National Environmental Policy Act (NEPA) and Systems Engineering: Managing the Environmental Risk

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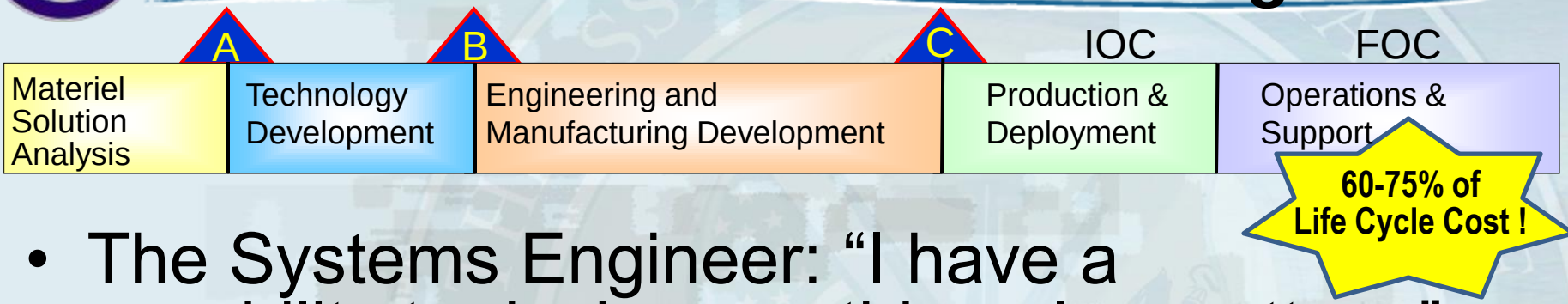
DESIGN • DEVELOP • DELIVER • DOMINATE
SOLDIERS AS THE DECISIVE EDGE

Service NEPA Regulations

- 3 Services, 3 Regulations, 3 Approaches
  - Differences in Application of CATEXs
  - Army Acquisition Only
    - Record of Environmental Consideration
    - Programmatic Environmental Assessment
- Differences are Primarily Procedural
  - Cause Potential Conflicts as Milestones Approach
- All Focus on Events within Acquisition Schedules
  - Support the Decisions for those Events

Systems Engineering: The Missing Link



- The Systems Engineer: “I have a capability to design…nothing else matters.”
- The Logistician: “I have to sustain the capability…spares and consumables must be delivered.”
- The Installation Environmental Engineer: “I wonder what this thing is? Hey, I just found this in the dumpster, anyone recognize it? What do you mean it’s radioactive!!! Holy…”

Environmental Risks

- Systems Engineering and Logistics
  - Systems Engineering selects Materials, Chemicals and Processes
    - Recognized Risk – Constraints on Production Processes or Personnel Exposure
  - Configuration defines Operations and Support
    - Recognized Risk – Non-availability of a Consumable or Transportation Constraints
- Installation Management and Operations
  - Operations and Support define Natural Resource Impacts
    - Un-recognized Risk – Inability to Operate, Support, Test or Train
    - Un-recognized Risk – Emerging Contaminant
- Environmental Risks Begin Early in Technology Development

Cost, Schedule and Readiness Impacts

- Massachusetts Military Reservation
  - Training Stopped due to Ground Water Contamination

And, for the first time in 13 years, troops at Camp Edwards are hearing the real bang of explosives as they train. Pyrotechnic grenades were approved for use just months before this exercise. The weapons were banned in 1997 because of environmental concerns.

"It has a loud report," McKenna said after the three explosions startled a crowd of onlookers and sent soldiers scrambling for cover. "That's the reaction we are looking for"

"I take this very seriously because it's about keeping people alive"

How Systems Engineering Impacts Installation Management

- Engineering
  - Are “new” materials and compounds required as part of system operation and maintenance?
- Configuration
  - Does system operational size (e.g. weight, width, etc.) or maintenance area requirements differ from currently fielded systems?
- Constraints
  - Does the system require test or training conditions (e.g. training objectives, test requirements, etc.) that differ from current test or training conditions?
- Management/Mission
  - Does the system have a mission that is strictly unique to the system and no other fielded system (e.g. increased mobility and/or range of operation)?

Systems Engineering Input

- ConOps
  - Shallow Harbor Operations
- Wheeled versus Tracked Vehicles
  - Speed, Ground Pressure and Turning Radius
- Explosive Formulations
  - Un-activated Ingredients
- Utility Services
  - Energy and Water Supplies

NEPA Sustainability Analysis

- USE NEPA!!
  - Ensure Smooth Acquisition Process through Milestones
  - Field Materiel without Surprises
  - Minimize Constraints to Mission Performance
  - Manage Impacts across the Environment and the Community
- Communicate Systems Engineering Information
- Validate Potential Environmental Issues During Testing
- Plan Environmental Management Techniques Early
- Manage or Eliminate the Environmental Risk
- Goal: Fully Trained, Fully Capable, Fully Ready Forces

The Important SE Data

- General System Characteristics
  - Wheeled vs. Tracked
  - Mobile vs. Stationary
- Hazardous Materials
- Fuels, Lubricants, Gases
- Munitions
- Power Demands
- Water Demand
- Optempo/Training Scenarios
- Infrastructure Carrying Capacities
  - Facilities
  - Landscapes
  - Fording
  - Surface Danger Zones
- Emissions and Wastes
  - Air/Water/Land
  - Noise
  - Hazardous/Radioactive/ Biological

Path Forward for the Army

- Integrate and Align ESOH in Systems Engineering Analysis
  - Army Integrated and Aligned two PESHEs into the Systems Engineering Plans
    - PAC-3 Missile and JLTV as examples
    - Lesson Learned/Gaps/Lost Information
  - New Army procedures for ESOH analysis
    - Focus on communicating risks
      - Risks with Systems Engineering Solutions (Acquisition)
      - Risks in Installation Management
      - Risks in Operations and Support

Closing Thought

- “If I pollute, the enemy knows I was there.”
- “If I pollute, the local community does not want me there.”

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