Cardinal Engineering

ShockIQ - Digital Transformation of the Navy Shock Qualification Process

National Shipbuilding Research Program

Electrical Technologies and Ship Design & Material Technologies Joint Panel Meeting

5 May 2026

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ShockIQ

- During a Phase II SBIR Cardinal Engineering developed a comprehensive shock qualification software tool, ShockIQ
- Allows user to navigate through the complex shock requirements
- TurboTax of Shock – simplistic language and terminology in user friendly interface

ShockIQ Development

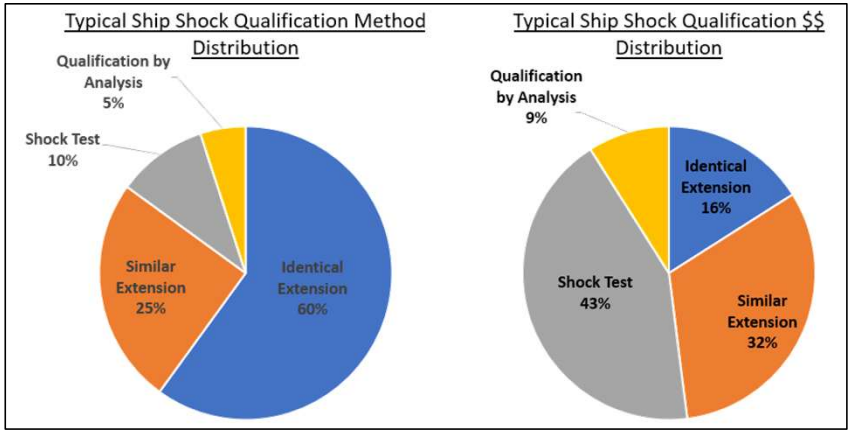
- Main Capabilities
  - Test Decision
    - Implemented template test procedures to use this information to generate a compliant shock test procedure with a few fill in the blanks
  - Test Optimizer Tool
  - Extensions
  - Database
- Future Capabilities
  - User roles and permissions
  - Workflow
- Incorporates:
  - Feedback from shock users
  - Lessons learned
  - Improved foundation in software code to facilitate additional standards
- SEA05P1-Shock endorsement letter for continued development
  - Reduces nonrecurring engineering dollars
  - Pairs with eShock
  - Maximizes digital engineering principles

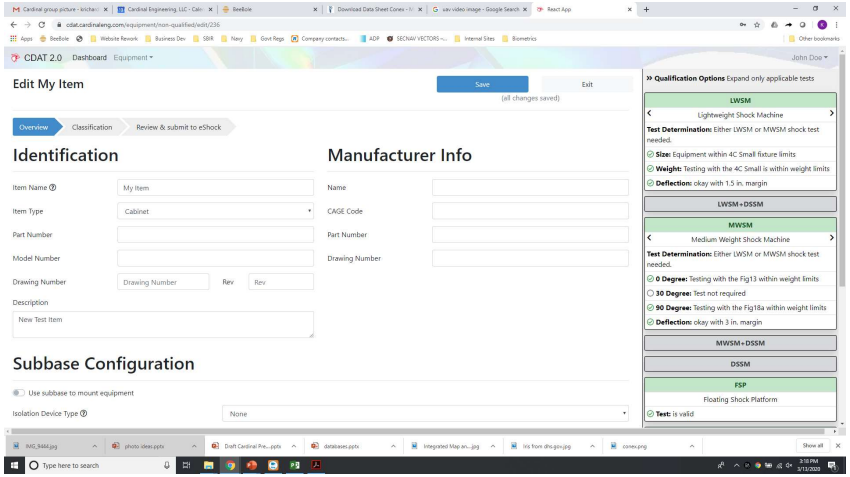
ShockIQ Status

- Proof of concept has demonstrated that MIL-S-901D IC#2/MIL-DTL-901E can be transitioned into a very capable and useful software tool
- IL4 compliant to host CUI data cloud based
  - Medium assurance token/CAC security access
- Can provide demonstrations to those interested
- Seeking partner to refine ShockIQ
- Near term goal is get tool to place where we can get stakeholders using ShockIQ and work with them to further develop for user base

ShockIQ

- ShockIQ is the “TurboTax” of equipment shock qualification
- Simplifies, *accelerates*, streamlines and *reduces the cost* for shock qualification of equipment installed on Navy platforms
- Provides a consistent and accurate application of the specifications across the enterprise
- Enables the exchange of information about qualified equipment across the enterprise to improve designs and reduce the use of costly physical testing
- Cost saving and avoidance through
  - Comprehensive test and extension determinations to support qualification planning efforts
  - Identification of the lowest cost qualification method
  - Design/qualification feedback to maximize extension potential
  - Consideration of testing cost during the design process
- Time savings through
  - Avoidance of redesign/rework/retest
  - Streamlined review of qualification submittals
  - SME force multiplier
- Shock database containing qualification records and information for hundreds of pieces of equipment
  - Connect with eShock
  - Digital Engineering Framework
  - Set up to handle future tools and capabilities





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