Systems Engineering - The Defense Acquisition System’s Environmental Management System (EMS)

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Overview

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

- 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
EMS -- Requirements cont'd

- 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

EMS Elements

- 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
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
DoD Acquisition SE

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*
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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- 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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- 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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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
SE - EMS Equivalency

✓ 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
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
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
SE - EMS Equivalency

- 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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✓ Evaluate significance in order to focus resources

“Control, manage, and improve” significant aspects

Management Reviews
SE - EMS Equivalency

“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
• 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
SE - EMS Equivalency

- **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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