94-0003402

Department of Energy
Washington, DC 20585

JUN 30 1994

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:

This fifth progress report provides a summary of actions conducted in accordance with Recommendation 93-1 Implementation Plan (IP) and other interactions with the Board staff during the April-June 1994, period.

During this period, the working group completed the preliminary findings of Action 3. These findings were presented to the Board staff in a draft document dated May 27, 1994. The 93-1 working group completed Action 3 and initiation of Action 4 nuclear safety and nuclear explosive safety orders evaluations and initiated Action 4 of the Department's IP. Details concerning individual Recommendation 93-1 actions are presented in Enclosure 1. Some highlights include:

Action 3 - "Identify the areas of inconsistency or discontinuity between the sets of Nuclear Safety Orders and Nuclear Explosive Safety Orders".

A progress briefing was provided to the DNFSB staff on May 5, 1994, concerning the Action 3 status and schedules and proposed Action 4 activities. On May 20, 1994, a background briefing was provided to the DNFSB staff and support personnel on Action 3 evaluation methodology and report organization. The briefing also included background information concerning the previously delivered Action 1 and 2 reports.

The preliminary results of Action 3 were forwarded as draft documents on May 27, 1994. The draft contained: (1) extract copies of controlling orders and directives; (2) the SME worksheets with the SME-Critical Safety Elements team observations, findings, and issues resolutions; and (3) supporting quality assurance and technical review worksheets and comments.

DOE will provide a final copy of the Action 3 report pending internal coordination of Action 3.

Action 4 - "Where appropriate, identify areas where the Orders and directives can and should be strengthened."

Action 4 activities were initiated on May 23, 1994. This comparison forms the basis of a DOE plan to strengthen the orders governing facilities that assemble, disassemble, or test nuclear explosives.

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Action 5 - Expedite Order Compliance Review.

A meeting was held between the staff of the DNFSB and Defense Programs on April 29, 1994, on the status of order compliance self-assessments at the facilities described in the IP, Action 5. Reports for each facility are being prepared (Pantex, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, and the Nevada Test Site) with the goal for report completion by June 24, 1994.

Schedule

Recommendation 93-1 near-term activities and schedule have been discussed with DNFSB staff during meetings in the April-May 1994, period. Preparation of the Action 4 report is proceeding and a first draft was completed on June 24, 1994.

If further information is needed regarding this report, please contact Captain David Olson at 301-903-3463.

Sincerely,

Charles J. Beers, Jr
Rear Admiral, U.S. Navy
Acting Deputy Assistant Secretary for
Military Application and
Stockpile Support
Defense Programs

3 Enclosures

Enclosure 1

PROGRESS REPORT
APRIL-MAY 1994
DEFENSE NUCLEAR FACILITIES SAFETY BOARD
RECOMMENDATION 93-1

Action 3 - Identify the areas of inconsistency or discontinuity between the sets of Nuclear Safety Orders and Nuclear Explosive Safety Orders, if any.

A subject matter experts (SMEs) group reconvened on April 15-18,1994, to complete the Action 3 evaluations. Participants included DOE Headquarters (DP-21, EH-30, EH-60, DP-23, DP-25, DP-12, DP-12, DP-13, and 31, and consultants), the Albuquerque and Nevada Operations Offices, Pantex and Nevada Test Site Management and Operating (M&O) contractors, and the weapons laboratories and other contractor support personnel.

The Federal employees and other personnel selected for service as SMEs had the background and experience to provide a breath and depth of capabilities for the Action 3 analysis in specific subject areas. The SME personnel have knowledge and experience in the areas of nuclear explosive safety, explosive safety, nuclear facility operations, commercial nuclear safety, in addition to personnel with environmental, safety, and health backgrounds.

SME working teams of five-eight personnel were formed to provide an appropriate mix of background and experience in nuclear explosive test, assembly and design operations to match the basic capabilities desired for the specific Critical Safety Elements (CSEs) groupings. The CSEs had previously been grouped into six major areas, reflecting a number of common skills and knowledge associated with related topics.

The Action III analysis CSE Groups used by the SME Teams were: Group 1: Plant and Hardware and Management Systems, Group 2: Operations and Procedures and People, Group 3: Safety Programs and Environmental Safety and Health. This permitted tailoring the SME groups to the specific subject matter, and promoted continuity of effort during the evaluation period as new personnel were added to the SME teams. This became valuable towards the end of the evaluation period and after personnel returned to their normal duty location. Team members continued their efforts through telephone conferences, facsimile transmissions, and other techniques in order to continue the evaluation process after leaving the Washington area. This permitted the team members to consider reviewer comments after they departed the area.

Mentors were employed to promote SME team interaction and dynamics and to identify areas of potential weakness for specific CSEs. When specific background and experience deficiencies were identified, action was taken to obtain a new team member or special consultant to improve capabilities of the SME teams. In addition, this action broadened the individual team's background and experience with a mixture of NRC, commercial/industrial operations, nuclear explosive operations, Naval/military reactors experience, and other nuclear activities. Team sessions were conducted to review the CSEs; where necessary, develop subelement descriptions, and complete the technical analysis. This was followed by a generalized

technical reviews on a near real-time basis, preliminary quality assurance reviews were performed and provided the individual SME Team for early resolution.

The Action 3 report contains the DOE nuclear explosive safety and nuclear safety orders evaluation results which were scheduled for delivery to the DNFSB on May 27, 1994. This report was produced through a cooperative effort involving Headquarters organizations (DP-21, DP-31, EH-30 and EH-60), the Albuquerque and Nevada Operations Offices, the national laboratories (SNL, LLNL, and LANL) and the Pantex and NTS management and operating contractors. The Action 3 results provide the basis for development of the corrective action plan scheduled in Action 4.

Action 4 - Identify areas where the Orders and directives can and should be strengthened, where appropriate.

The first meeting of the Action 4 Technical Planning Group responsible for developing the Recommendation 93-1 Corrective Action Plan met at the Nevada Operations Office on May 24, 1994. Primary activities directed toward the aggregation of the individual CSE evaluation results were grouped to assist in the resolution of the inconsistencies and discontinuities identified in the Action 3 report.

An Action 4 task group composed of representatives from HQ (DP-21, DP-31, EH-30, and EH-60), the Albuquerque and Nevada Operations Offices, and other staff as may be required, will conduct working meetings at DOE/HQs during the June 9-17, 1994, period to prepare the Action 4 report. The task group will evaluate the current department's program to upgrade and revise the ES&H orders and directives, the operations offices initiatives, and corrective action plans resulting from other DNFSB Recommendations. The Action 4 report is scheduled to be submitted by June 24, 1994.

Action 5 - Expedite Order Compliance Review.

A meeting was held between the staff of the DNFSB and Defense Programs on April 29, 1994, on the status of order compliance self-assessments at the facilities described in Implementation Plan Action 5. It was agreed that an outline (provided by Jim McConnell, DNFSB staff) could be used to develop reports appropriate to close the sub-recommendation 4 of Recommendation 93-1 Implementation Plan Action 5. This outline was provided on May 6, 1994, and reports for each facility are being prepared (Pantex, Livermore National Laboratory, Los Alamos National Laboratory, and the Nevada Test Site) with the goal for completing the reports by July 22, 1994, and submission with the sub-recommendation 3 final report at the same time.

Board Staff Meetings:

Two briefings for the Board staff were held during this period. Enclosure 2 provides a copy of the minutes from the May 5, 1994, meeting with a summary of the briefing materials used during that meeting. The second meeting occurred on May 20, 1994, with the principal focus of providing background and procedural information on Recommendation 93-1 activities. A copy of the minutes and briefing materials are found at Enclosure 3.

Enclosure 2

DNFSB RECOMMENDATION 93-1 DISCUSSIONS WITH DNSFB STAFF

May 5, 1994

SCOPE:

A status briefing and discussions were held with the Defense Nuclear Facility Safety Board (DNFSB) staff on May 5, 1994. The purpose was to appraise the DNFSB Staff on Action 3 developments to include preliminary results and conclusions, initial Action 4 activities, and the proposed schedule for Action 3 and Action 4 reports delivery during the May-June 1994 period.

The participating personnel are shown on the attached attendance list (Appendix 1).

The briefing outline is provided (Appendix 2).

ACTIONS:

At the end of the meeting, the Board staff accepted the proposed Recommendation 93-1 activities schedule:

Action 3 Report	Board Deliverable	May 20, 1994
Action 3 Process Training	Training Session for Board Staff	May 20, 1994
Status Briefing	Board Staff	June 14, 1994 (1 P.M.)
Action 4 Report	Board Deliverable	June 24, 1994

SUMMARY OF DISCUSSIONS:

Action 3:

The Board staff requested information concerning the Quality Assurance and other review work sheets for the Action 3 data packages. Response was provided that quality assurance (QA) and technical review worksheets will be included in the individual CSE data packages.

Questions were raised by the Board staff concerning the variability in Subject Matter Expert (SME) team operations and their results. Discussions focused on SME Team improvements which occurred during the three working sessions. The Department representatives discussed some inconsistencies which occurred during the first SME meetings with differences in SME team operations and the results. They described the evolutionary actions to enhance SME team dynamics: expanding membership from Pantex and NTS-site personnel, DP and EH members, and the Albuquerque and Nevada operations offices.

The Department believes that improvements through increased EH-personnel participation, mentoring, and quality review feedback to the teams have benefitted the process and the product, and other improvements are being pursued during the final Action 3 review process. Several examples of CSEs requiring rework by the SME teams were discussed: training and qualifications, safety analysis, and criticality safety. Final results of these changes will be identified in the final package which will be presented to the Board.

The Staff indicated their interest in the review and comment resolution process, and the methods and means which will be used to document the process. An extended discussion occurred on the methods and means to be employed for review comment resolution. It was discussed that the anticipated general review comments could be binned into several groups: (1) no comment required when reviewer agrees with the evaluation; (2) comparatively minor comments which could be easily resolved; and (3) more complex situations which might require reworking the evaluation.

At the time of the briefing, only two CSE packages had been returned following EH-reviews, and no major disagreements or issues had been identified. The review results will be retained in the CSE data package permanent records.

The Board Staff prompted discussions on the preliminary results which can be drawn from the work to date. The Department's interpretation of 93-1 includes issues identification, and the process appears to be working. The evaluation has identified areas where a particular HQ DOE order does not cover a single topic, but the collective material of several orders may do so. In addition, there are instances where supplementary directives cover a topic without a corresponding HQ level order.

The Board staff expressed concerns that NUREG-1324, as the CSE-basis may not provide the best yardstick for the Action 3 evaluation. While the 93-1 evaluation could conclude that the existing orders provide equivalent safety assurance, there exists the possibility that the underlying orders might be compared to an inadequate CSE thus making the conclusions questionable. The Decommissioning and Decontamination CSE became the focus of discussion on the inadequacy of the CSE. The Department representatives believe the issue of orders adequacy is outside the bounds of Recommendation 93-1 actions, and would be handled either under Recommendation 90-2 or via other process.

The Board staff expressed a desire to see the complete CSE evaluation worksheet data packages when the Action 3 report is forwarded. This would provide a complete CSE package for their review. The Department's representatives accepted this action.

The Board staff requested that an orientation or training session on the Action 3 process be provided for their reviewers. This request was accepted and a session will be scheduled with the Board staff for the afternoon of May 20. They would like one or more of the SME team chiefs to attend. This action was accepted.

Ted Lewin, Sonalysts, Inc., provided mentoring comments on the Action 3 SME process activities. The quality of the SMEs is considered to be generally

satisfactory while the quality of the SME teams has varied during the process, due mostly to different approaches taken by the three teams. One group remained and worked together during the entire period while the others had different levels of participation by other SME and EH personnel. His comments included observations on the confusion caused by the different exclusion and/or exemption statements affecting the nuclear explosive assembly, disassembly and testing operations. Overall, the process appears to be working and the final product should be reasonable.

Also, the Board staff was interested in the use of "standards" in the orders evaluation processes. The department representatives stated that specific standards are included under the orders prescribing them, but were not specifically addressed during Action 3.

Action 4:

No significant comments were generated when the proposed Action 4 process was presented. The preparation and review cycle for Action 4 will begin when the Action 3 product is being prepared. No significant delays are anticipated in the Action 4 delivery date of June 24, 1994.

General comments were made concerning the possible impacts of the department's program to reduce the numbers of orders. Consensus of the discussion was that it was not possible to evaluate any impact at this time.

General:

The Board staff commented that Recommendation 93-1 efforts had evolved since last year, and the results of this work might provide some assistance to the people supporting Recommendation 93-6 operations which are currently getting started. Specifically, monthly meetings were helpful to the process. Department personnel stated that they thought monthly meetings with the Board staff were helpful especially during the early days of this process.

Appendix 1

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
93-1 Meeting
May 5, 1994
- Attendance List -

Monet Harrison	AL	505/845-5378
David Olson	HQ/DOE	301/903-3463
Thomas M. Mills	HQ/DOE(DP-21/SRA)	301/903-4802
Robert F. Miller	AL (Stone & Webster)	505/845-5775
J.T. Arcano	DNFSB Staff	202/208-6547
Ralph Arcano	DNFSB Staff	202/208-6547
David Cleaves	MITRE	703/883-5470
Shiv Seth	MITRE	703/883-5440
Dennis Kelly	MITRE	703/883-7823
T.E. Lewin	Sonalysts, Inc.	301/417-9774
Victor Loczi	DOE/DP-311	301/903-3892
Ed Little	Sonalysts, Inc.	301/417-9774
S. L. Krahn	DNFSB Staff	202/208-6400
Farid Bamdad	DNFSB Staff	202/208-6588
Joe Roarty	DNFSB Staff	202/208-6436
Sol Pearlstein	DNFSB Staff	202/208-6407
Jim Ahlgrimm	DOE/EH-6	202/586-3685
Steve Guidice	DOE/AL	505/845-5378
Lester Ettinger	DNFSB Staff	202/208-6439
Jim Mc Connell	DNFSB Staff	202/208-7479
Don Owen	DNFSB Staff	202/208-6580
Mike Mitchell	DOE/DP-24	301/903-9408

DNFSB Briefing
Recommendation 93-1
May 5, 1994

Appendix 2

Agenda

- Introduction
- Action 3
  - Process
  - Status
  - Preliminary Results
  - Issues/Concerns
  - Action 3 Report
- Action 4 Process and Schedule
- Independent Evaluator's Comments

Action 3 Process

- Three SME working sessions
  - Participation
  - Board Staff observation
  - Independent evaluator observation
- Working session format
  - Team
  - Complete evaluation worksheets
- Worksheet reviews
  - QA checklist for completeness
  - Technical reviewer comments
  - Independent evaluator comments

DNFSB Recommendation 93-1
Evaluation Worksheet

CSE: _____ **Site (circle one or both)**

Subelement: _____ **Pantex** **NTS**

Statement: (from CSE description or excluded Order requirement)

_____

_____

_____

_____

_____

_____

Applicable Requirements: Attach copies of Order/Directive page(s) marked to indicate applicable requirements.

Evaluation:	**Notes**
1. Do applicable Orders and Directives contain requirements that address the statement or part of the statement? Yes [ ] Continue evaluation No [ ] Result: **DISCONTINUITY**	
2. Do the requirements include objectives equivalent to those in the statement? Yes [ ] Continue evaluation No [ ] Result: **INCONSISTENCY** Identify: _____ _____ _____ _____ _____ _____ _____ _____	

DNFSB Recommendation 93-1
Evaluation Worksheet

Evaluation:	Notes
3. Do the requirements include methods equivalent to those in the statement? Yes [ ] Result: **ACCEPTABLE** No [ ] Continue evaluation Identify methods not included or not equivalent: _____ _____ _____ _____ _____ _____ _____ _____ _____	
4. Do the methods provide a greater or equal level of safety assurance? Yes [ ] Result: **ACCEPTABLE** No [ ] Result: **INCONSISTENCY** No methods [ ] Result: **INCONSISTENCY** Describe analysis: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	

Action 3 Process
(concluded)

- Evaluation Summaries
  - Drafted by working group at AL
  - Participation
  - Further evaluation as necessary to resolve technical review comments

- Reviews of summaries in progress

Action 3 Status

- Evaluation performed for all 36 Critical Safety Elements (CSEs)
- Twenty Draft CSE Summary Reports completed through April 29
  - CSE Summary
  - Evaluation Summary
  - Conclusion
  - Recommendations (optional)
- Submitted to Board Staff for information
- Draft reports for all 36 CSEs to be completed by May 6
  - To Board on May 20

Action 3 Preliminary Results

- Results of comparison to both
  - NUREG-1324 based CSE description
    - Commercial nuclear facility standard
  - Orders excluded from nuclear explosive facilities/operations
    - DOE nuclear facility standards

- Discontinuity
  - Applicable Orders/directives do not address CSE (or part of CSE) or excluded Order

- Inconsistency
  - Applicable Orders/directives address CSE or excluded Order, but
    - Don't include all objectives
    - Methods less detailed or less rigorous
  - Applicability not clear

- Acceptable
  - Applicable Orders/directives adequately address the CSE and excluded Orders

Action 3 Preliminary Results General

- Applicable Orders may collectively address a CSE, but there is no single Order that directs an integrated program
- Lack of clarity in specifying applicability
  - Facility vs. Operation
  - Consistency in "exclusions"
- DOE Order 5480.19 addresses most conduct of operations issues
  - Written for reactors or process plants
  - Application to nuclear explosive operations not always explicit
- Several elements addressed by operations office directives
  - But no HQ-level direction
- Many nuclear explosive safety requirements less detailed than equivalent nuclear facility safety requirements
- Other hazards in nuclear explosive facility not addressed
  - NES only address nuclear explosive hazard (main charge and pit)

Action 3 Preliminary Results Example

CSE #3: Safety Committees

- **DOE requires several committee-like groups to review safety**
  - **Such as NESSG**
- **But no requirement for safety committee comparable to that at commercial facilities**
- **Results:**
  - **Discontinuity for facilities**
    - **No requirements for safety committees**
  - **Inconsistency for nuclear explosive operations**
    - **NESSG is a committee to assess safety of operation**
    - **But not equivalent to commercial safety committee**

Action 3 Preliminary Results Example

CSE #5: Occurrence Policies

- **DOE policy primarily in DOE 5000.3B**
  - **Applies to all facilities**
- **DOE 5610.11**
  - **Defines reportable events unique to nuclear explosive operations**
  - **Complements DOE 5000.3B**
- **Result: Current policy is acceptable**
  - **No recommendations**

Action 3 Preliminary Results Example

CSE #10: Other Limits, Control, and Tests
Subelement a: Operating Limits

- **DOE Order 5481.1B (for nonnuclear facilities)**
  - **General requirement for safety analysis to define operational limitations**
- **AL Order 5481.1B expands exclusion statement of DOE 5481.1B to exclude operations involving assembly, disassembly, handling, storage and transportation of nuclear explosives**
- **DOE Order 5480.22 (for nuclear facilities)**
  - **Provides detailed instructions for developing operating limits**
- **Results:**
  - **Discontinuity (Pantex)**
    - **Applicable Orders do not address operating limits**
  - **Inconsistency (NTS)**
    - **Applicable Orders address operating limits, but only in general terms**
    - **Not as rigorous as for DOE nuclear facilities**

Action 3 Preliminary Results Example

CSE #14: Maintenance Programs

- **DOE Order 4330.4B provides guidelines for maintaining all government property**
  - **Based on graded approach**
  - **Chapter I for nonnuclear facilities (nuclear explosive facilities)**
  - **Chapter II for nuclear facilities**
    - **More detail and rigor than Chapter I**

- **Evaluation:**
  - **Graded approach instructions are to add detail and rigor to Chapter I if determined to be necessary - can use that in Chapter II**
  - **If implemented properly, Chapter I provides requirements equal to Chapter II**

- **Result: Applicable requirements equivalent to those for nuclear facilities**

- **Recommendation:**
  - **Revise policy to make Chapter II apply to items important to nuclear explosive safety**

Action 3
Issues/Concerns

- Evaluations - accuracy and completeness
  - Level of detail
  - Content of evaluation documentation package
- EH review
- Participating SMEs
- Ongoing issuance of requirement documents
  - Revised Orders
  - 10CFR800 series of regulations

Action 3 Report

- Content
  - Executive Summary
  - 35 CSE appendices (Accident analysis combined with hazards analysis)
    - Evaluation summary
    - Results sheet
  - Worksheets will not be in report - available on request
- Tentative Schedule
  - Complete draft by May 13
  - Submit to Board by May 20

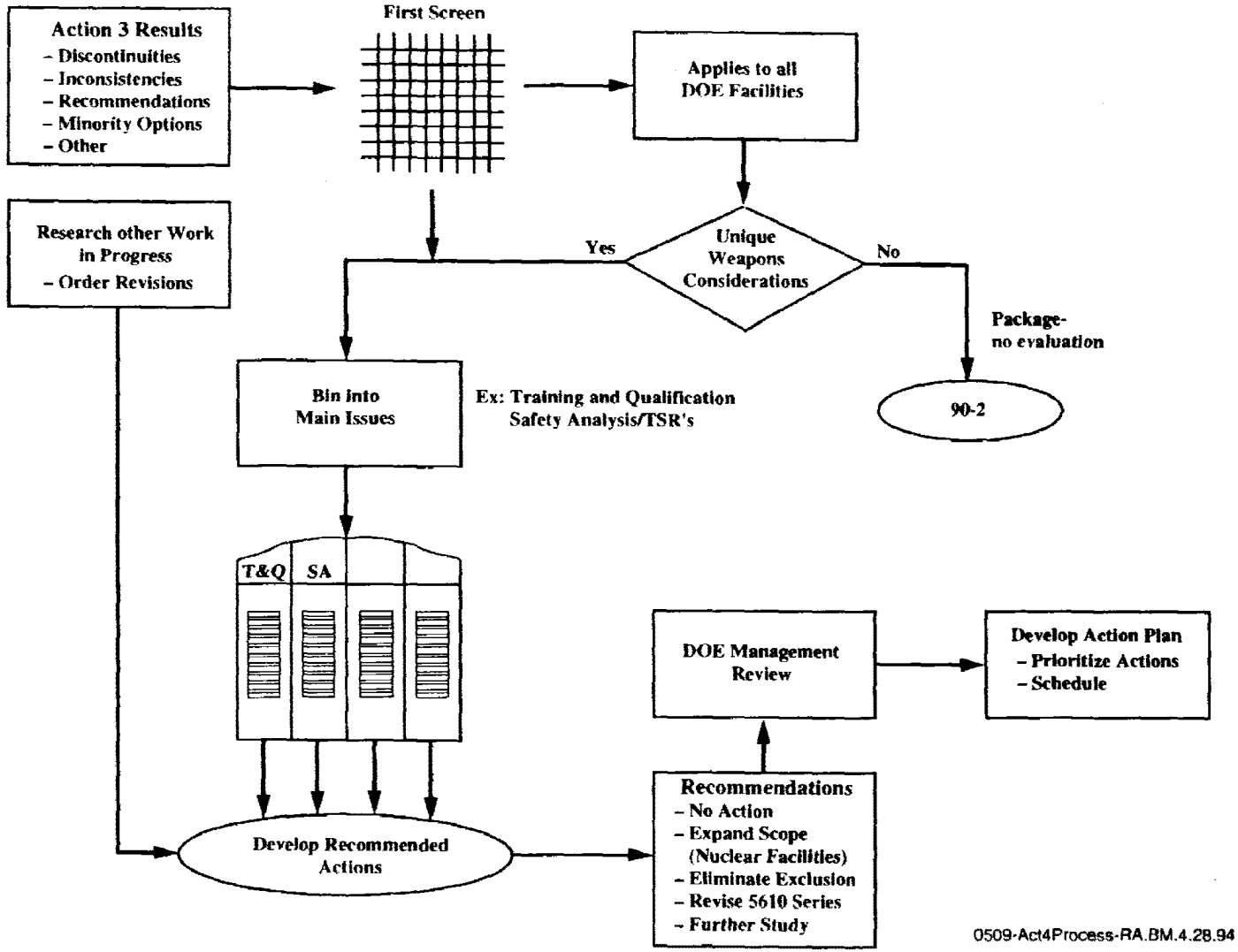
Action 4

- **Implementation Plan statement**

  The Department will, where appropriate, identify areas where the Orders and Directives can and should be strengthened

- **Implementation Plan Course of Action**
  - **Develop prioritized list of recommended changes**
  - **Develop plan and schedule**

Action 4 Process



Action 4
Tentative Schedule

- **May 16** — **Begin Action 4 - bin Action 3 results**
- **May 24-25** — **Working session to develop recommendations**
- **June 10** — **Complete draft of corrective action plan**
- **June 24** — **Complete DOE management reviews and submit to Board**

Enclosure 3

DNFSB STAFF BRIEFING

MAY 20, 1994

SCOPE:

A program status and orientation briefing for the Defense Nuclear Facilities Safety Board (DNFSB) staff and personnel was held at the DNFSB on May 20, 1994.

An attendance list is enclosed (Appendix 1), while copies of the briefing materials are found at Appendix 2.

The primary focus of this meeting was to provide the DNFSB staff and their contractor support personnel with background information in preparation for review of the Recommendation 93-1 Action 3 Report. Supporting information and reports which had been submitted to the Board under Actions 1 and 2 were identified for reference during the Action 3 review process:

Action 1 Reports:

> Identification of Operations and Facilities involved with nuclear explosive assembly, disassembly and test operations.
>
> The DOE Orders and supplementary field office directives covering nuclear safety and nuclear explosive safety.

Action 2 Reports:

> Critical Safety Elements (CSE) descriptions, to include excluded order attributes.
>
> Matrix of DOE Level 1 Orders of Interest to the Board against the Applicable CSE attributes.

Action 3 Report:

> CSE Evaluations (Observations, Conclusions and/or recommendations)

SUMMARY OF DISCUSSIONS:

The Recommendation 93-1 presentation to the Board (attachment 2) focused on background information concerning Actions 1 and 2 activities and associated topical reports. Principal issues discussed included:

The project focus is the Pantex and Nevada Test Site facilities and operations directly associated with nuclear explosive assembly, disassembly and test operations.

The main evaluation goal was to identify inconsistencies and/or discrepancies in the DOE policy drivers related to nuclear explosive operations.

Recommendation 93-1 covers the nuclear explosive safety orders applicable to the Pantex and NTS operations, as well as the other nuclear safety orders related to nuclear and nonnuclear facilities.

Action 1 identified the nuclear safety and nuclear explosive safety orders and directives to be evaluated and clearly identified the specific facilities and operations to be included in the evaluation.

Action 2 required the development of the Critical Safety Elements for use as the Action 3 evaluation yardstick, and the identification of the order attributes with the respective CSEs for the orders evaluation process.

Action 3 assessed the DOE Level 1 Orders dealing with nuclear explosive operations, and not with the Orders compliance aspects of those operations which are considered under Recommendation 90-2.

Scope and format of the Action 3 report.

Following the presentation, a questions and answer session was conducted for the DNFSB representatives and provided them the opportunity to question Department representatives on a variety of related topics. Concurrent small group discussions were held between the DNFSB staff/designated reviewers and Department representatives concerning the working of the different SME groups.

Topics discussed included the rationale for organizing teams along subject matter lines, with personnel adjustments in team membership to provide necessary background and professional experience for the specific team needs related to the CSEs the team was evaluating. The Action 3 SME working group organization:

Team 1, CSE Team One:
Team Leader: V. Loczi, DP-31,
CSE Groups I and IV

Team 2, CSE Team Two
Team Leader: J. Snell, EH-63
CSE Groups III and IV

Team 3, CSE Team Three
Team Leader: T. Hunsaker, NV
CSE Groups V and VI

A significant interest topic to the Board staff and their reviewers was the consistency of SME team results. Mentor comments were provided each day on the CSE evaluation process, team operation and group dynamics. Recognizing the differences in CSE topics, the CSE evaluation and review process was discussed with the Board staff and reviewers on actions taken to achieve the best results.

Following SME team deliberations, the completed CSE package was feed into a quality assurance audit to determine if all CSE subelements had been addressed, that the CSE worksheets reflected SME Team comments, and that required supporting documentation was present (extract pages of orders and directives, etc.). This process also identified any other actions necessary to complete the CSE analysis. The annotated CSE package was returned to the Team Chiefs for anniditonal work, if required.

Following QA comment resolution, a technical review assured that the CSE data packages contained all information necessary to support the findings and conclusions. The final technical review was completed during the Action 3 CSE summary report preparation.

The final conclusions and results received an independent technical review from the DOE Environmental Safety and Health office personnel (EH-30 & EH-60) using personnel not previously participating in Recommendation 93-1 work, where possible. This step identified issues concerning the DOE ES&H Orders revisions currently in progress, as well as considering other departmental initiatives related to nuclear safety orders.

The reviewers assured that no critical order safety element applying to nuclear explosive operations was overlooked or had been interpreted incorrectly. The final reviewer comments were used to modify individual CSE summary sections in the Action 3 report.

At the end of the briefing and discussion session, CSE data folders containing copies of all documentation for each CSE evaluation were provided the Board staff. Approximately sixty percent of the CSE folders were provided on May 20, 1994, with the remaining folders forwarded during the following week. The final CSE data folder was delivered on May 31, 1994.

Appendix 1

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
93-1 ACTION 3
Briefing/Training
May 20, 1994
- Attendance List -

Jim Mc Connell	DNFSB Staff	202/208-6479
Jan Preston	DNFSB Staff	202/208-6562
Thomas M. Mills	DOE/DP-21 (SRA)	301/903-4802
David Olson	DOE/DP-21	301/903-4931
Lester Ettlinger	DNFSB Staff	202/208-6439
Bill Von Holle	DNFSB Staff	202/208-6588
Joe Roarty	DNFSB Staff	202/208-6436
David Cleaves	MITRE	703/883-5470
Daisy Ligon	MITRE	703/883-6840
Timothy J. Dwyer	DNFSB Staff	202/208-6659
Dan Burnfield	DNFSB Staff	202/208-6609
Dennis Kelly	MITRE	703/883-7823
Ahmad Faramarzi	MITRE	703/883-6388
Matthew Moury	DNFSB Staff	202/208-6645
Ralph Arcano	DNFSB Staff	202/208-6547
John Drain	DNFSB Staff/OE	703/351-8345
Ralph West	DNFSB Staff/OE	703/351-8357
T.E. Lewin	Sonalysts, Inc.	301/417-9774
E.S. Little	Sonalysts, Inc.	301/417-9774
Victor Loczi	DOE/DP-311	301/903-3892
Albert G. Jordan	DNFSB Staff	202/208-6560
Herb G. Maasie	DNFSB Staff	202/208-6559
Don Owen	DNFSB Staff	202/208-6580
Bill Shields	DNFSB Staff	202/208-6387
Tim Arcano	DNFSB Staff	202/208-6547

DEFENSE NUCLEAR FACILITIES SAFETY BOARD RECOMMENDATION 93-1

EVALUATE AND ENHANCE, WHERE APPROPRIATE, THE STANDARDS THAT GOVERN NUCLEAR WEAPONS ASSEMBLY, DISASSEMBLY, AND TESTING REQUIREMENTS

AGENDA MAY 20, 1994

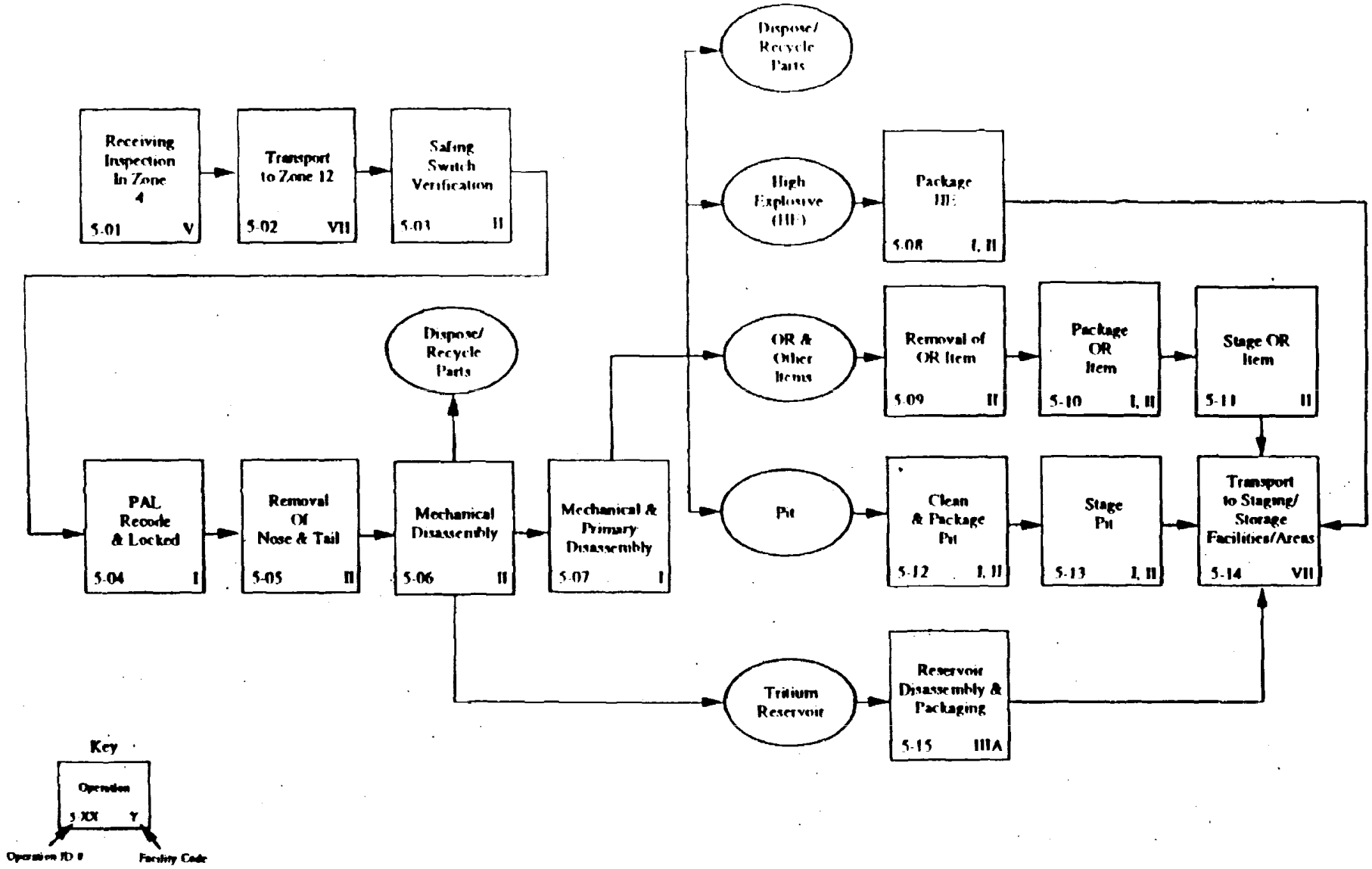
- RECOMMENDATION 93-1 PROCESS BACKGROUND
- ACTION III ORDERS EVALUATION
- SUBJECT MATTER EXPERT TEAM OPERATIONS
- ACTION IV SCHEDULE

RECOMMENDATION 93-1 ACTIVITIES

- **ACTION I** — REVIEW NUCLEAR SAFETY ORDERS AND DIRECTIVES TO DETERMINE APPLICABILITY TO FACILITIES AND SITES THAT ASSEMBLE, DISASSEMBLE, AND TEST NUCLEAR WEAPONS
- **ACTION II** — PROVIDE A CLEAR EXPLANATION OF THE NUCLEAR SAFETY AND NUCLEAR EXPLOSIVE SAFETY ORDERS AND HOW THEY ARE APPLIED BY IDENTIFYING THOSE CRITICAL SAFETY ELEMENTS OF OPERATIONS AND HOW THEY ARE ADDRESSED BY EACH ORDER AND DIRECTIVE
- **ACTION III** — IDENTIFY THE AREAS OF INCONSISTENCY OR DISCONTINUITY BETWEEN THE SETS OF NUCLEAR SAFETY ORDERS AND NUCLEAR EXPLOSIVE SAFETY ORDERS, IF ANY
- **ACTION IV** — IDENTIFY AREAS WHERE THE ORDERS AND DIRECTIVES CAN AND SHOULD BE STRENGTHENED, WHERE APPROPRIATE

ACTION I RESULTS

- DEFINITION OF OPERATIONS THAT INVOLVE ASSEMBLY, DISASSEMBLY, AND TESTING OF NUCLEAR WEAPONS
- LIST OF OPERATIONS AND FACILITIES THAT ASSEMBLE, DISASSEMBLE, AND TEST NUCLEAR WEAPONS
- LIST OF THE COMBINED ORDERS THAT MAY APPLY TO THESE OPERATIONS AND FACILITIES



DNFSB Recommendation 93-1
Implementation Plan Action 1

Figure 5. Weapon Disassembly

TABLE 1.

LIST OF OPERATIONS AND FACILITIES
NUCLEAR WEAPON ASSEMBLY, DISASSEMBLY, AND TESTING

I. Pantex Buildings 12-44 (Cells 1 through 6), 12-85, 12-96, 12-98 (Cells 1 through 4)

Assembly Operations:

1-01 Assemble Joint Test Subassembly (JTS)
1-02 Complete Joint Test Assembly (JTA)
2-01 Potting and Bonding
2-02 Case Pressing
2-03 Mechanical Assembly
2-04 Electrical Testing
2-05 Marking
4-04 Special Electrical Test (Permissive Action Link (PAL)) (12-98, Cell 4) (See Note 1, below)

Disassembly Operations:

1-03 JTA Post Mortem
5-04 PAL Recode and Locked (12-98, Cell 4) (See Note 1, below)
5-07 Mechanical and Primary Disassembly
5-08 Package High Explosive (HE)
5-10 Package OR Item
5-12 Clean and Package Pit
5-13 Stage Pit

II. Pantex Buildings 12-64 (Bays 1 through 17), 12-84, 12-99, 12-104, and 12-104A (when completed)

Assembly Operations:

1-01 Assemble JTS
1-02 Complete JTA
2-01 Potting and Bonding
2-02 Case Pressing
2-03 Mechanical Assembly
2-04 Electrical Testing
2-05 Marking
2-06 X-Ray (12-104A)
3-01 Test Radio Frequency (RF) System As Required

TABLE 2.

DNFSB RECOMMENDATION 93-1
ACTION 1.C
ORDERS AND DIRECTIVES THAT CURRENTLY APPLY

DOE Level I Orders of Interest					
Order #	**Subject**	**Pantex (Note 1)**	**NTS Area 27**	**NTS Event Site**	**Remarks**
1300.2A	Department of Energy Technical Standards Program	X	X	X	
1360.2B	Unclassified Computer Security Program	X	X	X	
1540.2	Hazardous Material Packaging for Transport - Administrative Procedures				Excludes packaging for nuclear explosives, components, and assemblies.
1540.3A	Base Technology for Radioactive Material Transportation Packaging Systems				Base technology development not applicable to facility operations.
4330.4A	Maintenance Management Program	X	X		Excludes 5610.11 Electrical Tester Program. Equipment used at the NTS Event Site is returned to other facilities for maintenance.
4700.1	Project Management System				Applies only to Projects.
5000.3B	Occurrence Reporting and Processing of Operations Information	X	X	X	
5400.1	General Environmental Protection Program	X	X	X	
5400.2A	Environmental Compliance Issue Coordination	X	X	X	
5400.3	Hazardous and Radioactive Mixed Waste Program	X	X	X	Excludes Atomic Energy Act (AEA) byproduct material. No requirements relevant to Pantex assembly/disassembly operations.

ACTION II RESULTS

- LIST OF CRITICAL SAFETY ELEMENTS FOR OPERATIONS AND FACILITIES IDENTIFIED IN ACTION I
  - COMPOSITE CSE BASED ON NUREG 1324
  - PLUS INPUT FROM:
    - SUBJECT MATTER EXPERTS (HQ-DP & EH, NV, AL, NTS, PX)
    - ATTRIBUTES FROM EXCLUDED ORDERS

- LIST OF ATTRIBUTES OF THE COMBINED ORDERS COVERING OPERATIONS, ETC

- MATRIX OF COMBINED ORDERS AND CRITICAL SAFETY ELEMENT ATTRIBUTES

MATRIX OF ORDERS and DIRECTIVES

AND

CRITICAL SAFETY ELEMENTS

PANTEX

CRITICAL SAFETY ELEMENTS

			Managerial Controls and Oversight								Oper-ations		Non Radio-logical Safety																											
Order#	Section #	Subject	1 Organization Plan	2 Policies Proc & Documentation	3 Safety Committees	4 Audits and Assessments	5 Occurrence Policies	6 Issues Management	7 Configuration Management	8 Records Management	9 Hazards Analysis	10 Other Limits Controls & Tests	11 Engineering Reviews	12 Training & Qualification Program	13 Quality Assurance	14 Maintenance Programs	15 Rad Safety Prog. Sys. Design Permits	16 Criticality Safety Program	17 General Safety & Housekeeping	18 Fire Protection Program	19 Materials Storage	20 Work Control System	21 Environmental Protection Programs	22 Safeguards	23 Emergency Management	24 Packaging/Transport Nucl Exp &Comp	25 Sampling & Analysis	26 Waste Management Program	27 Accident Analyses	28 Decommissioning Plan & Activities	29 Tooling and Equipment	30 Human Factors	31 Human Reliability	32 Nuclear Explosive Safety	33 Explosive Safety	34 Nucl Test Site Construction Program	35 Test Operations	36 Readiness Reviews
Level I DOE Orders of Interest to the DNFSB																																								
1300 2A	All	DOE Technical Standards Program		X																																				
1360 2B	All	Unclassified Computer Security Program																					X																	
4330 4A	Sect 1-11	Maintenance Management Program (Nonnuclear Facility Requirements)		X		X										X																								
	Chap I,3 1	Organization, Administration and Training	X											X		X																								
	Chap I,3 2	Condition of Facilities and Equipment									X	X				X			X																					
	Chap I,3 3	Maintenance Documentation		X												X																								
	Chap I,3 4	Work Control System		X								X				X						X																		
	Chap I,3 5	Maintenance Facilities, Equipment, and Materials Control System													X	X																								
	Chap I,3 6	Implementation of Maintenance Activities														X																								
	Chap I,3 7	Maintenance Evaluation and Analysis				X		X																																
	Chap I,4	Additional Maintenance Management Requirements				X										X																								
5000 3B	All	Occurrence Reporting and Processing of Operations Information					X	X					X																											
5400 1	Sect 1-9	General Environmental Protection Program																					X																	
	Chap I	Environmental Protection Standards																					X																	
	Ch II Sect 2	Notification of Environmental Occurrences				X																X								X									
	Ch II Sect 3-5	Reports															X						X																
	Chap III	Environmental Protection Program Plans		X																			X					X											
	Chap IV	Environmental Monitoring Requirements													X		X						X				X												
5400 2A	All	Environmental Compliance Issue Coordination						X															X																
5400 3	All	Hazardous and Radioactive Mixed Waste Program																										X											

ACTION III

- ASSESS THE LEVEL OF SAFETY ASSURANCE PROVIDED BY EACH SET OF ORDER REQUIREMENTS

- DEVELOP A METHODOLOGY TO CONTROL THE PROCESS, TO INCLUDE EVALUATION CRITERIA AND DOCUMENTATION TO ENSURE THAT THE PROCESS IS CONSISTENT, RIGOROUS AND SUFFICIENTLY DOCUMENTED

- ANALYSIS RESULTS WILL IDENTIFY:
  - INCONSISTENCIES - SITUATIONS WHERE TWO SETS OF REQUIREMENTS PROVIDE DIFFERENT LEVELS OF SAFETY ASSURANCE AND SITUATIONS WHERE TWO OR MORE ORDERS PROVIDE CONFLICTING REQUIREMENTS
  - DISCONTINUITIES - SITUATIONS WHERE ONE SET OF ORDER REQUIREMENTS DOES NOT ADDRESS AN IMPORTANT ASPECT OF THE CRITICAL SAFETY ELEMENT

- SUMMARIZE INCONSISTENCIES AND DISCONTINUITIES AS START POINT FOR ACTION IV ACTIVITIES

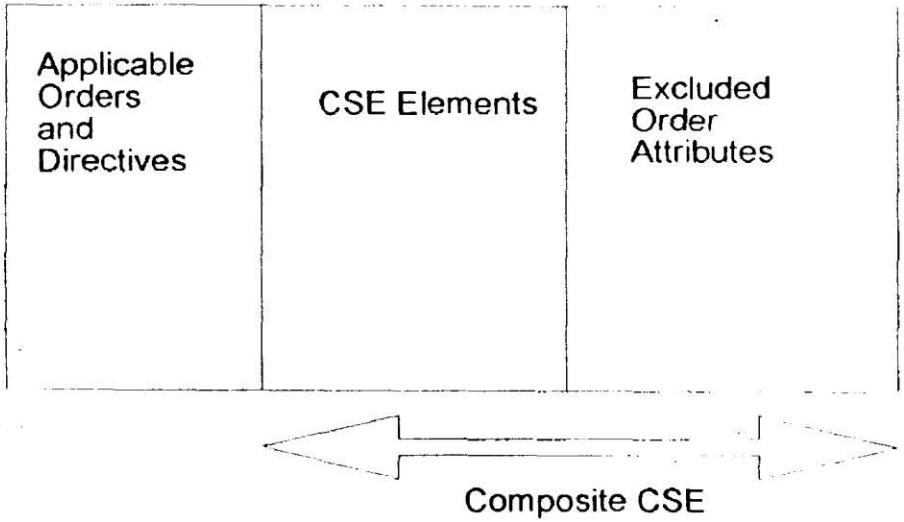
ACTION III EVALUATION PROCESS

- INTERACTIVE PROCESS INVOLVING ACTION II PRODUCTS WITH SUBJECT MATTER EXPERT (SME) TEAMS - DP, EH, AL, NV, NTS, AND PX
- IN-PROCESS QUALITY ASSURANCE AND TECHNICAL REVIEWS
- INDEPENDENT EH/DP FINAL REVIEWS
- MENTOR FEEDBACK

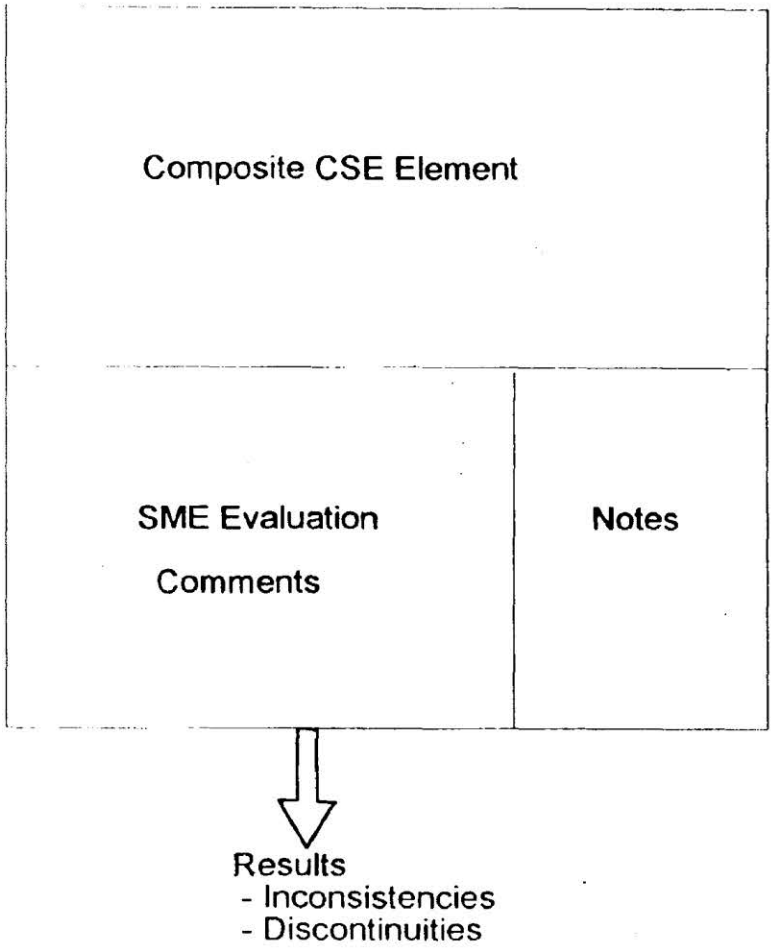
ACTION III EVALUATION PROCESS

ACTION II INPUTS

CSE SUMMARY DATA

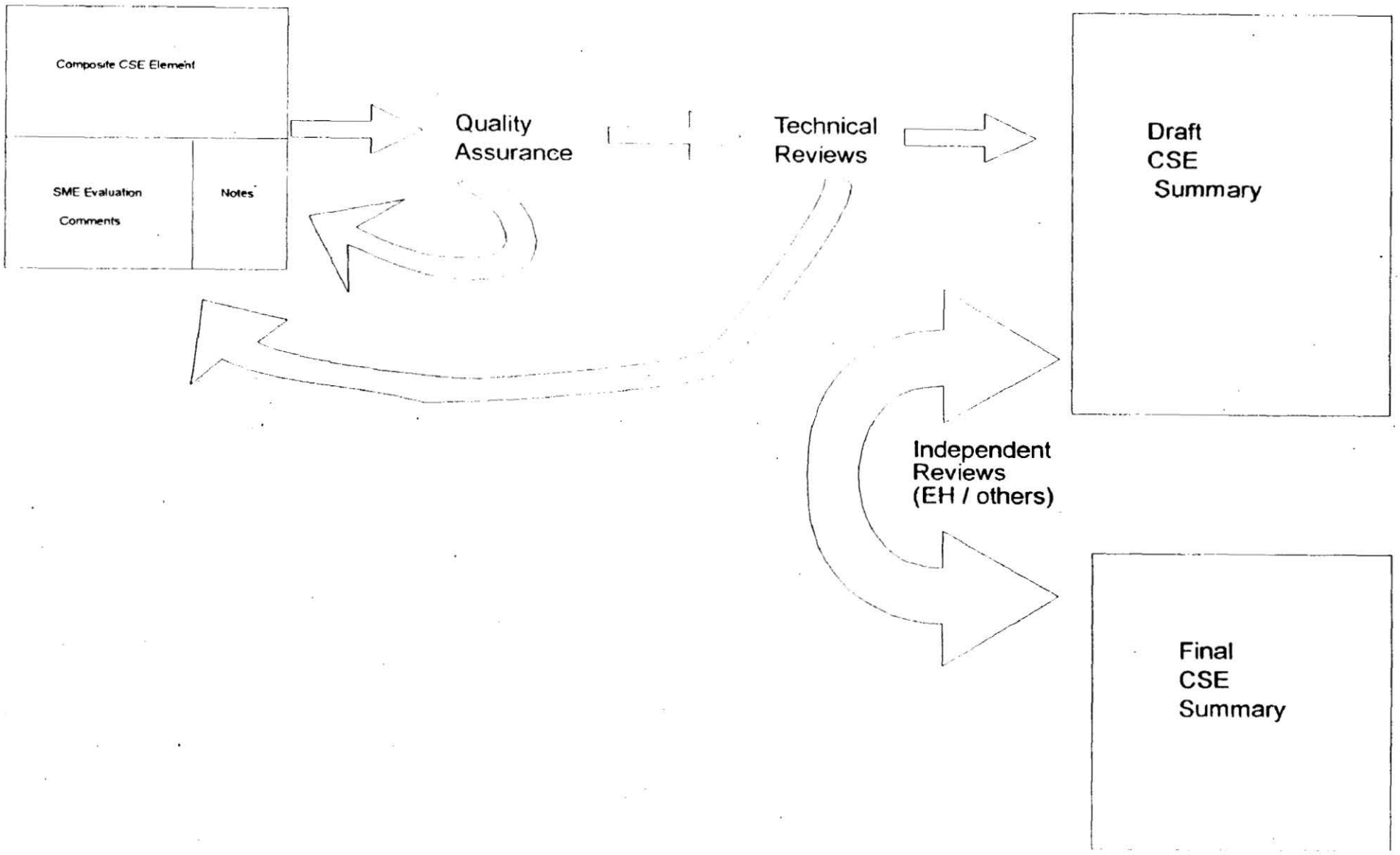


CSE EVALUATION WORKSHEETS



ACTION III EVALUATION PROCESS

SME WORKSHEETS



CSE Evaluation Report
CSE #1: Organization Plan

CSE Summary

Provide a formal organizational structure, staffing plan, statement of accountability, and statement of personnel qualifications. Provide a statement of responsibilities and authorities, and communicate these clearly to personnel. Identify staffing needs and requirements to ensure all activities can be conducted safely and efficiently.

Evaluation Summary

a. Organizational Structure

Requirements for an organizational structure that assigns responsibility and accountability for safety, quality, and safeguards programs are found in several DOE Orders and directives, including DOE Orders 5480.1B and 5700.6C, and directives QC-1 and QC-2. An inconsistency exists in that the quality program organization for facilities is described in DOE Order 5700.6C, the quality program structure for the nuclear explosive operations at Pantex is described in QC-1, and the quality program requirements for NTS are described in QC-2, with no requirement to or guidance for integrating the three sets of requirements. Another inconsistency is that there are no requirements for an organizational structure that assign responsibility to ensure persons in specific positions within management are responsible and accountable for safeguards in their operation.

Independence of the safety, quality, and safeguards functions from production operations is discussed in the same DOE Orders and directives mentioned above. Independence of the safety organization is addressed adequately for both facilities and operations. Independence of the quality organization is addressed adequately for nuclear explosive facilities and Pantex nuclear explosive operations. An inconsistency exists in that requirements for independence of the quality organization for weapons operations at NTS are lacking. Another inconsistency exists in that requirements for independence of the safeguards organizations for both nuclear explosive operations and facilities are lacking.

The authority to halt work due to safety concerns is addressed for nuclear explosive facilities and operations. The authority to halt work due to quality concerns is addressed for Pantex nuclear explosive operations. An inconsistency exists in that the authority to halt work due to quality concerns is not addressed for nuclear explosive facilities or NTS nuclear explosive operations. An inconsistency also exists in that the authority to halt work due to safeguards concerns is not addressed for either nuclear explosive facilities or operations.

Assigning an official the authority to settle disputes between independent organizations (i.e., safety, quality, and safeguards organizations) and production operations is not set forth clearly in any applicable Order or directive.

An overall inconsistency exists between DOE and commercial nuclear facilities with respect to the authority given to the quality organization. Commercial nuclear facility quality organizations are independent of production and authorized to stop work if it is determined that unsafe activities are occurring. The DOE quality organization, though also independent of the production organization, must work through line management to halt unsafe activities.

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b. Staffing Plan Contains the Array of Skills and Minimum Number of Employees Needed

DOE Order 5480.19, which applies to both nuclear explosive facilities and operations, requires a staffing plan, but does not specify what should be included in the plan. The Order also requires sufficient personnel be provided to accomplish assigned tasks. Excluded DOE Order 5480.20 stipulates that minimum staffing requirements are to be met for safe and reliable operations, and that this is to be based on the SAR and OSRs. The requirements in DOE Order 5480.19 are not as rigorous as those in DOE Order 5480.20, resulting in an inconsistency.

c. Accountability of Managers and Supervisors

DOE Orders and directives do not provide clear requirements for written delegation of authority for each manager's position to the extent required by the CSE objectives. DOE Order 5700.6C addresses responsibility and authority for facility operations, but does not specifically address accountability for weapons operations. QC-2 addresses management commitment to a quality program for nuclear explosive operations at NTS. It requires a written quality policy that specifies authorization and responsibilities, but this does not constitute a clear statement of authority as required by the CSE objectives. DOE Order 5480.19 addresses accountability for operations personnel, but does not address accountability for managers and supervisors.

d. Personnel Knowledge, Skills, and Qualifications Identified to Judge Competency to Perform Functions

The CSE description and excluded Order 5480.20 require that written plans or procedures be prepared to specify the knowledge, skills, and qualification requirements for each position. DOE Order 5700.6C requires that functional responsibilities be described in the Quality Assurance Plan, and that qualification should include each candidate demonstrating proficiency in the special skills or abilities required for the position. This meets the requirements of the CSE for facility operations. The only applicable Order or directive that addresses weapons operations is NV 56XE.1, which includes the requirements for key positions critical to safety for nuclear testing and test device assembly. There is no similar policy for personnel performing other nuclear explosive activities.

Conclusion

Requirements for a formal organizational structure, staffing plan, statement of accountability, and personnel qualifications for nuclear explosive activities are limited, and are generally not as rigorous as those for commercial nuclear facilities. Some of these inconsistencies are not limited to DOE nuclear explosive activities; they exist for DOE nonnuclear and nuclear facilities as well.

CSE 1: Organization Plan

Applicable DOE Orders and Supplemental Directives	Composite Critical Safety Element Description	Observations and Recommendations
5480.1B All 5480.19 Chap. I 5700.6C 9.b(1),Att.I,II.A SEN 35-91 All NV 56XE.1 Sect. 1-9, 11 QC-1 Sect. II QC-2 Sect. I QC-2 Sect. II.1	a. Organization Structure: Design the organization structure to ensure that persons in specific positions within a management chain are responsible and accountable for quality, safety, and safeguards in their operation. Indicate how quality, safety, and safeguards functions are independent of production operations and how those responsible for these functions are authorized to halt unsafe activities. Assign the senior responsible official the authority to settle disputes between these entities. 5700.6C - Quality Assurance - *Excluded for Weapon Operations* - Section 9.b and Attachment I, Section II.A defines management requirements for organizing and implementing a quality assurance program.	Inconsistency: No applicable requirement for a safeguards program organization for nuclear explosive operations. Inconsistency: No policy for integrating the quality program requirements of 5700.6C for facilities, QC-1 for Pantex operations, and QC-2 for Nevada Test Site (NTS). Inconsistency: The authority to halt work for quality concerns is not addressed for nuclear explosive facilities or NTS. Inconsistency: The authority to halt work for safeguards concerns is not addressed for either nuclear explosive facilities or operations. Inconsistency: DOE quality organizations must work through line management to halt unsafe activities where commercial nuclear facilities do not. Inconsistency: No policy for quality organization independence exists for NTS. Inconsistency: No policy for safeguards organization independence exists for both nuclear explosive operations and facilities. Inconsistency: No policy for assigning an official the responsibility to settle disputes between organizational entities. **Recommendations:** 1. The organizational responsibilities currently contained in SEN 35-91 could be transferred to a permanent DOE Order. Safeguards and quality should be added to the scope. 2. Dispute resolution between independent assessment organizations and line organization should be clearly identified.
	b. Staffing Plan: Define in a staffing plan the array of skills needed to perform the functions assigned to each department and indicate the minimum number of employees with each skill required to carry out the duties assigned. 5480.20 - Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non - Reactor Nuclear Facilities - Staffing Requirements: The operating organization shall ensure that	Inconsistency: No requirements to base staffing on safety analyses as stipulated in DOE Order 5480.20.

CSE 1: Organization Plan

Applicable DOE Orders and Supplemental Directives	Composite Critical Safety Element Description	Observations and Recommendations
	minimum staffing requirements are met for safe and reliable operations. Staffing shall be based on the facility SAR and OSRs. Facility operations shall be contingent upon meeting criteria contained in these documents.	
	c. Accountability of Managers and Supervisors: Include a clear statement of accountability for the activities managed within the written delegation of and authority for each manager's position so that the incumbent has a clear understanding of what to do and how to do it. 4330.4B - Maintenance Management Program - *Excluded for program elements related to nuclear facilities* -Chap.II, Sect. 2 - Maintenance Organization Policies: A primary responsibility of the maintenance manager is to ensure implementation of management and policies that affect the maintenance organization. Responsibility for implementing policies should be clearly defined. The maintenance manager should be involved in defining entry-level criteria and selecting a staff of high-quality personnel.	Inconsistency: No clear policy requiring written delegation and authority for each manager's position.
	d. Personnel Qualifications: Include a statement of the knowledge and skills required for each position in the organization plan so that a judgment may be made about the competency of an individual to perform the functions of the position. 5480.20 - Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non - Reactor Nuclear Facilities - Establishes the qualification requirements for personnel involved in the operation, maintenance and technical support of DOE owned Category A and B reactors and non-reactor nuclear facilities.	Inconsistency: No policy for written plans or procedures specifying the knowledge and skill requirements for nuclear explosive operations (with the exception of key positions critical to safety for nuclear testing and test device assembly).

MENTOR ACTIVITIES

- ASSESS SME TEAM OPERATIONS AND INTERACTIONS
- ASSESS SME TEAM COMPOSITION AND CAPABILITIES
- ASSIST IN PROMOTING FOCUS ON SME TEAM GOALS
- ASSESS ACCURACY OF FINAL PRODUCT

DNFSB Recommendation 93-1
Evaluation Worksheet

CSE: 1. ORGANIZATION PLAN

Subelement: a. Organization structure(1st sentence) **Pantex [X] NTS [X]**

Statement: (from CSE description or excluded Order requirement)

a. Organization Structure. Design the organization structure to ensure that persons in specific positions within a management chain are responsible and accountable for quality, safety, and safeguards in their operation.

Applicable Requirements: Attach copies of Order/Directive page(s) marked to indicate applicable requirements.

Evaluation:	**Notes**
1. Do applicable Orders and Directives contain requirements that address the statement or part of the statement? Yes [X] Continue evaluation No [ ] Result: **DISCONTINUITY**	
2. Do the requirements include objectives equivalent to those in the statement? Yes [X] Continue evaluation No [X] Result: **INCONSISTENCY** **Identify:** Safeguards not addressed adequately. **Note:** DOE 5480.1B, which applies to weapons ops. and all facilities, requires line management and/or EH-1 to be responsible for effective ES&H performance. Safeguards and quality are not addressed. DOE 5700.6C, which addresses facilities and not weapons ops., requires that a Quality Assurance Plan be developed which defines organizational structural, functional responsibilities, and levels of authority. This Order addresses ES&H, quality and safeguards. QC-1, which addresses weapons ops. for Pantex, discusses organizational structure and accountability for quality assurance. QC-1 does not address environment, health, and safeguards. No requirements for weapons operations.	5480.1B 7f SEN 35-91 4.0 5700.6C 9.b(1) QC-1 QC-2

April 27, 1994

V. Loczi; J. McGrail; M. Johnson; D. Kristensen; G. Danielson

DNFSB Recommendation 93-1
Evaluation Worksheet

Evaluation:	Notes
2. Continued SEN 35-91, which applies to facilities and weapons ops., defines organizational structure and accountability for ES&H. It does not include safeguards or quality.	
3. Do the requirements include methods equivalent to those in the statement? Yes [X] Result: **ACCEPTABLE** No [ ] Continue evaluation **Identify methods not included or not equivalent:**	
4. Do the methods provide a greater or equal level of safety assurance? Yes [ ] Result: **ACCEPTABLE** No [ ] Result: **INCONSISTENCY** No methods [ ] Result: **INCONSISTENCY** **Describe analysis:**	

Conclusion: There is no single document which addresses this statement for NE facilities and operations. However, the statement is covered by bits and pieces throughout several documents (except for safeguards).

Objectives of SEN -35 could be transferred to a policy document. Safeguards and quality should be added to scope. The requirements are in a SEN and will expire automatically unless it is renewed every year.

April 29, 1994

V. Loczi; J. McGrail; M. Johnson; D. Kristensen; G. Danielson

ACTION IV ACTIVITIES

- DEVELOP A PRIORITIZED LIST OF RECOMMENDED CHANGES TO STRENGTHEN THE COMBINED ORDERS
  - PRIORITIES WILL BE BASED ON IMPORTANCE TO SAFETY

- DEVELOP A PLAN AND SCHEDULE FOR STRENGTHENING THE COMBINED ORDERS