection for Military Ground Vehicles"
- MIL-PRF-32548, "Occupant Seat Belt

Restraints for Use in U.S. Military Ground Vehicles"

- MIL-PRF-32563, "Energy-Attenuating Seat Systems for Use in U.S. Military Ground Vehicles"
- MIL-PRF-32564, "U.S. Army Ground Vehicle Energy-Attenuating Steering Subsystems"
- MIL-PRF-32566, "Energy-Attenuating Floor Mats for Use in U.S. Military Ground Vehicles"
- MIL-PRF-32518, "Interior Head Impact Protection for Use in U.S. Army Military Ground Vehicle Interiors"
- MIL-PRF-32558, "Blast Sensing and Blast Data Recording Systems."

The OCP suite of documents includes standards, specifications, procedures, and a guidebook that assist with the implementation, execution, and realization of the new occupant-centric philosophy to new and existing military ground vehicle platforms.

CHALLENGES

The OCP TECD standardization team persisted through the program complexity, magnitude of data, and involvement from organizations across DoD, industry, and academia, resulting in the completion of the OCP TECD program standards deliverables through the publication of MIL-STD-3058 and the six military performance specifications.



The OCP TECD program's scope was complex and involved a new philosophy of military ground vehicle design. This occupant-centric design philosophy prioritizes requirements for accommodation, operability, and underbody blast force protection while at the same time managing other vehicle requirements relating to cost, schedule, and mission.

The magnitude of data included the technical activities conducted by the OCP TECD team and partner organizations, such as requirements development, analysis of alternatives, trade studies, down-selects, optimization and integration, VoC activities, modeling and simulation, test and evaluation, and more.

Lastly, it was an enormous effort ensuring that all of the information and comments from the OCP TECD program and partner organizations from across DoD made it into the OCP TECD standards documents. The TARDEC Blast Mitigation Program and the Michigan Chapter of the National Defense Industrial Association created and used a cooperative research and development agreement to collaborate on and develop a practical and usable set of design guidelines and standards for soldier accommodation, operability, and underbody blast force protection to achieve a reduction in soldier injuries. Planning, facilitating, and leading numerous workshops, reviews, and adjudication meetings were required during the standardization coordination process, which resulted in the publication of the OCP standards documents.

About the Award Winner

The OCP TECD standardization team included five individuals from the TARDEC standardization and grounds system survivability organizations who led the effort and activities required to publish the military standard and the performance specifications. The team included Sylvia G. Eid, Christine M.

Wodzinski, Gale L. Zielinski, Scott J. Merritts, and Jeffrey L. Norkus.

Sylvia G. Eid, mechanical engineer, served as the lead for the standardization effort of the OCP TECD military standard and performance specifications by guiding the team through the requirements of MIL-STD-961 and MIL-STD-962 and applying them to the OCP TECD standards documents. Once the requirements of those military standards were met, she executed the coordination process from conception through completion and publication. Coordination actions included the identification and adjudication of suggested and essential comments for integration into the OCP TECD standards and specifications, followed by publication to ASSIST.

Christine M. Wodzinski, mechanical engineer, served as the technical lead for the OCP TECD standardization effort by holding numerous cross-functional workshops and reviews across DoD, including industry and academia, in order to consolidate the abundant amount of technical data and reports into one military standard and six performance specifications. Once the coordination review period ended, meetings were held with OCP TECD SMEs to adjudicate comments and update the documents appropriately.

Gale L. Zielinski, mechanical engineer, supported the OCP TECD standardization effort as the SME for soldier population, encumbrance, and accommodation.

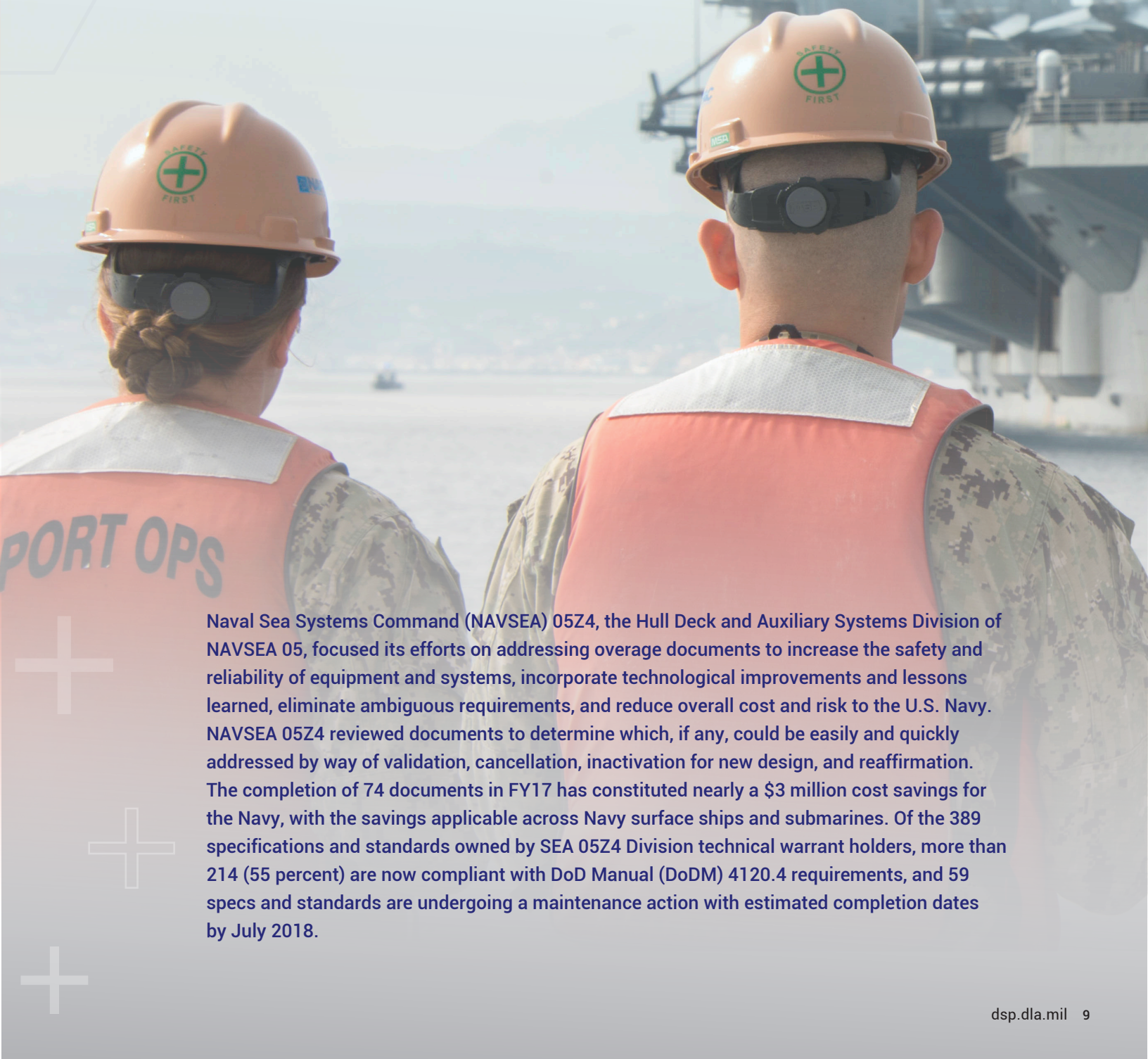
Scott J. Merritts, mechanical engineer, supported the OCP TECD standardization effort by interfacing with the OCP TECD SMEs and writing and reviewing the technical requirements and verification methods.

Jeffrey L. Norkus, engineering technician, supported the OCP TECD standardization effort by interfacing with the OCP TECD SMEs and writing and reviewing the technical requirements and verification methods.



Driving Cost and Risk Out of the Navy's Technical Standards

Award Winner: Naval Sea Systems Command 05Z4



Naval Sea Systems Command (NAVSEA) 05Z4, the Hull Deck and Auxiliary Systems Division of NAVSEA 05, focused its efforts on addressing overage documents to increase the safety and reliability of equipment and systems, incorporate technological improvements and lessons learned, eliminate ambiguous requirements, and reduce overall cost and risk to the U.S. Navy. NAVSEA 05Z4 reviewed documents to determine which, if any, could be easily and quickly addressed by way of validation, cancellation, inactivation for new design, and reaffirmation. The completion of 74 documents in FY17 has constituted nearly a \$3 million cost savings for the Navy, with the savings applicable across Navy surface ships and submarines. Of the 389 specifications and standards owned by SEA 05Z4 Division technical warrant holders, more than 214 (55 percent) are now compliant with DoD Manual (DoDM) 4120.4 requirements, and 59 specs and standards are undergoing a maintenance action with estimated completion dates by July 2018.

BACKGROUND

As part of their responsibilities as technical authorities, NAVSEA technical warrant holders (TWHs) are charged with maintaining their technical standards, including developing, updating, and dispositioning Defense Standardization Program documents and other technical standards under their technical cognizance. Over the years, because of budget constraints, a reduction in workforce, the lack of attention to technical standards currency, and other issues, the priority for maintaining technical standards was low and more pressing day-to-day technical requirements and issues were the focus instead. This resulted in numerous specs and standards becoming outdated and unusable in their current state, which in turn resulted in the need to repeatedly write requirements into contracts and other documents that properly belong in the specs.

While this is not a new issue, tackling it required constant focus, and elevating the importance of well-maintained technical standards was necessary to get and keep the momentum going without the benefit of additional personnel or financial resources.

PROBLEM/OPPORTUNITY

DoDM 4120.24 requires that preparing activities review all DoD-prepared or adopted documents in ASSIST and take action, within 5 years of last action (unless there's sustained maintenance), to update, inactivate for new design, cancel, withdraw adoption of, validate, or reaffirm the document. With 357 of its 389 DSP documents, or nearly 92 percent, in an overage status at the start of 2010, it was clear that the SEA 05Z4 Division needed to put a plan in place to elevate their importance with strong support from NAVSEA leadership and determine the appropriate maintenance action to take with each of them.

APPROACH

SEA 05Z4 began its efforts by reviewing its documents to determine which, if any, could be easily and quickly addressed by way of validation, cancellation, inactivation for new design, and reaffirmation, based on use in recent and future procurements. Because these actions were in the form of notices, they were easier, quicker, and lower risk to accomplish.

Unfortunately, during FY11, FY12, and FY13, the SEA 05Z4 Division was only able to complete a total of 45 actions, 26 of which were notices. This left 331, or over 85 percent, of its documents still in an inadequate state and requiring an action. While others were involved



in the success of this division in addressing over 40 percent of the DSP documents, the actions that this team took resulted in significant cost savings and contributed most to the reduction in overall age of the division's documents.

NAVSEA's portfolio of documents is diverse, ranging from components to systems. The components, such as ropes and fittings, are used by other services (Military Sealift Command and Coast Guard), other navies, and in some cases, such as ropes, even private industry as commercial standards. Consequently, in addition to the Navy getting better products for less money, all users of its documents are also getting better products for less money.

OUTCOME

The team's completion of 74 documents in FY17 constituted nearly a \$3 million cost savings for the Navy recurring per year indefinitely, with the cost savings applicable across Navy surface ships and submarines. The cost to update these documents was \$389,000, or approximately \$5,000 each. The FY17 savings are in addition to nearly \$10 million annually recurring cost savings in FY16 and similarly large recurring savings in prior fiscal years.

On a monthly basis, team member David Breslin compiled and published the division's technical standards metrics, reporting the status of efforts in driving the age of standards down, driving the costs and associated risks with standards deficiencies down, and driving the quality, currency, and relevance of standards up. As a part of these metrics, he documented each TWH's total number of documents, the average age starting in 2010, and the average age in the current month and year, visibly indicating the upward or downward trend for currency. Since 2010, the average age of standards for Mr. Breslin's division has decreased by 4.2 years (from 15.7 to 11.5). He also placed extra attention and focus on the top 10 oldest documents, highlighting their age, the responsible TWH, and the current plans with estimated completion dates for update. Additionally, he celebrated the most current "youngest" documents by documenting their age and who owns them, which served as recognition and support for those making the efforts. To assist with the workload imposed on the TWHs, Mr. Breslin served as the TWH's designee for a number of document maintenance actions, managing and performing the work associated with the document update from planning through publication.

For the past year, team member William Calvert completed 70 document maintenance actions, of which 58 (45 overage) were DSP



The FY17 savings are in addition to nearly \$10 million annually recurring cost savings in FY16 and similarly large recurring savings in prior fiscal years.



documents and 12 were NAVSEA standard drawings (referenced in many DSP documents). These documents had a number of issues, including safety problems, unclear test requirements, invalid requirements, and the like, many of which contributed to increased costs for the Navy to procure, operate, and maintain these items. As an example of Mr. Calvert's efforts to address these issues in FY17, he revised MIL-DTL-16556, "Valve, Solenoid, Three-Way Bypass," which was particularly important because the Naval Surface Warfare Center Corona reported that there were at least 76 valve failures during FY16 due to overheating solenoids, reducing the reliability of reverse osmosis plants and costing \$340,000 in material alone. The revision of this specification eliminated anachronistic requirements associated with steam operation, established requirements for high-reliability solenoids, and eliminated numerous ambiguities caused by conflicting tests. These specification improvements are expected to result in the Navy procuring better solenoid valves and saving an estimated \$1 million per year.

Team member Erin Babik revised the 30-year-old MIL-DTL-1183, "Fittings, Pipe, Cast Bronze, Silver Brazing, General Specification," and its 12 slant sheets during FY17, in a highly detailed project requiring the close coordination of numerous engineers throughout the Navy and industry. It eliminates the need for program offices to develop project-peculiar documents, opens the vendor base to expanded competition and lower prices, and eliminates numerous contract errors that had been consuming significant labor hours. Minimally, this revision is expected to save the Navy \$150,000 per year and serves as a prime example of the importance of the work being accomplished, given these fittings are used throughout the fleet and by every program office on every surface

ship, aircraft carrier, and submarine. Ms. Babik is now on track to double her output during FY18, where she is expected to publish an additional 30 document revisions.

Team member Robert Galway developed a new specification, MIL-DTL-32572, "Anchor Windlass, Electro-Mechanical, Vertical, Two-Speed, and Variable Speed," which addressed the Navy's requirement to minimize the weight of components, decreased the costs associated with maintenance downtime due to hydraulic failures, and eliminated the use of hazardous materials (hydraulic fluids). With the stringent weight-critical requirements for each ship and the fact that the hydraulic system is 5 tons per ship more than that of the electro-mechanical system, the need to lighten the load on all surface ships was essential, for a savings of more than 400 tons across all ships thus far. Cost savings are estimated to be approximately \$380,000 per ship for 70 ships, equating to a minimum cost savings of \$26 million for initial acquisition. Mr. Galway currently owns 29 DSP documents and has brought over 50 percent of his total documents in compliance with the DoDM 4120.24 document maintenance requirement.

In addition to the cost savings and improvements articulated above, the need for developing project-peculiar documents for a number of the published documents was eliminated and the average amount of time it took the SEA 05Z4 Division TWHs to complete their document maintenance actions was reduced by 4 months.

CURRENT STATUS

Of the 389 specs and standards owned by SEA 05Z4 Division TWHs, more than 214 (55 percent) are now compliant with DoDM





4120.4 requirements, and 59 specs and standards are currently undergoing a maintenance action with estimated completion dates by July 2018.

CHALLENGES

Problems that were obstacles to getting the actual document maintenance work done were as follows:

1. Getting buy-in from both the working level and leadership that keeping these essential procurement documents up to date is vital to reducing safety risks and costs. This was overcome by the director of the SEA 05Z4 Division reviewing the status of document maintenance efforts with the document owners on a weekly basis and reporting on the status of each document owner's efforts, to bring visibility to successes and work still to be done, and receiving the support of the SEA 05Z Marine Engineering Group director for a job well done.
2. The excessive process time to complete document maintenance actions was overcome by removing unnecessary and non-value-added process steps, which reduced the average SEA 05Z4 document maintenance action from execution to completion time by 4 months.
3. The lack of financial and people resources to complete document updates was overcome by seeking assistance from capable and knowledgeable contractor personnel who had the bandwidth to accomplish a large part of the document update efforts in a shorter amount of time and at a significantly lower cost.

About the Award Winner

The team included David Breslin, William Calvert, Erin Babik, and Robert Galway.

David Breslin is the NAVSEA 05Z4 director for Hull, Deck, and Auxiliary Systems. For the past 7 years, he has been the division's leader and champion for updating, inactivating, canceling, and validating its 389 specs and standards, with more than 214 (55 percent) compliant with DoDM 4120.4 requirements to date, 74 of which were published in FY17 alone.

William Calvert is a NAVSEA 05Z4 technical warrant holder for Fluid Systems. As a TWH, he is responsible for working with his technical chain of experts to maintain each of his documents. This includes reviewing and validating the accuracy of all changes made to his documents and approving the documents for publication.

Erin Babik is a SEA 05Z4 engineering manager for Submarine Fluid Systems. During FY17, she was the single highest-producing employee relative to revising specifications, by publishing 15 document revisions. She has a passionate and detailed-oriented commitment to bringing old specifications up to date.

Robert Galway is a NAVSEA 05Z4 technical warrant holder for Deck and UNREP Systems. In the past year, he completed 81 document maintenance actions, for which 6 (3 overage) were DSP documents and 75 were NAVSEA standard drawings (referenced in many DSP documents). These documents had a number of issues, many of which contributed to increased costs for the Navy to procure, operate, and maintain the items.





VIP Special Airlift Mission SLCS Integration Team Upgrades Communication System

Award Winner: U.S. Air Force's 645th Aeronautical Systems Group

The U.S. Air Force's 645th Aeronautical Systems Group (AESG), also known as "Big Safari," was assigned modernization, upgrade, and sustainment efforts of the Very Important Person Special Airlift Mission (VIPSAM) Senior Leader Communications Systems (SLCS) on the VIPSAM C-37, C-32, C-40, and VC-25 Air Force One fleet. The primary objective was to consolidate all mission communications modifications under one program office to achieve a common passenger experience and operator interface regardless of aircraft. The system provides high reliability and

interoperability to afford our nation's senior leadership the connectivity required to perform all business functions from daily tasks to matters of national leadership command capability. The operational requirements for the mission communication system upgrades yielded a single-system common passenger experience solution to be implemented across the Operational Support Airlift (OSA) and Executive Airlift (EA) fleet. This modernization effort included the upgrade, modifications, sustainment, and logistical support for operational missions.



BACKGROUND

Before June 2015, distinct program offices managed the mission communication systems for VIPSAM aircraft. Each program office was tasked with the challenging effort of keeping the communication system up with rapidly changing technology, while also maintaining an airworthy asset. As a result, the communication systems often received a technology refresh instead of a system upgrade, which limits the rate of evolution and capabilities of the SLCS.

Additionally, different program offices provided varying solutions to the same problem, which created uncommon passenger experiences and operational challenges for senior leaders, who flew on multiple aircraft. In assigning mission communications responsibility to 645 AESG, the Air Force made a deliberate decision to standardize the VIPSAM fleet regardless of aircraft size.

PROBLEM/OPPORTUNITY

Several problems presented themselves as opportunities for improvement:

1. An evolving uncommon passenger experience was confusing to senior leaders, communication teams, and accompanying personnel. Each airplane had different capabilities, from antennas to ground entry points to handheld devices. Every person would have to learn and adapt to the aircraft they were flying. For example, the President could transition through three experiences within a few minutes (limousine, helicopter, and VC-25). Each of these programs had its own singular solution to one problem, senior leader communications. These solutions varied in bandwidth, reliability, and user interface (e.g., handheld phone). When you consider the number of airplanes and senior leaders in government, this became a large problem with varying degrees of solutions required.
2. Each platform comes with its own communications system. By having multiple program offices managing all the different platforms, the Air Force ended up with a series of solutions that are very different. As an example, the capability on a C-32 varies widely from the capability on a C-37. The variance can range from the speed and bandwidth of the system to the handheld device each senior leader holds. If each mission design series of aircraft operates differently, this can create confusion and frustration for the senior leaders. Combine that with modern technology experiences, and the presentation to senior leaders is that the Air Force is significantly behind in technology.
3. The capability of the government to keep up with evolving technology is very difficult. Most commercial communication systems upgrade every year, improving memory or speed. The standard DoD acquisition process is too cumbersome to reliably keep up with this evolution. Most communication systems need to be considered as a quick reaction capability. Considering all the program offices involved with these aircraft, "quick" is not part of the equation. Each office comes with a culture and process for doing business, which is not necessarily conducive to quickly modifying the communication system as fast as it is evolving. Additionally, because senior leaders are involved, there is zero tolerance for failure. Due to the time for modification and the contracting process alone, regular SLCS deliveries are roughly three generations behind what senior leaders are holding in their hands.

APPROACH

Upon receipt of the Letter of Direction (LOD) dated June 3, 2015, Big Safari took over the management of the SLCS on the VIPSAM fleet. The primary objective of the direction was to consolidate all mission communications modifications to achieve a common passenger experience and operator interface regardless of aircraft. The system must provide high reliability to afford our nation's senior leadership the connectivity required to perform all business functions from daily tasks to national leadership command capability-related matters.

Thus, the team's first and foremost task was the standardization of systems, interfaces, and interoperability with existing communication and command structures. Immediately, Big Safari worked to establish a transition plan. This task proved to be very complex. The items for the transition ranged from a simple contractual part exchange to more complex airworthiness considerations between two organizations.

A majority of the transition plan has been executed. The team has transitioned all parts and stood up locations at each base that houses newly hired field service representatives, logisticians, and spare equipment. This is a critical step in the construction of the program infrastructure because there are now worldwide locations that can house universal parts, shortening the logistics chain.

At the start of this project, the DoD contractor, L-3 Technologies, maintained a system integration lab (SIL) with government-owned spare parts. All parts have since transitioned to 645 AESG and have been inputted into the Big Safari Inventory System, while maintaining the lab environment. The lab has become a troubleshooting tool and provides hot spares that are shared across all aircraft and SILs. Boxes for all aircraft are run through the lab to ensure they have the correct configuration or revision associated.

The team established sustainment for the communication systems on the varying programs. Multiple meetings were held to establish the order of aircraft to receive the modification.

OUTCOMES

Cost Savings

Cost savings are usually evaluated with the bottom-line cost to the government. In this case, the budgetary dollars have remained the same, but the capabilities installed on the plane have increased. In other words, the team has bought more capability with the same amount of money. This is highlighted by modifications that were planned in FY18 being moved to FY17 maintenance schedules.

Improvement in Reliability

When Big Safari took over the communication systems, there were several critical parts at end of life. These parts had vanishing vendors, which means that their sustainability was costly. To maintain the line replaceable units, the companies would have to reverse-engineer the box and then determine how to fix it. This is a costly approach to maintenance. The result of this approach are aircraft that struggle to keep communications systems working, or even systems that are patched together with spare parts, which leaves limited capabilities. By consolidating the management of the system under one program office, one can leverage the benefits and efficiencies across all platforms. Finally, consolidation has given each program a chance to stay ahead of rapidly changing technology.

Improvement in Interoperability

Similar to reliability, interoperability is a huge benefit to the consolidation of programs. Previously, each platform was subject to individual sparing lines and low-level relationships for borrow payback. The new

communication systems that are going into the platforms have interchangeable boxes, including routers, intermediate frequency converters, power supplies, antennas, radomes, workstations, wireless access points, switches, and airborne executive phones.

Breadth of Applicability of the Accomplishment

The breadth of the accomplishment is huge. This covers multiple commands, platforms, senior leaders, and locations. The sheer number of people affected is incredible, and the feat of moving everyone in the same direction is Herculean. A little over a year after the LOD, comments are coming from the vice chairman of the Joint Chiefs of Staff and the commander of the Central Command, lauding the capabilities that are now at their fingertips.

Cost of Developing Solution

The cost to upgrade all programs is \$250 million. While that number alone seems huge, the capabilities previously discussed are a huge leap forward.



CURRENT STATUS

The SLCS modernization upgrade gives the Air Force and DoD ultimate flexibility and improved capability without increasing budget requirements. The benefits of this standardization will be felt for decades across multiple commands, platforms, locations, and senior leaders.

- Three C-37s' quick reaction capabilities were delivered in 3 months.
- Ten C-37s are complete—a new one is being delivered every 4 months.
- Two C-32s are complete—the first C-32 was delivered in December 2017, and each plane will cycle through every 7 months.
- Two C-40s are complete—the first C-40 was delivered in January 2018, and each plane will cycle through every 7 months.
- One VC-25 is complete—the first VC-25 was delivered in December 2017, and each plane will cycle through every 2 years.

CHALLENGES

- The previous organization was not willing to relinquish responsibility. There were many conversations defining roles and responsibilities. While the transition appeared smooth there were significant hours spent changing roles.
- There were two organizations with vastly different processes. The 645 AESG has a streamlined way of doing business. It has specific areas of responsibilities that allow it to maneuver faster than traditional acquisition.
- The communication system was an afterthought to keeping the aircraft in the air. These systems need to be removed and upgraded. This creates a challenge of getting all users and maintenance to understand the new system. However, the products that have already reached the field have received positive reviews from all parties.
- By bringing a new organization to the mix, contractors were forced into new roles and responsibilities. This changed the dynamic significantly for some. It also created tension that had to be worked through. With each passing day, relationships improved and the team moved toward the delivery of a new product.



About the Award Winner

The VIPSAM SLCS Integration Team comprises personnel located at Wright-Patterson Air Force Base Ohio and Greenville, TX. The team included Robert Jackson, Robert Voigt, Denton Lester, Kevin Bradley, and Barry Bonnema.

Robert Jackson is the 645 AESG branch chief, overseeing the program that manages OSA/EA platforms (operational and test-bed). He coordinated with multiple levels of government to make the case for SLCS to be moved under the Big Safari umbrella. He delivered multiple briefings to senior leadership. His activities were instrumental in ultimately getting approval to move the SLCS modification programs to 645 AESG. Mr. Jackson oversaw all programmatic issues, including financial management, contract management, development, testing, and delivery.

Robert Voigt is the 645 AESG program manager for OSA/EA platforms. He orchestrated all financial management, contracting actions, and overall schedule. He directly managed all facets of the program including development, modification, test, delivery, and sustainment of enhanced wideband communications systems across the VIPSAM aircraft fleet. His daily

management and oversight were instrumental to the early and on-time delivery of multiple aircraft.

Denton Lester is the chief airframe inspector. His many contributions to the VIPSAM SLCS standardization included the management of developmental and operational test activities, consisting of 12 Federal Aviation Administration test plans and four test sorties. His efforts were crucial in obtaining two new supplemental type certificates and in obtaining the Air Mobility Command's aircraft "buy-off."

Kevin Bradley is the chief avionics inspector. He played a critical role in the standardization effort as lead flight mechanic on six satellite communication test mission sorties. He was a driving force in the validation of a \$90 million signal coverage modification and SLCS standardization across the VIPSAM fleet.

Barry Bonnema is the Special Programs flight chief. He contributed to the VIPSAM SLCS standardization through his travels to the customer to train 25 operators and six field service representatives on the upgraded communications systems. His efforts ensured that qualified crews were available for mission execution.

Program News

Topical Information on Standardization Programs and People

DSPO DIRECTOR RECEIVES SAE MEDAL OF HONOR

Gregory Saunders, Director of the Defense Standardization Program Office, received the SAE International Medal of Honor at the annual Awards Ceremony during the SAE International WCX World Congress Experience. The Medal of Honor, established in 1986, is SAE International's most prestigious award; it recognizes SAE International members for their unique and significant contributions to SAE International.

SAE International's Board of Directors honored Mr. Saunders for a career dedicated to advancing engineering standards both in DoD and in the private sector. During nearly 25 years of participation with SAE, he worked to improve the effectiveness and efficiency of the SAE standards development system. During that time, he chaired the Aerospace Council and the Technical Standards Board responsible for overseeing the development and maintenance of more than 10,000 engineering standards, and he later was elected to the Board of Directors and to the position of aerospace vice president.

Mr. Saunders works for the Office of the Secretary of Defense, where he is responsible for policies and procedures governing the development and use of military specifications and standards, the qualified products and manufacturers database, and DoD's use of voluntary consensus standards.

SAE International is a global association committed to being the ultimate knowledge source for the engineering profession. For more information, go to <https://www.sae.org>.



Gregory Saunders (right) accepts the award from SAE President Mircea Gradu.

INTERNATIONAL STANDARDIZATION WORKSHOP TO BE HELD IN DC AREA

The Defense Standardization Program Office will host the International Standardization Workshop on October 30–November 1, 2018, in the United States. DoD is sponsoring this three-day event. It will be held at LMI corporate headquarters in Tysons, VA.

The goal of this year's workshop is to bring together national subject matter experts who are responsible for the development of standardization and interoperability solutions in support of alliance capabilities.

The materials and information to be presented at this event are intended for military, civilian, and contractor personnel who are required to have a fundamental knowledge of multinational and NATO standardization policy, procedures, and activities.

Advance registration is required, as space is limited. For more information about this event, contact Latasha Beckman at latasha.beckman@dla.mil, or visit <http://www.dsp.dla.mil>.

Events

Upcoming Events and Information

2018 DSP WORKSHOP

JULY 9–12, 2018, TYSONS, VA

The Defense Standardization Program Office will be hosting a Defense Standardization Program Workshop at LMI in Tysons, VA. The workshop will be open to federal employees and immediate support contractors, but space will be limited. Attendees will benefit from this opportunity to interact with standardization executives, participate in standardization training and tutorials, and collaborate in working groups to develop new approaches to outstanding issues. For more information, visit <http://www.dsp.dla.mil>.



2018 SES ANNUAL CONFERENCE

AUGUST 7–8, 2018, NASHVILLE, TN

The 67th Annual Society for Standards Professionals Conference will take place in August in Nashville with the theme of “Dynamic Diversity: Expanding the Future of Standardization.” Katherine E. Morgan, president of ASTM International, will be the keynote speaker for the event.



WORLD STANDARDS WEEK 2018

OCTOBER 15–19, 2018, WASHINGTON, DC

World Standards Week is an annual American National Standards Institute (ANSI) event in which members of the standards and conformity assessment community come together in the spirit of cooperation and collaboration. The weeklong series of meetings includes open conference sessions on hot topics for standardization stakeholders, policy committee meetings, and special events celebrating the greater ANSI community. To register and for more information, visit www.ansi.org/wsweek.



U.S. CELEBRATION OF WORLD STANDARDS DAY

OCTOBER 18, 2018, WASHINGTON, DC

The U.S. Celebration of World Standards Day at the Fairmont Washington is “an event that recognizes the critical role of various stakeholders across the standards community, including business leaders, industry, academia, and government.” ANSI will serve as the administering organization for this event in recognition of its 100th anniversary. For more information, visit www.ansi.org.



2018 DMSMS CONFERENCE

DECEMBER 3–6, 2018, NASHVILLE, TN

The 2018 Diminishing Manufacturing Sources and Material Shortages Conference will be held at the Music City Center in Nashville. There will be training, breakout, and plenary sessions aimed at providing insights that you can use to minimize the budget and schedule risks caused by obsolescence while enhancing future readiness. Qualified attendees (active U.S. military, government, or current DD2354 on file) also will be able to attend the concurrent Defense Manufacturing Conference at no additional expense, giving you access to more technical information for the same travel cost. For more information on the event, go to www.dmsmsmeeting.com.

Defense Standardization Program JOURNAL

APRIL–JUNE 2018

Upcoming Issues Call for Contributors



We are always seeking articles that relate to our themes or other standardization topics. We invite anyone involved in standardization—government employees, military personnel, industry leaders, members of academia, and others—to submit proposed articles for use in the *DSP Journal*. Please let us know if you would like to contribute.

Following are our themes for upcoming issues:

Issue	Theme
July–September 2018	International Standards
October–December 2018	Energy Standards
January–March 2019	Standardization Tools and Programs

