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

Author(s): Morris, Tommy Joe

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Weapon Division (W-DO)

Weapon Surety and Military Liaison Group (W-10)

Weapons 101 Overview

August 7, 2014

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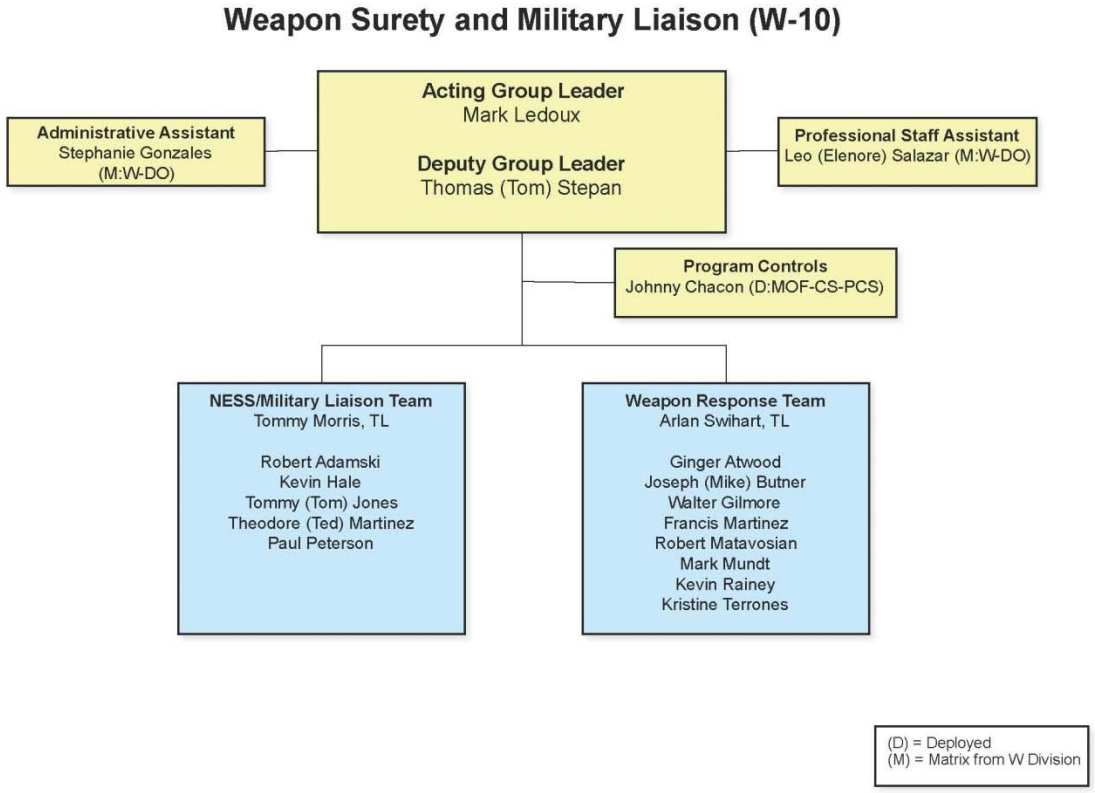
Agenda

- 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

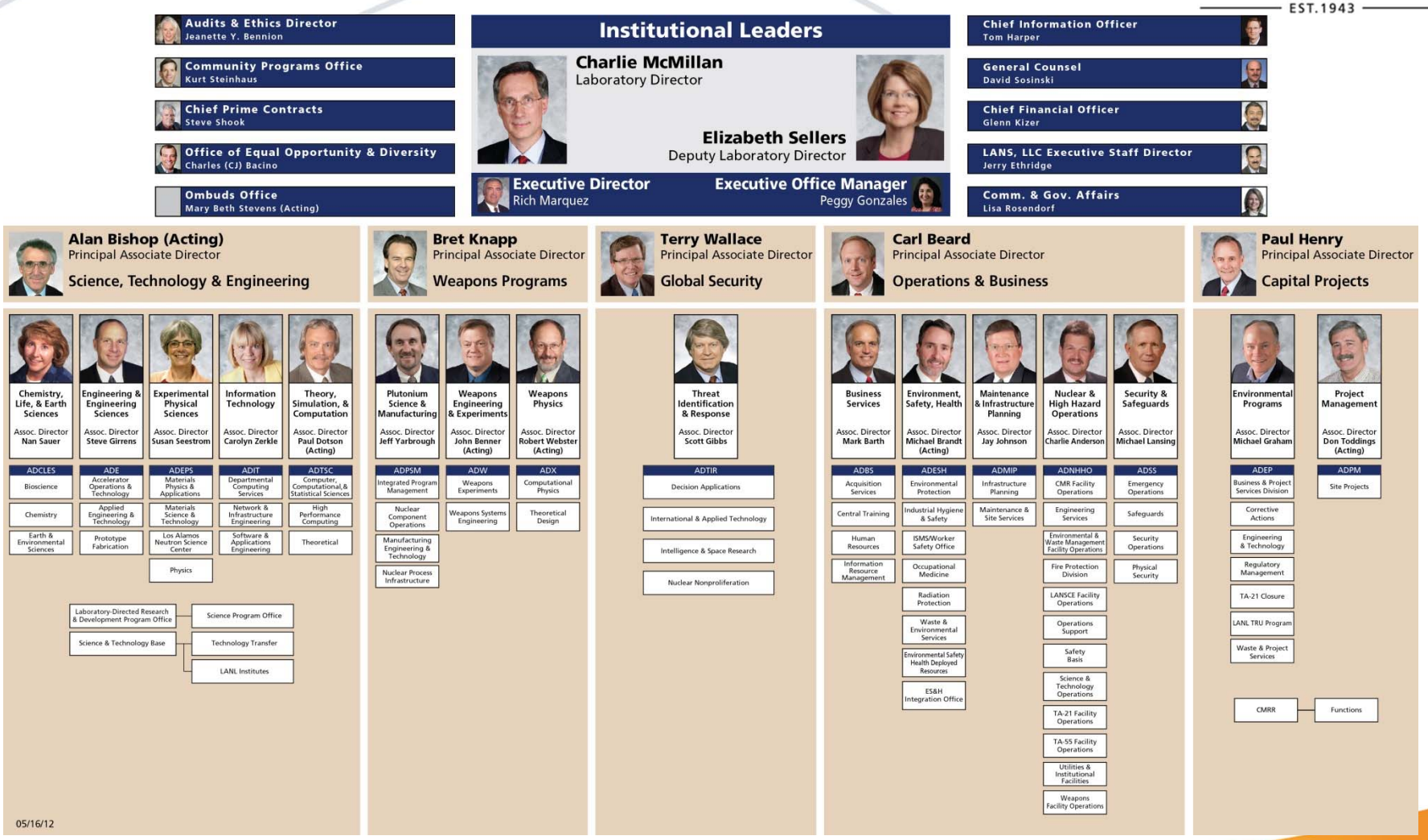
W-10 -- *Weapon Surety and Military Liaison*

- 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

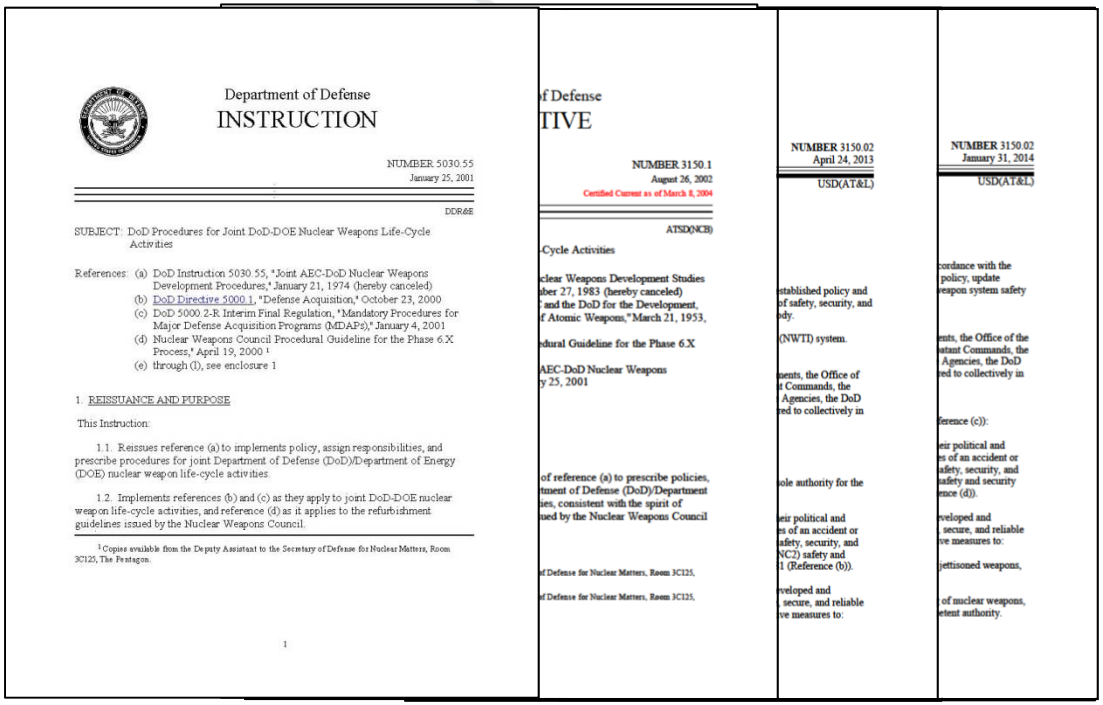


Management Overview



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.



Department of Defense
INSTRUCTION

NUMBER 5030.55
January 25, 2001

DDR&E

SUBJECT: DoD Procedures for Joint DoD-DOE Nuclear Weapons Life-Cycle Activities

References: (a) DoD Instruction 5030.55, "Joint AEC-DoD Nuclear Weapons Development Procedures," January 21, 1974 (hereby canceled)
(b) DoD Directive 5000.1, "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 6.X Process," April 19, 2000 [1]
(e) through (l), see enclosure 1

1. REISSUANCE AND PURPOSE

This Instruction:

1.1. Reissues reference (a) to implements policy, assign responsibilities, and prescribe procedures for joint Department of Defense (DoD)/Department of Energy (DOE) nuclear weapon life-cycle activities.

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.

[1] Copies available from the Deputy Assistant to the Secretary of Defense for Nuclear Matters, Room 3C125, The Pentagon.

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NUMBER 3150.1
August 26, 2002
Certified Current as of March 8, 2004

ATSD(NCB)

-Cycle Activities

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f Atomic Weapons," March 21, 1953,

dural Guideline for the Phase 6.X

AEC-DoD Nuclear Weapons
y 25, 2001

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f Defense for Nuclear Matters, Room 3C125,

f Defense for Nuclear Matters, Room 3C125,

NUMBER 3150.02
April 24, 2013
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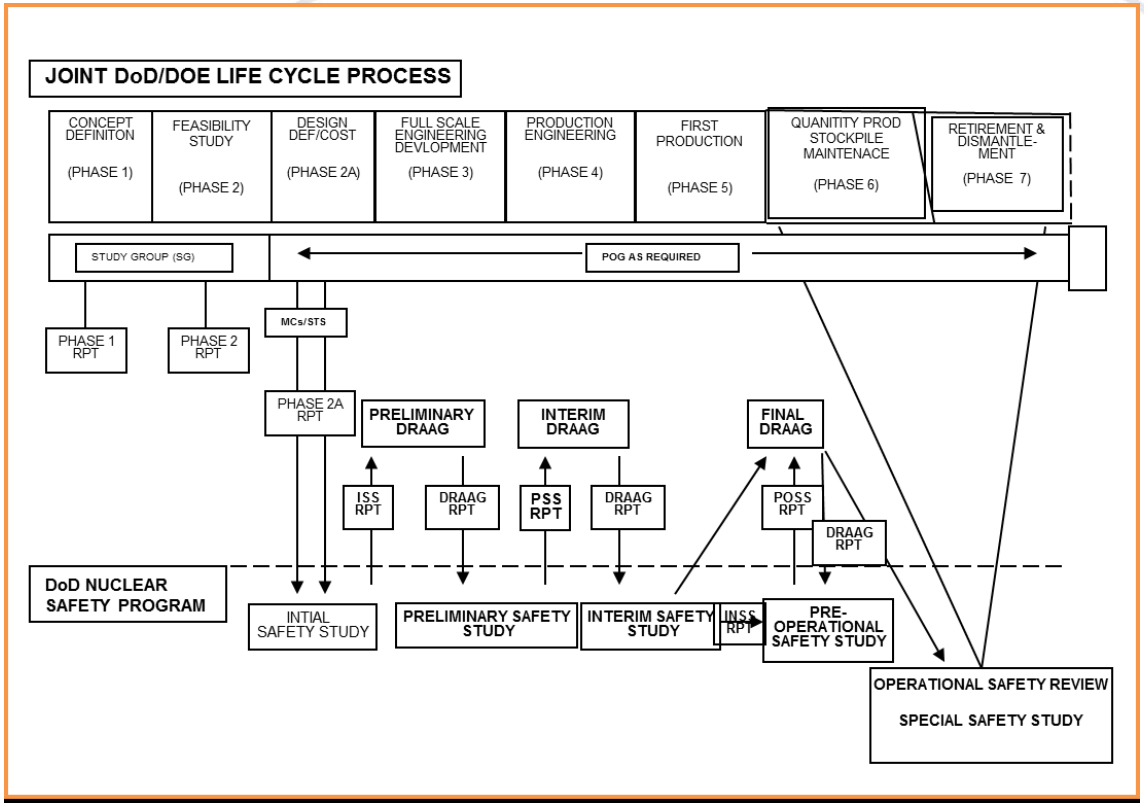
DoD i5030.55 DoD Procedures for Joint DoD-DOE Nuclear Weapons Life-Cycle Activities
DoD D 3150.1 Joint DoD-DOE Nuclear Weapon Life-Cycle Activities
DoD D 3150.2 DoD Nuclear Weapon Surety Program
DoD M 3150.2 DoD Nuclear Weapon System Safety Program Manual

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

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

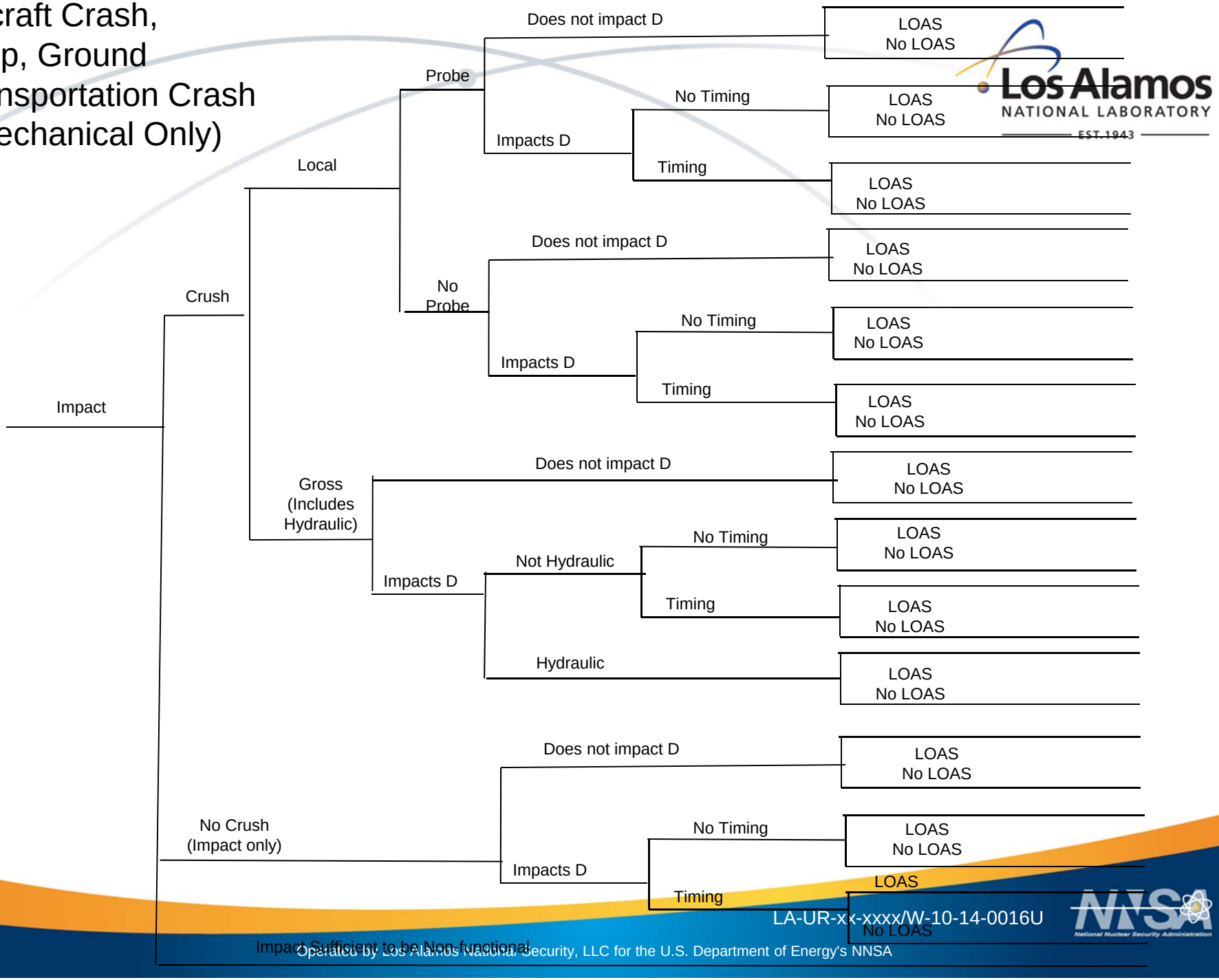
- Technical Procedures. Technical procedures are the explicit directions which must be followed to conduct operations with nuclear weapons. Technical procedures are documented in Military Department technical publications and JNWPS TPs
- JNWPS. The Military Departments and DTRA will maintain the JNWPS 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

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)



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?