



**Department of Energy**  
Washington, DC 20585

95-0003110

APR 10 1995

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DNF SAFETY BOARD

The Honorable John T. Conway  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, N.W.  
Suite 700  
Washington, D.C. 20004

Dear Mr. Conway:

Enclosed is the eleventh bimonthly progress report on implementation of Defense Nuclear Facilities Safety Board Recommendation 92-6. The report covers activities through March 15, 1995, and provides updates on the status of items discussed in your letter of April 29, 1994. Additionally, this report provides status of actions in response to your letter of January 20, 1995. Final response to that letter will be provided in April by separate correspondence.

This document is Unclassified and is suitable for placement in the public reading room.

Sincerely,

Donald F. Knuth  
Deputy Assistant Secretary  
for Facility Transition and  
Technical Support  
Defense Programs

Enclosure

cc w/enclosure:  
M. Whitaker, EH-6

ENCLOSURE

**STATUS OF ACTIONS**

for the

**DEFENSE NUCLEAR FACILITIES SAFETY BOARD**

**RECOMMENDATION 92-6**

**Report Number 11**

**Jan 16, 1994 - Mar 15, 1995**

## 1.0 INTRODUCTION

This report provides the status of the Department of Energy (DOE) Implementation Plan dealing with Operational Readiness Reviews (ORRs) in response to the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 92-6.

## 2.0 TASK STATUS

### 2.1 TASK 1: DEVELOP A DOE ORDER ON STARTUP AND RESTART OF NUCLEAR FACILITIES

The purpose of this task was to develop a DOE Order on startup and restart of nuclear facilities. This document was developed concurrently with the ORR Standard listed in Task 2.

#### 2.1.1 Activities Performed During This Reporting Period

The first revision of DOE Order 5480.31 which has been under development and coordination for some period of time has been over come by events. A Secretarial initiative to reduce by consolidation the redundant requirements contained in DOE Orders has resulted in further revision of DOE Order 5480.31. The revision governing startup and restart of nuclear facilities is DRAFT DOE Order 440. The schedule for issue of this new Order makes it inappropriate to proceed with the page change at this time. The new Order and it's companion Implementation Guide will address those items which were committed to the DNFSB in response to their acceptance of the original DOE Order 5480.31.

### 2.2 TASK 2: DEVELOP A STANDARD ON THE PLANNING AND CONDUCT OF OPERATIONAL READINESS REVIEWS - COMPLETE

## 3.0 OTHER INFORMATION

The DNFSB's letter of April 29, 1994, provided comments on the current interim guidance for readiness reviews of weapons assembly and disassembly operations and requested specific schedules for revision of the interim guidance for readiness reviews of weapons assembly and disassembly operations, and for completion of the interim guidance for readiness reviews of nuclear explosive test operations at the Nevada Test Site (designated Test Readiness Assessments (TRAs)).

A second letter from the DNFSB on the same subject dated December 9, 1994, provided additional comments on the revised interim guidance for readiness reviews of weapons assembly and disassembly operations and requested information regarding DOE's actions to address these comments. The DNFSB also provided comments on the interim guidance for TRAs and requested that the draft document be revised to remove departures from the intent of Recommendation 92-6 and address the additional comments provided and that the revision be submitted to the DNFSB.

Albuquerque Operations Office (AL) is developing final readiness review requirements for weapon assembly/disassembly operations as part of the initiative to upgrade and rewrite the nuclear explosive and weapon safety program Supplemental Directives 5610.10 and 5610.11 (Recommendation 93-1). The DNFSB staff has participated in this development. The DNFSB comments contained in the December 9, 1994, letter will be addressed in the next draft of these documents. The Draft documents should be released by March 31, 1995.

AL Weapons Programs Division is also revising Chapter 3.7, "Weapon Assembly/Disassembly Readiness," of the AL Development and Production (D&P) Manual to address several areas of concern relative to readiness guidance identified during the W48 Qualification Evaluation (QE) for Dismantlement. This document provides interim readiness review guidance. This revision will address the comments provided by the DNFSB in the December 9, 1994, letter. The W48 QE generated several lessons learned which are being incorporated into the QE tasking letters and Chap 3.7. The DNFSB staff was involved in the two QE lessons learned working groups. Final guidance (Chap 3.7) will be delayed several months due to the actions required to incorporate these lessons to the Chap 3.7 guidance. Currently, DOE/AL issues tasking letters with guidance for specific warheads that will undergo the QE Processes before the revised Chap 3.7 is issued. Once Chap 3.7 is released, it will be the guiding document until the release of DOE Order 5610.10 and 5610.11.

Departures and comments identified by the DNFSB regarding TRAs have been addressed and coordinated with the DNFSB staff. The final revision of this document is attached.

This report is provided to satisfy implementation plan requirements for Recommendation 92-6 as well as to provide response to the DNFSB letters of April 29, and December 9, 1994. Specific actions to address comments provided in the DNFSB's letter of January 20, 1995, are being addressed in conjunction with the changes to the QE process and upgrades to Chap 3.7 of the AL Development and Production Manual. These actions will be forwarded for the DNFSB's review in April.

Following the issuance of DOE Order 440, and completion of the revisions to Chapter 3.7 of the AL D&P Manual, we consider the actions associated with this recommendation to be complete.

**U. S. DEPARTMENT OF ENERGY  
NEVADA OPERATIONS OFFICE**

**ORDER**

**Draft NV 56XF.1**

**3-14-95**

**Subject: TESTING READINESS ASSESSMENTS**

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1. **PURPOSE.** Provide policy and direction and establish authorities and responsibilities for U.S. Department of Energy/Nevada Operations Office (DOE/NV) Testing Readiness Assessments (TRAs) conducted at the Nevada Test Site.
2. **CANCELLATION.** None.
3. **SCOPE.** The provisions of this Order apply to all organizational elements of DOE/NV, DOE/NV contractors and subcontractors, associated agencies, and Nevada Test Site users; e.g., national laboratories.
4. **EXCLUSIONS.** None.
5. **REFERENCES.**
  - a. DOE Order 1324.2A, RECORDS DISPOSITION, of 9-13-88.
  - b. DOE Order 5480.31, STARTUP AND RESTART OF NUCLEAR FACILITIES, of 9-15-93.
  - c. DOE-STD-3006-93, PLANNING AND CONDUCT OF OPERATIONAL READINESS REVIEWS (ORR), of 11-93.
6. **DEFINITIONS.**
  - a. **Breadth.** The set of core requirements which are evaluated by the TRA team during conduct of the TRA.
  - b. **Depth.** The level of analysis, documentation, and/or actions necessary to evaluate an applicable core requirement.

- c. **Graded Approach.** A process by which the level of analysis, documentation, and actions necessary to comply with a requirement in this Order are commensurate with:
- (1) The relative importance to safety, health, emergency management, and environmental protection;
  - (2) The magnitude of any hazard involved;
  - (3) The life cycle stage of equipment or facilities;
  - (4) The programmatic mission;
  - (5) The particular characteristics of the weapons test; and
  - (6) Any other relevant factor.
- d. **Implementation Plan.** The procedural document by which the TRA is conducted. This document implements the policy and actions approved in the Plan-of-Action. The TRA Team defines the depth, or rigor to be applied to each assessment area, of the TRA in the Implementation Plan.
- e. **Performance Based Assessment.** A systematic approach of evaluation, based on an assessment of the level of adequacy and effectiveness at which requirements have been established and implemented and the level of knowledge and skills required for competent job performance. This assessment determines if the system, as a whole, adequately fulfills the identified requirements, places more emphasis on assessing for adequacy of system control, and places less emphasis on assessing each singular requirement and component.
- f. **Plan-of-Action.** The high level document describing the scope and prerequisites of the TRA, the composition of the team performing the assessment, and the approval authority. Line management defines the breadth of the assessment in the Plan-of-Action by relating the core requirements to the physical and administrative boundaries of the test phase.
- g. **Post-test Finding.** A finding that can be resolved after test activities have commenced.

- h. **Pre-test Finding.** A finding that must be corrected before the test phase can proceed.
  - i. **Readiness to Proceed Memorandum.** The formal document submitted by the Test Organization which certifies the conclusion that each of the test phases are prepared for the TRA to commence.
  - j. **Safety Basis.** The combination of information relating to control of hazards for a test (including design, engineering analyses, and administrative controls) upon which the Department depends for its conclusion that the test can be conducted safely.
  - k. **Scope.** The overall magnitude of the TRA as defined by the breadth of core requirements selected and the depth of evaluation of these core requirements during conduct of the TRA.
  - l. **Test.** An underground nuclear weapon test or other experiment which results in nuclear yield. This does not include hydrodynamic tests that have not been designed to produce a nuclear yield.
  - m. **Test Organization.** The organization formed for the purpose of conducting a test. The composition of the Test Organization may be readily adjusted or changed in response to the needs and technical objectives of the test program.
  - n. **Testing Readiness Assessment.** A disciplined, systematic, documented, performance based examination of facilities, equipment, personnel, procedures, and management control systems to ensure that testing operations are performed within the approved safety envelope as defined by the safety basis documentation listed in Section 10.a.3.
7. **POLICY.** Testing operations shall be carried out under the authority of the Atomic Energy Act of 1954, as amended; DOE Reorganization Act, Public Law 95-91, of 8-4-77; the Energy Reorganization Act of 1974; the Limited Test Ban Treaty, the Threshold Test Ban Treaty, and Peaceful Nuclear Explosions Treaty, and other international agreements; Nevada Test Site Environmental Impact Statement of 1977; and additional guidance as provided by the Assistant Secretary for Defense Programs, DOE Headquarters. These operations shall be conducted subject to programmatic and detonation approvals provided by the Detonation Authority.

It is the Department's policy that testing operations shall be conducted only after documented reviews of readiness have been conducted and the approvals specified in this order have been received. The TRA shall, in all cases, demonstrate that it is safe to conduct testing operations. The TRAs are not intended to be tools of line management to confirm readiness.

8. **OBJECTIVES.** TRAs shall provide an independent assessment of readiness to conduct a test in order to demonstrate that it is safe to conduct the test after line management has achieved readiness.

9. **RESPONSIBILITIES AND AUTHORITIES.**

a. **DOE/NV Manager.**

- (1) Initiates the preparation for the TRA for each test phase.
- (2) Concurs on the recommended TRA team leader and team member candidates for each test phase and forwards this recommendation to the Detonation Authority.
- (3) Reviews and concurs on the Plan-of-Action for each test phase and forwards the document to the Detonation Authority for approval.
- (4) Approves the Readiness to Proceed Memorandum and forwards the document to the Detonation Authority to initiate the TRA for each test phase.

b. **DOE/NV Assistant Manager for Operations.**

- (1) Recommends a TRA team leader and team member candidates for each test phase to the DOE/NV Manager.
- (2) Prepares the Plan-of-Action for each test phase.
- (3) Prepares the Readiness to Proceed memorandum upon completion of the TRA prerequisites for each test phase.

c. **Test Organization.**

- (1) Provides input for the Plan-of-Action for each test phase.



(2) Provides support and documentation for the TRA team as required.

(3) Corrects TRA pre-test and post-test findings.

d. TRA Team Leader.

(1) Responsible for overseeing the TRA process and acts as the interface between the team and test organization management.

(2) Defines the TRA team membership based on suitable candidates identified by DOE/NV Manager. The team shall include at least one member with qualifications to assess each applicable core requirement identified in the Plan-of-Action.

(3) Prepares and approves the Implementation Plan.

(4) Prepares and approves the TRA Report and forwards the document to the DOE/NV Manager and the Detonation Authority for action.

(5) Determines and documents the qualifications of the TRA team members.

e. TRA Team Members.

(1) Assist the TRA team leader in preparing the Implementation Plan.

(2) Develop criteria and review approaches for the team member's areas of assessment.

(3) Execute TRA objectives as assigned in the Implementation Plan or by the TRA team leadership.

(4) Assist the TRA team leader in preparing the TRA Report.

(5) Concur with the determination of test readiness and the conclusions presented in the TRA Report in the team member's area of assessment.

**10. REQUIREMENTS.****a. General.**

- (1) A TRA for each applicable phase shall be required prior to conducting a test if a test or hydronuclear experiment has not been conducted during the previous 12 months which demonstrated the capability of that phase.
- (2) A test is conducted in five distinct phases: (1) Device Assembly, (2) Delivery, (3) Insertion/Emplacement and Stemming, (4) Test Execution and Reentry, and (5) Post Shot Drilling. Some activities associated with a core requirement for a test phase are unique to that phase while other activities associated with a core requirement are common to all test phases. This difference shall be factored into the TRAs conducted for the test phases. A flow diagram depicting the TRA process for each test phase is shown in Attachment 1. The core requirements for the TRA are shown in Attachment 2.
- (3) The foundation for a TRA is the approved safety basis documentation. The minimum safety basis documentation for each phase shall include:
  - (a) Device Assembly - Basis for Interim Operation/Preliminary Hazards Assessment (Area 27 facilities only) and Nuclear Explosive Safety Study.
  - (b) Delivery - Containment Evaluation Panel Report and the Nuclear Explosive Safety Studies.
  - (c) Insertion/Emplacement and Stemming - Containment Evaluation Panel Report and Nuclear Explosive Safety Study.
  - (d) Test Execution and Reentry - Containment Evaluation Panel Report, Nuclear Explosive Safety Study, Nuclear Testing Restrictions and Guidance memo, DOE/NV Manager to Test Controllers, dated 4/21/92, and Planning Directive for Underground Nuclear Tests at the Nevada Test Site memo, Deputy Assistant Secretary for Military Application to DOE/NV Manager, dated 6/11/92.

- (e) **Post Shot Drilling - Final Hazard Analysis for Drillback Operations at the Nevada Test Site, TPO-94-U-054, dated 12/17/93.**
  - (4) **A Plan-of-Action, Implementation Plan, and TRA Report shall be prepared for each test phase based on the guidance in DOE Order 5480.31 and DOE-STD-3006-93. The resolution of all findings from the TRAs shall be documented and maintained with the Plan-of-Actions, Implementation Plans, and TRA Reports.**
  - (5) **The TRA is an independent verification of line management having achieved readiness to conduct a test.**
- b. TRA Personnel.**
- (1) **The TRA team leader shall be a senior individual with the necessary qualifications for managing and conducting the TRA. The basis of the qualifications should include the following:**
    - (a) **Technical familiarity with the activities and functional areas being assessed;**
    - (b) **Previous performance-based assessment experience or training;**
    - (c) **Demonstrated leadership and managerial skills; and**
    - (d) **TRA or ORR experience, or formal training.**
  - (2) **The TRA shall be conducted by personnel qualified in the technical activities involved. The TRA team leader shall determine and document the qualifications of the team members. The team members shall be selected based on the guidance in DOE-STD-3006-93. Attachment 3 shall be used to document the qualifications of each team member.**
  - (3) **The TRA team shall not include as TRA team leader an individual responsible for accomplishing the work being reviewed. Additionally, no TRA team member should review work for which he or she is directly responsible.**

- (4) The TRA team leader and team members shall be relieved of other responsibilities and shall be dedicated to the TRA during Implementation Plan development and the duration of the TRA.

**c. Plan-of-Action.**

- (1) The Plan-of-Action shall be based on the guidance in DOE-STD-3006-93 with the following modifications:
  - (a) The test phase shall be used in place of the facility name.
  - (b) A description of the test phase shall be used in place of the facility description.
  - (c) The relevant test organization groups shall be used in place of the responsible contractor.
  - (d) The designation of action shall be a restart.
  - (e) The Plan-of-Action shall designate the point in time that will be assessed taking into account that authorities to proceed must be in place before fabrication and shipment of critical components.
- (2) The Plan-of-Action shall be prepared by the DOE/NV Assistant Manager for Operations. The DOE/NV Manager reviews and concurs on the Plan-of-Action and forwards the document to the Detonation Authority for approval.

**d. Implementation Plan.**

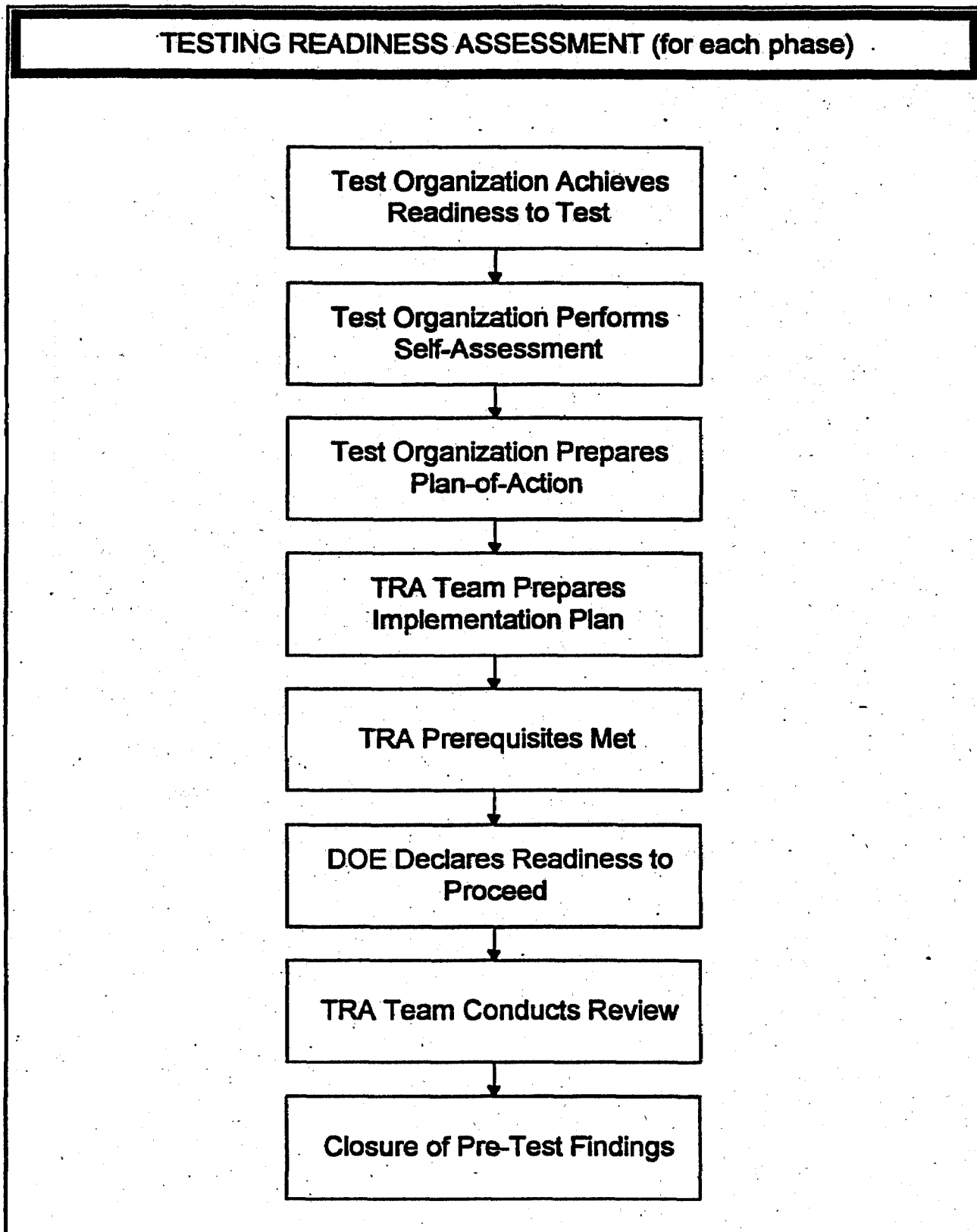
- (1) The Implementation Plan shall be based on the guidance in DOE-STD-3006-93 with the following modifications:
  - (a) The test phase shall be used in place of the facility name.
  - (b) A description of the test phase shall be used in place of the facility description.
  - (c) The relevant test organization groups shall be used in place of the responsible contractor.

- (2) The Criteria, Review and Approach documents included in the implementation plan, which define the depth of the review, will be standards-based. Use of and reference to specific requirements associated with individual review criteria shall be used to the greatest extent possible.
  - (3) The Implementation Plan shall be prepared by the TRA team leader and team members. The TRA team leader approves the Implementation Plan.
- e. Readiness to Proceed. The DOE shall initiate the conduct of the TRA when DOE line management, up to the Detonation Authority, have documented in writing their readiness to test. At the start of the TRA, all actions required for testing shall be completed with the exception of a manageable list of open pre-test findings that have a well defined schedule for closure to allow review of the results of the closure process by the TRA.
- f. TRA. The TRA shall be performed based on the guidance in DOE-STD-3006-93. Each team member's assessment activity, as well as findings, shall be documented on the standard forms shown in Attachment 4.
- g. Pre-test Findings.
  - (1) The Test Organization shall be required to satisfy all pre-test findings of the TRA prior to conducting a test.
  - (2) The mechanism for closure of TRA pre-test findings is described in DOE-STD-3006-93. This process includes:
    - (a) Development of action plans, approved by DOE, to correct the findings;
    - (b) Documentation of completion of response actions responding to the findings in a closure package; and
    - (c) DOE verification of closure of pre-test findings. The organization verifying the closure will be designated by the Detonation Authority.

**h. TRA Report.**

- (1) The TRA Report shall be based on the guidance in DOE-STD-3006-93 with the following modifications:
  - (a) The test phase shall be used in place of the facility name.
  - (b) A description of the test phase shall be used in place of the facility description.
  - (c) The relevant test organization groups shall be used in place of the responsible contractor.
  - (d) Pre-test and post-test findings shall be used in place of pre-start and post-start findings.
- (2) The TRA Report shall be prepared by the TRA team leader and team members. The TRA team members shall concur on the Report and the TRA team leader shall approve the Report.
- (3) Additionally, there shall be a "Lessons Learned" section in the final report which may be applied to future TRA efforts. This section may be completed subsequent to testing operations.
- (4) The TRA Report shall be submitted to the DOE/NV Manager for action.
- (5) The final report shall be submitted to the Detonation Authority as a basis to grant approval for testing operations.

- i. **TRA Corrective Action Plans.** The Test Organization shall prepare corrective action plans based on the guidance in DOE-STD-3006-93 with pre-test and post-test findings used in place of pre-start and post-start findings.
- j. Once the DOE process has been completed and all pre-test findings are satisfactorily resolved, permission to conduct testing operations shall be granted by the Detonation Authority.
- k. All documents pertaining to TRAs shall be maintained in accordance with DOE Order 1324.2A, RECORDS DISPOSITION, of 9-13-88.



**TESTING READINESS ASSESSMENT CORE REQUIREMENTS**

Each of the core requirements listed below, as a minimum, must be addressed when developing the breadth of a TRA. Justification must be provided in the Plan-of-Action if it is determined that a particular core requirement is not applicable or will not be assessed. The Plan-of-Action may reference a timely, independent assessment which addressed the requirements in a technically sound manner to justify not performing further evaluation of a core requirement during conduct of a TRA. A graded approach shall be used to determine the level of analysis, documentation, and/or actions necessary to evaluate core requirements listed below or other core requirements in the defined breadth of the TRA. The minimum core requirements are as follows:

**DEFICIENCY SYSTEM** - A process has been established to identify, evaluate, and resolve deficiencies and recommendations made by oversight groups, official assessment teams, assessment organizations, and the Test Organization.

**EXERCISES** - An integrated exercise program and a dry run program, including program records, has been established and implemented. The integrated exercise program and dry run program rehearses normal, abnormal, and emergency activities associated with each phase of a nuclear device test.

**MANAGEMENT** - Functions, assignments, responsibilities and reporting relationships are defined, understood and implemented with line management responsible for control of safety. Management programs are established to ensure test support services defined for the test phase are adequate for conducting the test. A program is established to promote a site-wide culture in which personnel exhibit an awareness of and demonstrate through their actions a high priority commitment to comply with worker and public safety, health, emergency management, and environmental protection requirements.

**PERSONNEL, TRAINING AND QUALIFICATION** - There are sufficient numbers of qualified key test personnel and test support personnel defined for the test phase to support safe conduct of a test. Level of knowledge of key test personnel and test support personnel defined for the test phase is adequate based on assessments of exercises or examinations and on selected interviews. Training and qualification programs for key test personnel and test support personnel defined for the test phase have been established, documented and implemented. Modifications to equipment and facilities have been assessed for potential impacts on training and qualification. Training has been performed to current procedures.

**PROCEDURES** - There are adequate procedures for conducting test activities. The procedures are consistent with the safety basis. Procedures reflect equipment or



facility modifications. A program has been developed that includes adequate plans for graded testing to confirm the viability of procedures.

**REQUIREMENTS COMPLIANCE** - A systematic assessment of conformance to applicable requirements for the test phase has been performed, any nonconformances have been identified, and schedules for gaining compliance have been justified in writing and formally approved.

**SAFETY BASIS** - Safety documentation is in place that describes the "safety envelope" of the test activities. The safety documentation characterizes the hazards/risks associated with the test activities. The safety documentation identifies positive measures (systems, procedures, administrative controls, etc.) that protect workers and the public from those hazards/risks. Systems essential to worker and public safety are defined. There are adequate safety limits for conducting test activities.

**SAFETY SYSTEMS** - A program is in place to confirm and periodically reconfirm the condition and operability of safety systems and includes examinations of records of tests and calibration of safety systems. A program to maintain control over the design and modification of equipment and facilities is established. All safety systems are currently operable and in a satisfactory condition. The safety systems are consistent with the description of the test included in the safety basis. Adequate facilities and equipment are available to ensure test support services defined for the test phase are adequate for conducting the test.

**TEAM MEMBER QUALIFICATION SUMMARY**

**TEAM MEMBER NAME:** \_\_\_\_\_

**CORE REQUIREMENT TECHNICAL AREA(S) ASSIGNED:** \_\_\_\_\_

**EMPLOYER/NORMAL WORK ASSIGNMENT:** \_\_\_\_\_

**SUMMARY OF TECHNICAL QUALIFICATIONS: (Relevant to assigned area(s))**

**SUMMARY OF ASSESSMENT/ORR/TRA/INSPECTION QUALIFICATIONS:**

**SUMMARY OF TEST PHASE FAMILIARIZATION:**

**BASIS FOR ACCEPTABLE INDEPENDENCE:**

**ACCEPTABLE TO TEAM LEADER:** \_\_\_\_\_

TRA Team Leader Signature

**TRA ASSESSMENT FORM**

Functional Area:	CRA Number/Title:	Date:
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Method of assessment (short narrative description):

Personnel contacted/position:

Records & other documents assessed:

Activities witnessed:

Discussion:

Conclusion:

Inspected by:	Approved by: _____ TRA Team Leader Date:
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**TRA DEFICIENCY FORM**

<b>Functional Area:</b>	<b>CRA Number/Title:</b>	<b>Date:</b> <b>ID #:</b>
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**Requirement:**

**Reference(s) (specific as to section):**

**Issue: Finding** \_\_\_\_\_ **Observation** \_\_\_\_\_

**Discussion:**

<b>Finding Designation:</b> <b>Pre-Test</b> _____ <b>Post-Test</b> _____	<b>Inspector:</b>
<b>Group Leader:</b>	<b>Approved by:</b> _____ <b>TRA Team Leader</b>
<b>Date:</b>	<b>Date:</b>

**TRA FINDING RESOLUTION FORM**

<b>Functional Area:</b>	<b>CRA Number/Title:</b>	<b>ID #:</b>
<b>Issue:</b>		
<b>Finding Designation:</b>	<b>Pre-Test</b> _____	<b>Post-Test</b> _____
<b>Date Received:</b>		
<b>Responsible Individual:</b>		
<b>Phone Number:</b>		

**Action Plan:**

**Resolution:**

**Corrective Action Completion**

<b>Certified by:</b> _____	<b>Date:</b> _____
<b>Verified by (Pre-test only):</b> _____	<b>Date:</b> _____