

# ***Headquarters U.S. Air Force***

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*Integrity - Service - Excellence*



## **Systems Engineering -The Defense Acquisition System's Environmental Management System (EMS)**

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Office of the Deputy Assistant Secretary  
(Science, Technology and Engineering)**



# Overview

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- **Environmental Management Systems (EMS)**
- **DoD Acquisition Systems Engineering (SE)**
- **SE – EMS Equivalency**



# EMS -- Requirements

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- **Executive Order (EO) 13148, *Greening the Government Through Leadership in Environmental Management*, 21 Apr 00**
    - Mandated EMS for all federal agencies
    - Required implementation by 31 Dec 05
  - **USD (AT&L) Memo, *DoD Environmental Management System*, 5 Apr 02**
    - Implemented EO 13148
    - Encouraged incorporating Safety and Health
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## EMS -- Requirements *cont'd*

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- **DoD Directive 4715.1, *Environment, Safety, and Occupational Health (ESOH)*, 19 Mar 05**
  - Requires ESOH management systems
  - Makes requirement applicable to acquisition, procurement, and logistics
- **ISO 14001: 2004, *Environmental Management Systems -- Requirements with Guidance for Use*, 15 Nov 05**



# EMS Elements

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- **Document EMS approach**
  - **Identify activities for analysis**
  - **Identify their environmental aspects**
  - **Identify their environmental impacts**
  - **Evaluate significance in order to focus resources**
  - **“Control, manage, and improve” significant aspects**
  - **Management Reviews**
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## EMS - Issue for DoD Acquisition

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- **Initial DoD Environmental perspective that each Acquisition Program Office had to have separate EMS**
  - **Concern -- separate, stand alone, duplicative management system within Program Offices focused on only one aspect of a system**
  - **DoD Acquisition ESOH IPT has countered that assertion with rationale for how DoD Acquisition SE satisfies EMS**
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# DoD Acquisition SE

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## ■ Governing Documents

- DoDD 5000.1, 12 May 03, *The Defense Acquisition System*
- DoDI 5000.2, 12 May 03, *Operation of the Defense Acquisition System*
- Defense Acquisition Guidebook, Oct 04
- DoD Policy Memo, 23 Sep 04, *Defense Acquisition System Safety*



# DoD Acquisition SE

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- **Translates capabilities into technical specifications**
    - **Optimizes total system performance**
    - **Minimizes total ownership cost**
  - **Employs interdisciplinary approach throughout life-cycle**
  - **Utilizes Risk Management to balance**
    - **External limitations**
    - **Design considerations**
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# SE - EMS Equivalency

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# SE - EMS Equivalency

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- **Document EMS approach**
  - **Systems Engineering Plan (SEP)**
    - Reviewed & approved at MS A, B, C
    - Includes ESOH Integration Strategy
  - **Programmatic Environment, Safety, and Occupational Health Evaluation (PESHE)**
    - Reviewed at MS B, C, FRP DR
    - Contains strategy, responsibilities, status of ESOH risk management, and measures for tracking progress



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# SE - EMS Equivalency

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- **Identify activities for analysis – SE**
  - **DoD SE V-Model of SE steps in each phase of program's life cycle**
    - **Phase inputs**
    - **Analytical steps**
    - **Validations & verification testing**
    - **Technical Reviews**
    - **Phase outputs**
  - **Life cycle map for identifying activities for analysis for ESOH concerns**



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# SE - EMS Equivalency

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- **Identify their environmental aspects**
  - **SE uses MIL-STD-882D, *DoD Standard Practice for System Safety***
  - **Aspects = Hazards**
  - **Hazard identification is first step in ESOH hazard analysis -- PHL**
  - **Track and report hazard throughout system life cycle**



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# SE - EMS Equivalency

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- **Identify their environmental impacts**
  - **MIL-STD-882D**
  - **Impact = Mishap or undesired effect**
  - **Identify potential E, S, or OH mishaps resulting from hazards -- PHA**
  - **Document in hazard tracking system**
  - **Report on status in technical and program reviews**



# SE - EMS Equivalency

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# SE - EMS Equivalency

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- **Evaluate significance in order to focus resources**
  - **MIL-STD-882D**
  - **Significance = Risk**
  - **Assess probability & severity that hazard will result in mishap -- PHA**
  - **Document in hazard tracking system**
  - **Report on status in technical and program reviews**



# SE - EMS Equivalency

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# SE - EMS Equivalency

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- **“Control, manage, and improve” significant aspects**
  - **MIL-STD-882D**
    - Identify mitigation measures
    - Reduce risk to acceptable levels
    - Verify mishap risk reduction
  - **Integral part of design development trade studies/trade offs**
  - **Tracked and reported at technical and program reviews**



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# SE - EMS Equivalency

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## ■ Management Reviews

### ■ Report status at technical and program reviews and in PESHE

- 23 Sep 04 AT&L memo

- New memo in final coordination

### ■ Formal risk acceptance process

- High risk -- Component Acquisition Executive (CAE)

- Serious risks -- Program Executive Officer (PEO) level

- Medium & Low risks -- Program Manager (PM)



# Summary

## **SE = Defense Acquisition's EMS**

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# Questions?

