Safety Release & Safety Confirmation Process

Perspectives on Rapid Fielding
(for NDIA Joint Power 2011 Expo)

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Purpose

To provide a brief overview of the DTC safety verification process,
and
To give the perspective of:
Government Tester
Government Rapid-Developer
(…to avoid surprises in the fielding process.)
How is This Brief Relevant to Me?

• Companies want to sell equipment to DOD!
• Most companies are addressing a need… or a perceived need.
• The government - organization buying it wants to provide solutions!
• We will use the case study and detailed ATEC information to help you further develop your project plan.
Unit Setting:

• “Delivery” DOES NOT EQUAL “Fielding”

• FIELDING (or Rapid Equipping) includes:
  - Soldiers + Equipment
    + Mission relevance
    + Training
    + Testing
    + Documentation
    + Designated “Recipient Unit”
    + Maintenance
  (+ sometimes a helpful Catcher/Coach along the process)

The ARMY is PEOPLE. (but a few persons do not represent the whole Army)
Samples of items Involving Safety Confirmation.

Deployed System Overview

Complete Solar Field comprised of 7 solar arrays  Command Trailer  Storage Trailer

Developmental Test Command
Case Study Overview

- CENTCOM & RDECOM were sending a renewable energy system to AFG to conduct an operational assessment and ROI and provide this to the PM to help facilitate modernization strategies for tactical power.
 Requirement
(Case study)

• **Operational Need**: Reduce Forward Fuel Consumption & Provide Tactical Power for Partners

• **Technology Provided**: NATICK assessed PowerFilm product as reliable and durable but didn’t have a Safety Release

• **Operational Deployment**: Power Shade would be helo-transported to an enduring Combat Outpost (COP) for Soldier Assessment
Details

(Case study)

- ATEC testing would subject Solar Shade system to wind loads, electrical discharge safety, assembly, carry, durability, etc.
- RDECOM FAST paid for testing, and data was used to ensure product would meet rigors of the operational deployment.
- It does not pay to skip this step!

Safety Releases & Safety Confirmations:
Alert People to Hazards and Risks,
Identify Restrictions, & Mitigations for Safe Use.
Assessment
(Case study)
Assessment
(Case study)
Results
(Case study)

Bottom Line: PowerFilm Power Shade demonstrated Safe performance, while provided power, in rain/wind environment.

Staking system modified. Better seals applied to Balance of System (BOS) electrical box to eliminate water intrusion.

System granted “Safety Confirmation” and thus deployed on schedule to a Field Artillery Unit.
What Was Learned
(Case study)

- CENTCOM
  - Must add cost and schedule for Safety Confirmation in technology program planning
- RDECOM/PM MEP
  - NATICK component had done its homework
- The Contractor: PowerFilm
  - Had a better understanding of Test Evaluation Mentality and how their product performed
- Down Range Deployment Managers
  - Confidence the technology was safe!
Safety Release
(AR 70-1, AR 73-1, DA-PAM 73-1, ATEC/DTC Reg 73-1)

- A Formal Document issued by DTC to a user/test organization before any hands-on testing, training, use, or maintenance by Soldiers
  - Issued for a specific event
    - At a specified time
    - A specified location
    - Under Specified Conditions
- Describes the specific hazards of the system based on
  - Test Results
  - Inspections,
  - System Safety Analysis
- Operational limits and precautions are identified to minimize risk to Soldiers
- All signed by Director, DTC.

• Does not authorize use of materiel in theaters where hostilities are present.
  • Not intended to support materiel release decisions

• Information System Engineering Cmd, Army Network Enterprise Technology Cmd, Health Services Cmd and Medical Research and Development Cmd – Provide their own SR
Safety Confirmation
(AR 70-1, AR 73-1, DA-PAM 73-1, ATEC/DTC Reg 73-1)

- A Separate Document that provides the Materiel Developer and Decision Maker with DTC safety findings and conclusions
- The Safety Confirmation
  - Classifies Residual Hazards (Severity and Probability)
  - Uses the Approved Risk Acceptance Model
- Supports all Milestones, Type-Classification, Materiel Release, and Fielding decisions, or as requested.
- Provided to AEC for attachment to the ATEC Milestone Assessment Report (OMAR) or OTA Evaluation Report (OER)
- All signed by DTC Director

The S.C. Is NOT a Permission Slip. SC describes risks and mitigations.
# Safety Documentation Matrix

(DTC Pam 73-1)

## Safety Release/Confirmation Matrix

<table>
<thead>
<tr>
<th>Activity</th>
<th>Testing, Pre-Test Training, or Demonstrations Using Soldiers</th>
<th>MS B</th>
<th>MS C (LRIP)</th>
<th>Full-Rate Production Decision</th>
<th>Material Release Decision (Full or Conditional Training)</th>
<th>Urgent Material Release (UMIR)</th>
<th>Interim Material Release</th>
<th>RFU Reference</th>
<th>System Changes (Modifications and Upgrades)</th>
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</thead>
<tbody>
<tr>
<td>DTC Document</td>
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### Safety Release
- Issued for a specific event
- At a specified time
- A specified location
- Under Specified Conditions
- Describes Safety Hazards & Operational Limits

### Safety Confirmation
- Supports Milestones & Materiel Releases
- A separate document to AEC & Materiel Developer
  - Provides Safety Findings & Conclusions
  - Classifies any Residual Hazards
Supporting Documentation

- System Description
- Technical/Operational Manuals
- Safety Assessment Report
  - Prepared by PM or Prime Contractor
  - Include Software Safety Risk Analysis
- Health Hazard Assessment Report
  - Prepared by Public Health Command (Prov.)
- Government or Contractor Test Data
  - Test Incident Reports
  - Fault Tree Analysis
- DTC Test Center Recommendations support:
  - Safety Release Recommendation
  - Safety Confirmation Recommendation
### Hazard Rating Categories (MIL-STD-882D)

<table>
<thead>
<tr>
<th>Hazards</th>
<th>Catastrophic</th>
<th>Critical</th>
<th>Marginal</th>
<th>Negligible</th>
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<tbody>
<tr>
<td>Could result in death, permanent total disability, loss exceeding $1M, or irreversible severe environmental damage that violates law or regulation.</td>
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<td>Could result in permanent partial disability, injuries or occupational illness that may result in hospitalization of at least three personnel, loss exceeding $200K but less than $1M, or reversible environmental damage causing a violation of law or regulation.</td>
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<td>Could result in injury or occupational illness resulting in one or more lost work days, loss exceeding $10K but less than $200K, or mitigable environmental damage without violation of law or regulation where restoration activities can be accomplished.</td>
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<tr>
<td>Could result in injury or illness not resulting in a lost work day, loss exceeding $10K, or minimal environmental damage not violating law or regulation.</td>
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### HAZARD PROBABILITY

- **Frequent**: Likely to occur often in the life of an item, with a probability of occurrence greater than $10^{-1}$ in that life.
  - Continuously experienced
  - Likely to occur in the life of an item, with a probability of occurrence less than $10^{-1}$ but greater than $10^{-2}$ in that life.
  - Will occur frequently
  - Likely to occur some time in the life of an item, with a probability of occurrence less than $10^{-2}$ but greater than $10^{-3}$ in that life.
  - Will occur several times
  - Unlikely but possible to occur in the life of an item, with a probability of occurrence less than $10^{-3}$ but greater than $10^{-6}$ in that life.
  - Unlikely but can reasonably be expected to occur
  - So unlikely, it can be assumed occurrence may not be experienced, with a probability of occurrence less than $10^{-6}$ in that life.

### Risk Acceptance Levels per DODI 5000.02, 8 Dec 08

- **Risk Assessment Levels & Definitions per Tables A-I thru A-IV of MIL-STD 882D, 10 Feb 00**
Follow-up

DTC POC:
ATEC
http://www.atec.army.mil

DTC “Request For Test Services” RFTS:

D. Rusin
DTC Test Manager
TEDT-TMA
314 Long’s Corner Road
APG, MD 21005
(410) 278-3364
dan.rusin@us.army.mil
BACKUP
System Commodity Areas Tested
At DTC Ranges

Direct Fire
- Live Fire
- Vehicles
- Small Arms
- Gen & Indiv Eq

Air Systems
- Air Worthiness

Chem Bio
- NBC Surviv
- Smoke & Obscurants
- Methodology

Missiles
- Ballistic Msl Def

Small Missiles & Rockets
- Guidance Sys
- HE Warhead & Fuzes

Indirect Fire
- Air Delivery
- Air Armaments
- Vehicle/Support Equip
- Imp Explosive Dev

C4I
- Info Assur
• Formal summary of safety and health data collected during the life of the system. Provides hazard potential and corrective actions to avoid personnel injury and equipment damage during testing.

• Includes The Surgeon General’s (TSG) Health Hazard Assessment (if available).

• PM Responsibility.

• To be provided 60 days prior to the start of DT/OT testing/demonstration:
  -- Facilitates SOP preparation
  -- Provides focus to safety testing
HEALTH HAZARD ASSESSMENT (HHA)

- The application of biomedical and psychological knowledge and principles to identify, evaluate, and control the risk to the health and effectiveness of personnel who test, use, or service Army systems.

- Prepared by The Surgeons General’s (TSG) Office at customer request.

- Based on the following:
  -- User provided data
  -- Previous testing
  -- CHPPM studies (Ionizing/Non-Ionizing radiation, toxic fumes)
  -- Other TSG collected data.

- HHA Requests electronically submitted via the Public Health Cmd.