14797 - Acquisition ESOH:

An OSD Perspective -
A Look Back and the Way Forward

2012 NDIA Systems Engineering Conference

October 24, 2012

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Office of the Deputy Under Secretary of Defense
(Installations & Environment)

Outline

- **A Look Back: On-going Activities**
  - **Acquisition Environment, Safety, and Occupational Health (ESOH) Policy & Guidance Update**
  - **Acquisition Information Repository**
  - **Sustainability in Acquisition**
  - **Military Standard (MIL-STD) 882E, Standard Practice System Safety**
  - **Program Support Reviews (PSRs)**
- **The Way Forward: What's on the Horizon**
  - **Joint DoD and Aerospace Industrial Association (AIA) effort to update National Aerospace Standard (NAS) 411**
  - **Human Systems Integration (HSI) & Systems Engineering (SE) ESOH Handbook for Capabilities Based Analysis (CBA) and Joint Capabilities Integration and Development System (JCIDS) Documents**
  - **Programmatic ESOH Evaluation (PESHE) Writing Guide**
  - **Other Acquisition ESOH Initiatives**

A Look Back:
On-going Activities

Acquisition ESOH Policy Update

- DoD Instruction 5000.02, Operation of the Defense Acquisition System Update
- AT&L Lead: Defense Procurement & Acquisition Policy (DPAP)
- Re-write to:
  - Incorporate Facts-of-Life changes (e.g. Weapon System Acquisition Reform Act (WSARA))
  - *Significantly* Streamline content
  - Address separate Acquisition System Types
  - Reference MIL-STD-882E, Standard Practice System Safety

Acquisition ESOH Policy Update (cont.)

- **Defense Acquisition Guide (DAG) Update**
  - **Phase 1 – Address Fact of Life Changes**
  - **Phase 2 – Published after DoDI 5000.02 Updated**
- **DoD Acquisition ESOH Integrated Product Team (IPT) involved**
  - **Participating in DAG Chapter 4, Systems Engineering, Working Group**
  - **Supporting other Chapters (e.g., Chapter 9, Test and Evaluation)**

Overarching DAG Chapter 4 Themes:
- **Provide cross-functional approach in delivering a capability to the war fighter**
- **Support program success through systematically increasing maturity and reducing risk over the acquisition lifecycle**

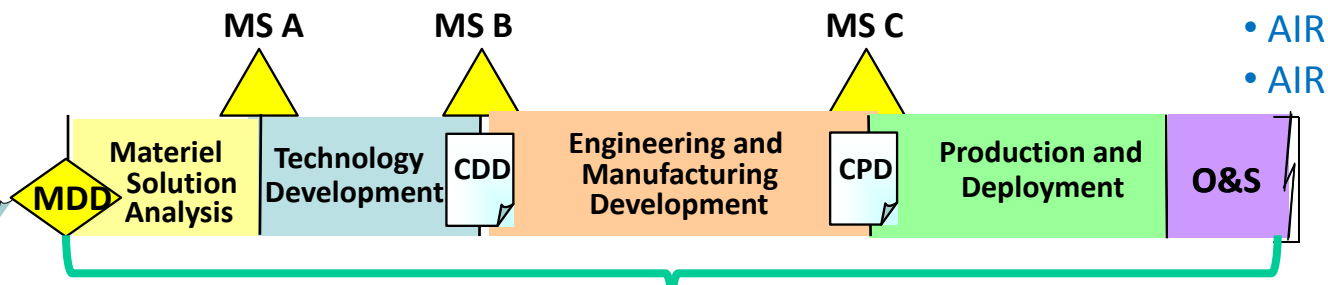
DAG Chapter 4 and ESOH-Related Changes

- **Overall DAG Chapter 4 Changes:**
  - **Target audience - Program Manager & Lead Systems Engineer**
  - **Significant size reduction (goal 50%) with minimized hyperlinking within chapter**
  - **Added Sustainability Life Cycle Assessment (LCA) Section as a Systems Engineering process tool**
  - **Operational Energy added as a Design Consideration**

DAG Chapter 4 and ESOH-Related Changes (cont.)

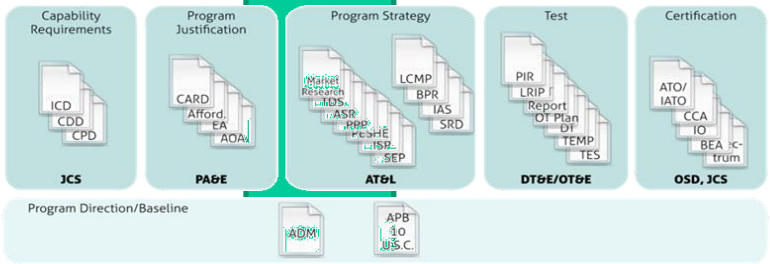
- **ESOH Section Changes to:**
  - **Reference new MIL-STD-882E, Standard Practice System Safety**
  - **Clarify ESOH content between Systems Engineering Plan (SEP) and Programmatic ESOH Evaluation (PESHE)**
  - **Identify National Environmental Policy Act (NEPA) / EO 12114 Compliance Schedule as separate document**
  - **Describe ESOH Risk Acceptance and Reporting Requirements**

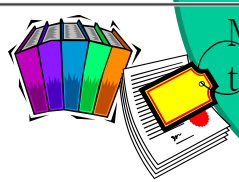
Acquisition Information Repository (AIR) Purpose and Concept of Operations



- AIR General User (AGU) – R
- AIR Local User (ALU) – R/W/Delete

Approved Milestone Information





Meta-tagged Documents; Extensible to Data

Wide access Securely selected

OSD Staff
- AT&L
- CAPE
- Comptroller
- OT&E, etc

Joint Staff

MILDEPs
- Headquarters
- PEOs
- PMs/PMOs

Authoritative source for AV, etc.

- A step toward "write once, use many", structured data, MS decision readiness, horizontal analysis, root-cause analysis, etc.

Factoring Sustainability into Acquisition Programs

- **Developing "Sustainability in Acquisition" Methodology**
  - **Based on three Levels of Life Cycle Assessment (LCA)**
  - **LCA could be placed on contracts**
  - **Communicating with stakeholders to identify improvements and gain support**
- **Programs would identify sustainability factors to be considered at the appropriate decision point**
  - **Use physical, chemical, and toxicity data to make smart choices**
  - **Possible weighting or scoring system for alternatives**
  - **Estimates potential life cycle costs that need to be considered**
- **Could be used to support Life Cycle cost estimating**

Added LCA to DAG Chapter 4 as one of the Systems Engineering Tools

MIL-STD-882E, Standard Practice Systems Safety

- **Published MIL-STD-882E on May 11, 2012 after multi-year effort**
  - **Changes include:**
    - **Creating mandatory definitions**
    - **Increasing dollar values for losses in severity categories**
    - **Adding "eliminated" as a probability level**
    - **Adding mandatory software system safety techniques and practices**
    - **Incorporating optional tasks to put on contract**
  - **Example Task: Task 108 – Hazardous Materials Management Plan**
    - **Worked with Aerospace Industries Association (AIA) to align National Aerospace Standard (NAS) 411 and MIL-STD-882E Task 108**
    - **Categorizes hazardous materials as Prohibited, Restricted, or Tracked**
    - **Working with AIA to update NAS 411 to provide baseline list of hazardous materials in these three categories**

ESOH Session
MIL-STD-882E Presentations

Wednesday October 24 Track 9 – ESOH Chair: Bob Smith		
TIME	TITLE	SPEAKER
8:00 - 8:35	14797-Acquisition ESOH: An OSD Perspective	Asiello
8:35 - 9:10	14756-Driving Affordability with Sustainability Analysis	Risz
9:10 - 9:45	14788-MIL-STD-882E: Overview of Development and Objectives of Rewrite	Walker
BREAK		
10:15 - 10:50	14789-MIL-STD-882E: Eight Element Process Changes – Highlight the New Details and Requirements	Gill
10:50 - 11:25	14794-MIL-STD-882E: Software System Safety Process in MIL-STD-882E	Smith
11:25 - 12:00	14790 - MIL-STD-882E: Mandatory Definitions	Rodriguez
LUNCH		
1:30 - 2:05	14863-MIL-STD-882E: Quantitative vs. Qualitative ESOH Risk Assessments Using the 882E Risk Matrix	Smith
2:05 - 2:40	14791-MIL-STD-882E: Risk Acceptance Requirements and Scenarios	Gill
2:40 - 3:15	14793-MIL-STD-882E: 882E Hazard Tracking System Requirements and Options	Thacker
BREAK		
3:45 - 4:20	14792 - MIL-STD-882E: Putting 882E on Contract	Walker
4:20 - 4:55	14818-Architecting for Disaster Preparedness	Dr. Dam
4:55 - 5:30	14541-Test and Evaluation of Black Swan Risks in Early Development for Maximum Effectiveness: A Case Study of Lightning Protection of Insensitive High Explosives	Sanders
END OF DAY		
Thursday October 25 Track 9 – ESOH Chair: Bob Smith		
8:00 - 8:35	14840-NEPA and Systems Engineering: Managing the Environmental Risk	Evans
8:35 - 9:10	14843-NEPA Compliance Challenges for Joint Acquisition Programs: US Air Force Perspective	Brown
9:10 - 9:45	New Concept for PESHE and NEPA/EO 12114 Compliance Schedule (REPLACES 14844)	Rodriguez
END OF TRACK		

Oversight - Program Support Reviews (PSRs)

- **Office of Deputy Assistant Secretary of Defense for Systems Engineering (ODASD(SE)) leads PSRs**
  - **Mandated by DoDI 5000.02**
  - **Provides a Systems Engineering Focused Review**
  - **Examines multiple aspects of Program**
  - **Supports Defense Acquisition Board Decisions**
- **ODUSD(I&E) provides ESOH Subject Matter Experts and coordinates with ODASD(SE) on PSRs to:**
  - **Validate program compliance**
  - **Assess effectiveness of Acquisition ESOH policy**
  - **Work closely with program teams**

The Way Forward: What's on the Horizon

Joint DoD and AIA effort to update NAS 411

- **Goals:**
  - **Aligning National Aerospace Standard (NAS) 411 & MIL-STD-882E, Task 108 - Hazardous Materials Management Plan**
  - **Addressing current challenges for Hazardous Material Management**
    - **Multiple management approaches seen in contract language variations, multiple waiver processes, etc.**
    - **Multiple hazardous material lists**
- **Approach:**
  - **MIL-STD-882E,Task 108 prioritizes efforts to eliminate or reduce hazardous material usage by categorizing targeted materials as:**
    - **Prohibited**
    - **Restricted**
    - **Tracked**
  - **AIA updates NAS 411 to provide:**
    - **Detailed guidance for implementing MIL-STD-882E,Task 108**
    - **List of baseline hazardous materials in the three categories**

HSI & SE ESOH Handbook for CBA and JCIDS Documents

- **Goal: Develop a Human Systems Integration (HSI) & Systems Engineering (SE) ESOH Handbook for Capabilities Based Analysis (CBA) and Joint Capabilities Integration and Development System (JCIDS) Documents**
- **Outcome Handbook which:**
  - **Supports SE ESOH & HSI [e.g., Manpower, Personnel, Training & Human Factors Engineering] participation in the JCIDS process**
  - **Contains detailed descriptions of pre-Milestone A JCIDS activities**
  - **Identifies most-valued insertion points for HSI & ESOH considerations in these activities**
  - **Provides example capability statements for each commodity group**
  - **Supports requirements traceability**
  - **Builds on DAU course CLR030 "ESOH in JCIDS," as a resource for applying lessons learned in the course.**

Programmatic ESOH Evaluation (PESHE) Writing Guide

- **Goal: Develop a writing guide for integrating the Systems Engineering Plans and PESHEs to**
  - **Describe technical planning for ESOH considerations in SE**
  - **Document data generated from implementing the technical plan**
- **Outcome**
  - **Improve SE ESOH risk management and provide a resource for developing system documentation and fielding activities**
  - **Support USD(AT&L) mandate to streamline Acquisition documentation process and improve cost efficiency**
- **Effort will use Acquisition ESOH professionals from the Military Services and DoD Components**

Other Acquisition ESOH Initiatives

- **Other Acquisition ESOH Training & Outreach Efforts**
  - **Updating our Defense Acquisition University (DAU) Courses**
    - **CLR 030, "ESOH in JCIDS"**
    - **CLE 009, "ESOH in Systems Engineering"**
  - **Updating Acquisition Community Connection (ACC)**
- **Collaboration with Services, Programs, and Industry by:**
  - **Continuing PSR support to help identify, tackle root causes / issues, and provide lessons learned**
  - **Addressing Chemicals/Materials of Evolving Regulatory Concern**
  - **Supporting DoD and Industry efforts for Sustainability and Operational Energy (i.e., ODUSD(I&E) LCA effort)**
  - **Improving NEPA/EO 12114 implementation for Joint Programs**

What's Ahead Here at NDIA Conference in the ESOH Session

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BACKUP SLIDES

New DAG Chapter 4 Framework

1. Introduction (Overview)
   - Systems Engineering Definition
   - Why it's important
2. Systems Engineering Activities in the Life Cycle
   - By phase description of key activities
   - Technical Reviews
   - Emerging Acquisition Models
3. Systems Engineering Processes
   - Description of each Process
   - Design Considerations (3 categories)
     - Affordability
     - Safety
     - Mission Assurance
   - Specialty Engineering

Overarching DAG Chapter 4 Themes:
- **Provide cross-functional approach in delivering a capability to the war fighter**
- **Support program success through systematically increasing maturity and reducing risk over the acquisition lifecycle**

Purpose - DAG Chapter 4, Systems Engineering, Rewrite

- Update to improve what (policies and practices) and how we communicate to a diverse population of practitioners
- Create a new DAG Chapter 4 strategy (context and communications), which promotes critical thinking
- Restructure to improve applicability, consistency, readability, and usefulness
  - Understand the audience
  - Examine and revise the contents and structure
  - Craft an approach, framework, and strategy to guide systems engineering efforts through the life cycle

Goal (Outcome):
Enhance application of SE policy and practice to improve acquisition program performance

DoD Acquisition ESOH IPT - DAG Chapter 4 Working Group

- **DoD Acquisition ESOH Integrated Product Team (IPT) participated in DAG Chapter 4 Working Group (WG) to address rewrite of the ESOH Section:**
  - **IPT created team whose members were DoD Principals to IPT, with all Services participating**
- **Focus of DoD Acquisition ESOH team:**
  - **Identifying most relevant information for section**
  - **Updating to incorporate MIL-STD-882E**
  - **Clarifying ESOH content for the Systems Engineering Plan (SEP) and PESHE**
  - **Risk reporting at Program and Technical Reviews**

DoD Acquisition ESOH IPT – DAG Chapter 4 Working Group (Cont.)

- Our ESOH IPT team took a holistic approach and participated in the re-write for all appropriate Chapter 4 sections
  - 22 Total Sections (including Corrosion Prevention Control, Operational Energy, and Reliability and Maintainability)
  - Made Significant contributions to the Software and the Demilitarization & Disposal sections
- We also supported other DAG Chapters, such as Chapter 9, Test and Evaluation
- We will continue supporting the DAG re-write effort

MIL-STD-882 Timeline Since 2000

- 2000 – DoD published MIL-STD-882D
- 2003 – DoD initiated effort to update MIL-STD-882D
- 2004 to 2010 – Multiple Drafts
- April 2010 – Final DoD Draft
- May to June 2010 – Industry Comment Period
- July 2010 to January 2011 – Resolving Industry and DoD comments
- 7 January 2011 – ODASD(SE)/MA provided written direction on revising MIL-STD-882D that drove end-to-end review and extensive changes

Why a PESHE Writing Guide – a Content Example

- Parts of DoD staff questioned need for Major Automated Information System (MAIS) programs to have a PESHE
  - GOAL: Streamline required documentation
- Current MAIS PESHE guidance out-of-date (circa 2005)
- DUSD(I&E) provided OUSD(AT&L) staff a position paper:
  - Emphasizing the need to complete ESOH analyses (e.g., National Environmental Policy Act (NEPA) & risk management)
    - Highlights software system safety requirements
  - Including Lessons Learned
  - Supporting embedding PESHE content into the SEP if there are minimal ESOH risks and NEPA considerations