NSWC CRANE Battery Risk Reduction Assessment Process
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NSWC Crane Background

- Indiana’s Navy Base
- 100 square miles
- Unique facilities
- 140 People dedicated to battery operations
- Test/Evaluate milliwatt cells to 1.3MW batteries
- Technical Agent for Navy Lithium Battery Safety Program
- Several ISEA, TDA, EA positions
- Abuse testing to life cycle testing
- Battery RDT&E, Engineering, Qualification, Lot Acceptance Test, Surveillance, Proto-types, DPA
- Over 50 years of supporting Navy batteries and battery systems
NSWC Crane Risk Assessment Drivers

- 23 October 2012 Battery Fire
- Navy Class A Mishap
- NAVSEA SIB Directed
NSWC Crane Risk Assessment Drivers

• SIB Findings/Issues
  – Not following documentation
  – Non-documented key decisions
  – Incomplete setup/training
  – Improper separation of duties causing conflicts of interest
  – Inadequate validation/certification processes
  – Poor Housekeeping
  – Under-estimated risks/hazards
  – Inadequate emergency planning
Became Complacent and Comfortable
Risk Assessment Plan

Develop Plan

• Recover
• Improve/Change Culture
• Actively Address Risk
• Complete/Holistic Risk Coverage
• Reduce Risk Level To As Low As Reasonably Achievable
• Sustain

Actions

• Research/Select Structure
• Define Risk Plan
• Develop Risk Assessment Board
• Establish Standards
• Document Everything
• Develop Sustainment
Base Structure for Risk Assessment

• SSP Risk Management Plan
  – Planned Risk Management
  – Continuous (timeless) risk assessment
  – Emphasize technical risk
  – Document everything thoroughly
  – Continually re-evaluate process and risk

• Provides Foundation for Risk Assessment Culture

SSP Risk Management Plan, Risk Management Guide for DOD Acquisition, Certification of Process Category Subject Matter Experts, NSWC Crane Lithium Battery Safety Instruction
• Gather program information
• ROMB meeting with minutes
• Procedure / HA Table development
• Appropriate procedure review
• Validations/Certifications/Hazard Briefings/Training
• Readiness Review
• Change Verification/Evaluation
• Follow up evaluation / lessons learned
Risk Assessment Process

- Compile program information & initial risk assessment
- Hold Risk Oversight Management Board Meeting
  - Chair Person Directed
  - Assess Vulnerable areas; Human Factors, Facilities/Location, Environment, Co-located Ops, Chemical, Equipment, Assets
  - Drill-down until risk levels are as low as achievable and acceptable
  - Generate minutes and 100% voting member approval
- Generate Procedures/HA Table w/ appropriate review
- Process Category SMEs
  - Operator training and certifications
  - Procedure Validation / Setups / Simulations
  - Hazard briefing
Risk Assessment Process

- Operation Execution and Evaluation
  - Process Changes with ROMB Chair Person oversight
- Project post operation review
  - Lessons learned
  - Finalize documentation
  - Maintain records
Risk Culture Change

• Documented Process
• Establishment of two Cultural changing positions
  – Board Chair Person
  – Process Category SMEs
• These positions drive cultural change throughout Division
  – Maintain the rigor
Questions

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Battery Hazards

• Not simple single point hazard
  – Electrical
  – Toxicity
  – Corrosive
  – Respiratory
  – Explosive gas generator
  – Deflagration

• Potential for self driven
• Easy to stimulate without knowing