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Title: Weapon Division (W-DO) Weapon Surety and Military Liaison Group (W-10)
Weapons 101 Overview

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Weapon Division (W-DO)

Weapon Surety and Military Liaison Group (W-10)

Weapons 101 Overview
August 7, 2014

LA-UR-xx-xxxx/W-10-14-0016U

P.O. Box 1663

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Agenda

- Introduction
- Weapon Surety and Military Liaison
- Joint DoD/DOE Responsibilities
- Weapon Life Cycle Phases
- Military Liaison
- Nuclear Weapon Safety Assessment
- Nuclear Explosive Safety Assessments
- Weapons Response
- Wrap-up

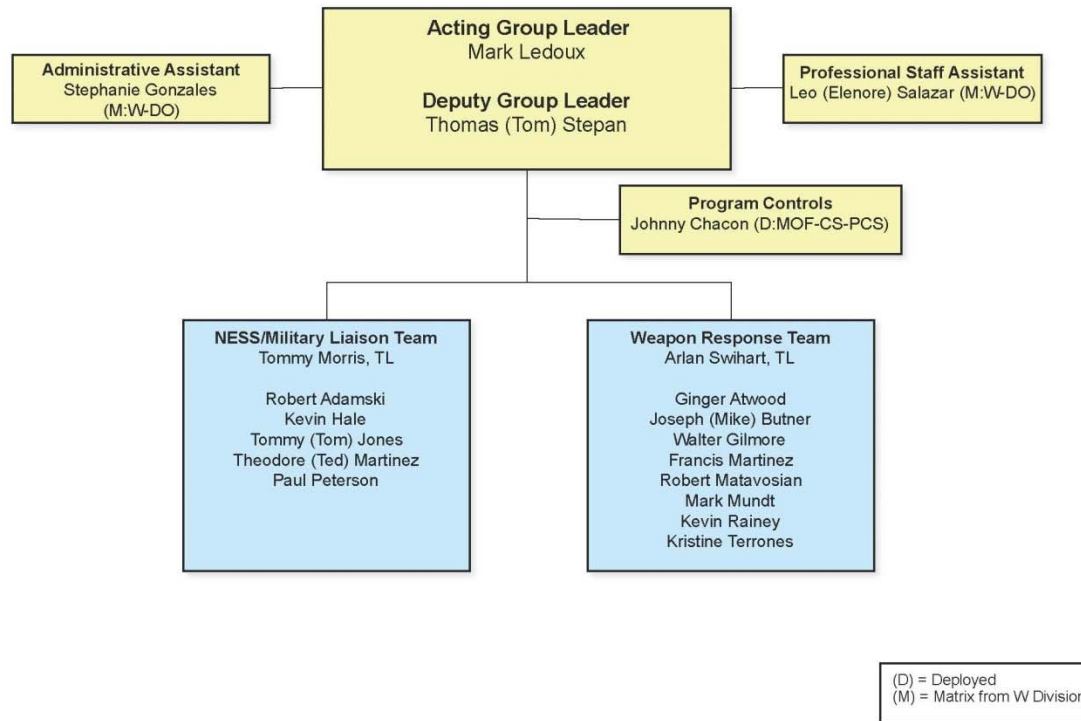
W-10 -- Weapon Surety and Military Liaison



- Military Liaison
- Nuclear Explosive Safety Assessment
 - Nuclear Explosive Safety Study Group members
 - Technical Advisors to NNSA NWSSG member
- Weapon Response Analysis
 - Provides characterization of risk for DOE nuclear explosive operations
- Nuclear Weapon Safety Evaluation
 - Provides an assessment against MC requirements

W10- Organization Chart

Weapon Surety and Military Liaison (W-10)



04/2014

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ADCLS Bioscience	ADE Accelerator Operations & Technology	ADEPS Materials Physics & Applications	ADIT Departmental Computing Services	ADTSC Computer, Computational, & Statistical Sciences
Chemistry	Applied Engineering & Technology	Materials Science & Technology	Network & Infrastructure Engineering	High Performance Computing
Earth & Environmental Sciences	Prototype Fabrication	Los Alamos Neutron Science Center	Software & Applications Engineering	Theoretical
Physics				

Laboratory-Directed Research & Development Program Office

Science & Technology Base

Science Program Office

Technology Transfer


LANL Institutes

05/16/12

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Nuclear Component Operations	Weapons Systems Engineering	Theoretical Design
Manufacturing Engineering & Technology	Nuclear Process Infrastructure	

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Threat Identification & Response
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ADTIR
Decision Applications

International & Applied Technology



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ADBS Acquisition Services	ADESH Environmental Protection	ADMIP Infrastructure Planning	ADNHHO CMR Facility Operations	ADSS Emergency Operations
Central Training	Industrial Hygiene & Safety	Maintenance & Site Services	Engineering Services	Safeguards
Human Resources	BSMS/Worker Safety Office	Occupational Medicine	Environmental & Waste Management Facility Operations	Security Operations
Information Resource Management	Radiation Protection	Waste & Environmental Services	Fire Protection Division	Physical Security
Environmental Safety Health Deployed Resources	ES&H Integration Office	Environmental Safety Health Deployed Resources	LANLCE Facility Operations	Operations Support
Safety Basis				
Science & Technology Operations				
TA-21 Facility Operations				
TA-55 Facility Operations				
Utilities & Institutional Facilities				
Weapons Facility Operations				

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Principal Associate Director
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ADPEP Business & Project Services Division	ADPM Site Projects
Corrective Actions	Engineering & Technology
Regulatory Management	TA-21 Closure
LANL TRU Program	Waste & Project Services
CMRR	Functions

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Joint DoD/DOE Responsibilities

- The Department of Defense and the DOE have complementary responsibilities based on law and formal agreements to provide a safe, secure, and militarily effective nuclear weapons stockpile.
- Nuclear weapon systems require special consideration because of their political and military importance, their destructive power, and the potential consequences of an accident or unauthorized act. Assured nuclear weapons and nuclear weapon systems safety, security, and control remain of paramount importance.

 <p>Department of Defense INSTRUCTION</p> <p>NUMBER 5030.55 January 25, 2001</p> <p>SUBJECT: DoD Procedures for Joint DoD-DOE Nuclear Weapons Life-Cycle Activities</p> <p>References: (a) DoD Instruction 5030.55, "Joint AEC-DoD Nuclear Weapons Development Procedures," January 21, 1974 (hereby canceled) (b) DoD Directive 2000.1, "Defense Acquisition," October 23, 2000 (c) DoD 5000.2-R Interim Final Regulation, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs)," January 4, 2001 (d) Nuclear Weapons Council Procedural Guideline for the Phase 6X Process,¹ April 19, 2000¹ (e) through (i), see enclosure 1</p> <p>1. REISSUANCE AND PURPOSE</p> <p>This Instruction:</p> <p>1.1. Reissues reference (a) to implement policy, assign responsibilities, and prescribe procedures for joint Department of Defense (DoD)/Department of Energy (DOE) nuclear weapon life-cycle activities.</p> <p>1.2. Implements references (b) and (c) as they apply to joint DoD-DOE nuclear weapon life-cycle activities, and reference (d) as it applies to the refurbishment guidelines issued by the Nuclear Weapons Council.</p> <p>¹ Copies available from the Deputy Assistant to the Secretary of Defense for Nuclear Matters, Room 3C125, The Pentagon.</p>	<p>Department of Defense INSTRUCTION</p> <p>NUMBER 3150.1 August 26, 2002 Certified Current as of March 8, 2004</p> <p>ATSD(XCB)</p> <p>Cycle Activities</p> <p>Nuclear Weapons Development Studies October 27, 1983 (hereby canceled) and the DoD for the Development, of Atomic Weapons," March 21, 1953,</p> <p>Procedural Guideline for the Phase 6X AEC-DoD Nuclear Weapons Program, January 25, 2001</p> <p>of reference (a) to prescribe policies, inherent of Defense (DoD)/Department ies, consistent with the spirit of used by the Nuclear Weapons Council</p> <p>of Defense for Nuclear Matters, Room 3C125, of Defense for Nuclear Matters, Room 3C125,</p>	<p>NUMBER 3150.02 April 24, 2013 USD(AT&L)</p> <p>established policy and of safety, security, and safety.</p> <p>(NWTI) system.</p> <p>agents, the Office of at Commands, the Agencies, the DoD ed to collectively in</p> <p>ole authority for the</p> <p>air political and as of an accident or safety, security, and NC2) safety and 1 (Reference (b)).</p> <p>veloped and secure, and reliable ve measures to:</p>	<p>NUMBER 3150.02 January 31, 2014 USD(AT&L)</p> <p>ordance with the policy, update weapon system safety</p> <p>ents, the Office of the stant Commands, the Agencies, the DoD ed to collectively in</p> <p>ference (c):</p> <p>air political and as of an accident or safety, security, and safety and security ence (d)).</p> <p>veloped and secure, and reliable ve measures to:</p> <p>etitioned weapons,</p> <p>of nuclear weapons, alent authority.</p>
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DoD i5030.55 DoD Procedures for Joint DoD-DOE Nuclear Weapons Life-Cycle Activities

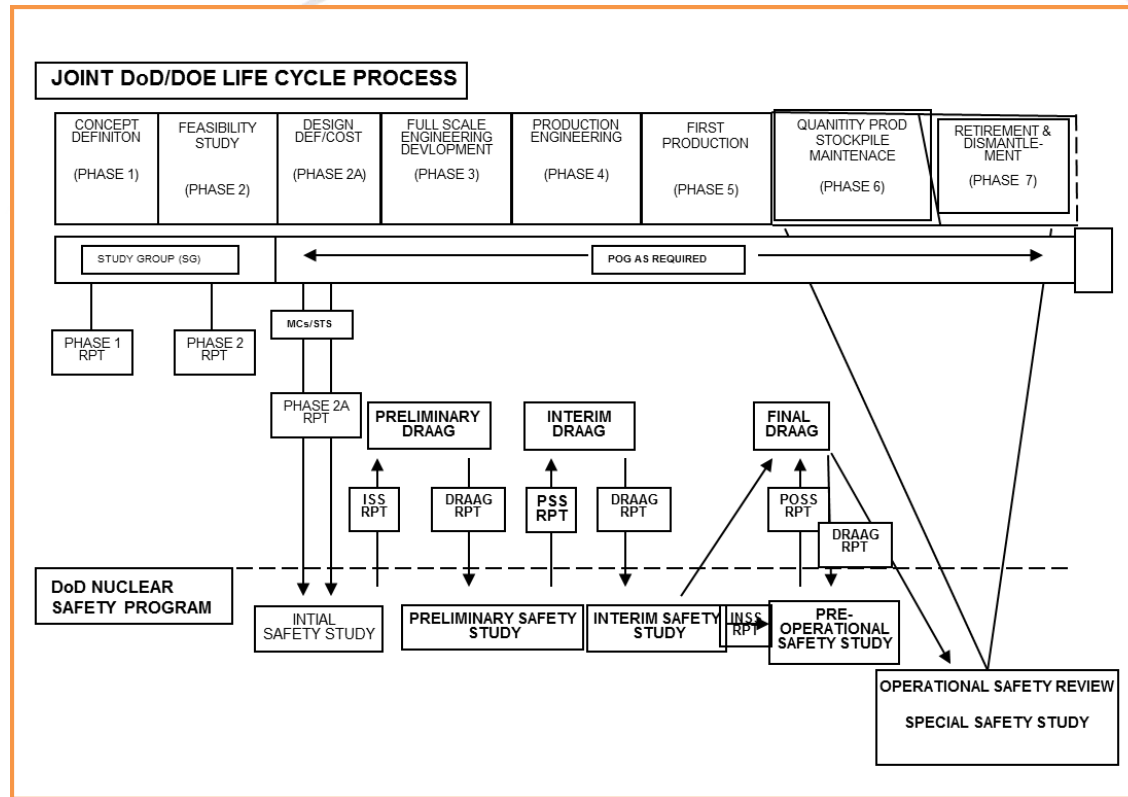
DoD D 3150.1 Joint DoD-DOE Nuclear Weapon Life-Cycle Activities

DoD D 3150.2 DoD Nuclear Weapon Surety Program

DoD M 3150.2 DoD Nuclear Weapon System Safety Program Manual

Military Characteristics (MCs) and Stockpile-to-Target Sequence (STS) jointly developed but define the Design Agency (DA) Requirements and Assessment Environments

Weapon Life Cycle Phases



Pantex Plant Operations occur Phase 5 – Phase 7



NNSA Over-the-Road Operations occur Phase 6 – Phase 7

LANL W-10 interactions begin with Design Safety Assessment in Phase 2 (6.2), Military Liaison in Phase 3 (6.3), NWSSG support begins with ISS, Weapons Response begins in Phase 3 (6.3), NESS starts with FPU and everything continues through final dismantlement

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Technical Publications in the Joint Nuclear Weapons Publication System (JNWPS) – LANL Military Liaison



- Technical Procedures. Technical procedures are the explicit directions which must be followed to conduct operations with nuclear weapons. Technical procedures are documented in Military Department technical publications and JNWPS TPs
- JNWPS. The Military Departments and DTRA will maintain the JNWPS publications on nuclear weapons, associated materiel, and related components. The JNWPS also includes supplemental information and data considered applicable by DOE and the Military Departments. It provides authoritative policy, procedures, information, and data for nuclear weapon operations, maintenance, support, and management to DOE, DTRA, and the Military Departments.
 - The JNWPS operates under a memorandum of understanding between the DoD and DOE. Under JNWPS, individual Military Departments and DOE review and sign JNWPS publications for which they have an application. JNWPS TP 0-1 lists, defines, and indicates the status of JNWPS publications.
 - Each JNWPS publication contains applicable safety precautions, warnings, and notes.

Memorandum of Understanding between the Department of Defense and Department of Energy, "Memorandum of Understanding between the Department of Defense and the Department of Energy for the Preparation, Publication and Maintenance of Technical Publications in the Joint Nuclear Weapons Publication System," March 17, 1992

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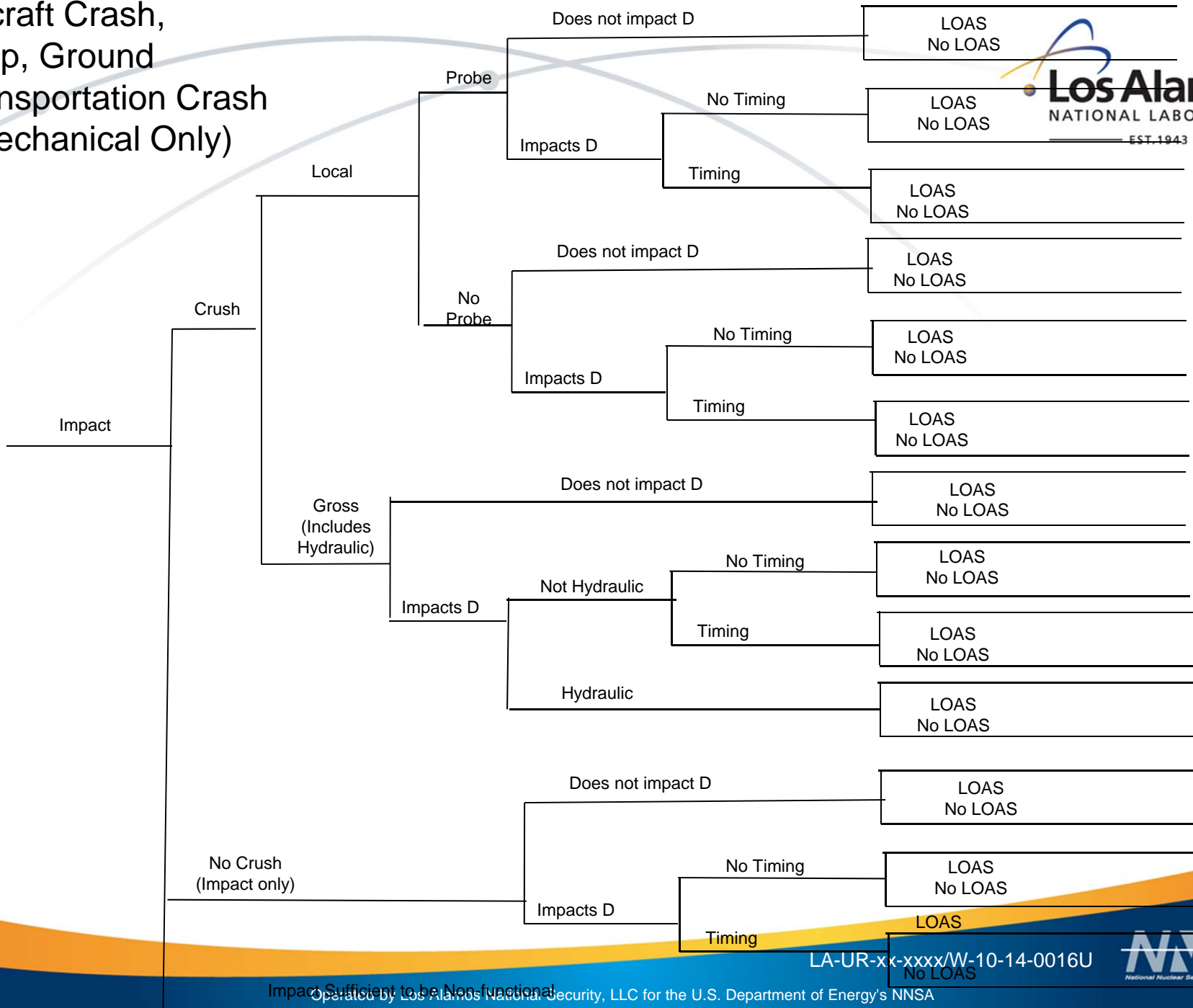
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DoD Nuclear Weapon Safety Design Criteria



- Quantitative safety design criteria are established by the DoD, issued in weapon specific military characteristics (MCs), and implemented by the DOE in coordination with the Project Officers Group (POG). They are used during nuclear weapon design, to ensure one-point safety, and to lower premature detonation probabilities and component malfunctions.
 - One-point safety will be inherent in the nuclear system design and will be obtained without the use of a nuclear safing device
 - The probability of a premature nuclear detonation of a warhead, due to warhead component malfunctions, in a mated or unmated condition, in the absence of any input signals except for specified signals (e.g., monitoring and control)
 - The probability of a premature nuclear detonation of a bomb due to bomb component malfunctions, in the absence of any input signals except for specified signals (e.g., monitoring and control)

Aircraft Crash, Drop, Ground Transportation Crash (Mechanical Only)



Impact Sufficient to be Non-functional

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LOAS
No LOAS



Technical Advisors to NNSA NWSSG member

The four DoD nuclear weapon system surety standards are used in the evaluation of the safety of a nuclear weapon system beginning as early as possible during development and continuing throughout a weapon system's life cycle. Four DoD nuclear weapon system surety standards provide positive measures to:

- (1) Prevent nuclear weapons involved in accidents or incidents, or jettisoned weapons, from producing a nuclear yield.
- (2) Prevent **deliberate** pre-arming, arming, launching, or releasing of nuclear weapons, except upon execution of emergency war orders or when directed by competent authority.
- (3) Prevent **inadvertent** pre-arming, arming, launching, or releasing of nuclear weapons in all normal and credible abnormal environments.
- (4) Ensure adequate security of nuclear weapons, as governed by DoD D 5210.41



NESSG Member



- Members provide independent assessment that NNSA Nuclear Explosive Operations meet the two NES Standards
 1. Nuclear explosive operations must have controls to prevent adverse environments and unauthorized acts that could lead to unintended nuclear detonation or main charge high explosive detonation/deflagration.
 2. Nuclear explosive operations must have controls to prevent unintended nuclear detonation and main charge high explosive detonation/deflagration, given an adverse environment or unauthorized act.

Weapon Response for NNSA activities



- Systematic Nuclear Weapon and component assessment to hazard scenarios provided by NNSA and DoD
- DOE Orders and Standards
 - Safe Harbor method DOE-STD-3016-2006 compliant

Meets 10 CFR 830 “Nuclear Safety Management” requirements

Questions so far?

