BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION 91-102

28 JULY 2004

Safety

NUCLEAR WEAPON SYSTEM SAFETY STUDIES, OPERATIONAL SAFETY REVIEWS, AND SAFETY RULES

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This instruction implements AFPD 91-1, *Nuclear Weapons and Systems Surety*. It describes the functions, composition, and membership qualification requirements of the US Air Force Nuclear Weapon System Safety Group (NWSSG); defines the procedures for conducting safety studies and operational safety reviews; outlines the development, approval, and publication process for Nuclear Weapon System Safety Group Reports and Weapon System Safety Rules; and the responsibilities of participating organizations. It applies to all personnel with nuclear weapon system safety and security responsibilities. Send major command (MAJCOM) supplements to this instruction to HQ AFSC/SEW, 9700 G Avenue, Kirtland AFB NM 87117-5670 for approval before publication. Records Disposition. Ensure that all records created by this AFI are maintained and disposed of IAW AFMAN 37-139, "Records Disposition Schedule."

SUMMARY OF CHANGES

This document is substantially revised and must be completely reviewed.

This change lists the standards to which weapon system safety rules are based. It expounds upon the NWSSG functions, composition, and duties of members. It briefly describes the types of studies and the processes involved with each study/review. It provides Air Force directions for implementing DoD guidance. The change provides a guide on topics addressed during support briefings. It also details the responsibilities of the agencies involved in publishing the weapon system safety rules.

Section A—General Information

1. Terms and Definitions. The terms used in this instruction are defined in AFI 91-101, *Air Force Nuclear Weapons Surety Program*.

2. Department of Defense (DoD) Safety Standards. DoD Directive 3150.2, *Nuclear Weapon System Safety Program,* establishes the DoD Nuclear Weapon System Safety Program, Policies, and Nuclear Weapon System Safety Standards. The DoD Nuclear Weapon System Safety Standards, identified below, serve as the foundation for all nuclear weapon safety matters:

2.1. There shall be positive measures to prevent nuclear weapons involved in accidents or incidents, or jettisoned weapons, from producing a nuclear yield.

2.2. There shall be positive measures to prevent DELIBERATE prearming, arming, launching, or releasing of nuclear weapons, except upon execution of emergency war orders or when directed by competent authority.

2.3. There shall be positive measures to prevent INADVERTENT prearming, arming, launching, or releasing of nuclear weapons in all normal and credible abnormal environments.

2.4. There shall be positive measures to ensure adequate security of nuclear weapons, under DoD Directive 5210.41.

3. Air Force Goals and Requirements:

3.1. This instruction provides guidelines to ensure nuclear weapons are designed, maintained, transported, stored, and operated in a safe and secure manner. The Air Force supports these goals by:

3.1.1. Convening the NWSSG to evaluate nuclear weapon systems.

3.1.2. Proposing nuclear weapon system safety rules for Secretary of Defense (SECDEF) approval.

3.1.3. Conducting Nuclear Surety Inspections according to AFI 90-201*, Inspector General Activities*.

3.2. Operational units shall:

3.2.1. NOT perform any nuclear operations without SecDef-approved safety rules.

3.2.2. Only use equipment, software, and procedures certified according to AFI 91-103, *Air Force Nuclear Safety Certification Program*.

3.2.3. Conduct operations with war reserve nuclear weapons according to approved plans based on governing directives, technical orders, and the safety rules.

3.3. Records Disposition. Records created as a result of processes prescribed in this instruction must be maintained and disposed of IAW AFMAN 37-139, *"Records Disposition Schedule*."

Section B—NWSSG Functions and Composition

4. NWSSG Functions:

4.1. Reviews nuclear weapon system designs and operations to determine if they meet the DoD Nuclear Weapon System Safety Standards IAW DoD 3150.2-M. **NOTE:** An NWSSG Study/Review is part of the overall nuclear certification process, however it does not constitute certification of the nuclear hardware, software, or procedures studied by the NWSSG. Reference AFI 91-103 for details regarding the Air Force Nuclear Safety Certification Program.

4.2. Proposes new weapon system safety rules and recommends changes to existing Secretary of Defense-approved weapon system safety rules to maximize nuclear weapon system surety commensurate with operational requirements.

4.3. Convenes and remains in session (this does not require the physical presence of the membership at a particular location) until the Nuclear Weapons System Safety Group Report is accepted by the Air Staff.

5. NWSSG Composition. Agencies appoint permanent members to serve in the NWSSG.

5.1. **Permanent Voting Membership:**

5.1.1. Chair from Headquarters Air Force Safety Center Weapons Safety Division (HQ AFSC/SEW) (votes only to break a tie).

5.1.2. One member each from the Air Force Materiel Command, Defense Threat Reduction Agency (DTRA), Department of Energy (DOE), Air Force Security Forces Center, and US Strategic Command (USSTRATCOM).

5.2. **Additional Voting Membership:**

5.2.1. One member each from the Air Mobility Command, Air Combat Command, US European Command, United States Air Forces in Europe, Supreme Headquarters Allied Powers Europe, National Security Agency, and Air Force Space Command when the group addresses topics in their organization's area of responsibility.

5.2.2. A member from another Air Force agency or military service that operates or maintains the weapon system being studied or reviewed.

5.2.3. The Chair shall identify and/or approve the additional voting members needed for each study/review.

5.3. Nonvoting Technical Advisors. Engineers, technical experts, and contractors may attend any phase of the NWSSG study or review when requested by the Chair, the Executive Officer, or a voting member. The Chair may limit how many technical advisors go on field trips. Any limitations should be identified as early as possible.

5.4. NWSSG Support Staff. The support staff includes the NWSSG Executive Officer and project officers.

6. Qualifications and Duties of Members:

6.1. NWSSG voting member general qualifications:

6.1.1. DoD military and civilian members must be of field grade rank or civilian equivalent. (**NOTE:** DOE and other non-DoD agencies should appoint voting members who meet this qualification as closely as possible). The Chair will approve exceptions to this requirement based on justification provided by the parent MAJCOM/Agency Commander or equivalent.

6.1.2. Military and civilian members must have operational or technical experience with nuclear weapons or nuclear weapon systems to include experience or training in evaluation techniques applicable to the DoD nuclear weapon system safety standards.

6.1.3. Military and civilian members must be knowledgeable of nuclear safety policies and procedures.

6.1.4. Have no direct responsibility for designing, developing, or producing the nuclear weapon system being reviewed.

6.2. Voting Member Responsibilities. Individual voting members must:

6.2.1. Independently formulate their judgments when assessing whether the nuclear weapon system under review meets the nuclear weapon system safety policies and standards.

6.2.2. Be able to identify, analyze, and provide independent assessments of pertinent nuclear weapon system safety-related information and operations.

6.2.3. Have full understanding of their agency's responsibilities for the nuclear weapon system being reviewed and be able to convey and represent to the NWSSG the unique operational requirements and responsibilities of their organization.

6.2.4. Attend all phases, actively and knowledgeably participate in NWSSG studies and reviews, vote during NWSSG meetings, and sign the NWSSG report.

6.2.5. Be responsible for the following administrative activities in support of the NWSSG:

6.2.5.1. Serve as point of contact to assist in coordinating the activities of the NWSSG.

6.2.5.2. Send their personal security clearance to HQ AFSC/SEW every year or as required.

6.3. Qualifications and Responsibilities of Advisors. Technical advisors must:

6.3.1. Have relevant technical knowledge of nuclear weapon systems, or specific technical knowledge or operational experience with the design, development, production, or operation of the nuclear weapon system under evaluation.

6.3.2. Support the member they represent by making contributions to briefings, discussions, and deliberations to clarify points of discussion on issues that are raised.

6.3.3. Send their personal security clearance to HQ AFSC/SEW no later than 5 days prior to start of study/review.

6.4. Member Training. NWSSG members are encouraged to complete training on nuclear weapons provided by agencies such as Joint Service Nuclear Weapons School, Sandia National Laboratories, and DOE. Contact NWSSG Support Staff for a list of recommended courses and their availability.

7. Observer Participation. Observers approved by the Chair or the Executive Officer may attend NWSSG meetings. Observers must:

7.1. Send visit requests to HQ AFSC/SEW at least 1 month before the meeting. Include the following information:

7.1.1. Full name, rank or civilian grade, Social Security number, and civilian employee or military identification card number.

7.1.2. Organization, address, and telephone number (Defense Switched Network [DSN] number, if available).

7.1.3. Security clearance and any special access, such as North Atlantic Treaty Organization (NATO), critical nuclear weapons design information, and Unauthorized Launch access.

7.1.4. Visit dates and specific NWSSG activities you want to attend.

7.1.5. Justification for visit.

7.1.6. Telephone number (DSN, if available) of the office that can verify the security clearance and special access.

Section C—Scheduling the Study/Review and Processing Reports

8. Types of Studies and Reviews. DoD 3150.2-M describes the types of studies and reviews the Air Force must conduct at a minimum. The NWSSG Chairman will determine the need and scope of studies.

8.1. Initial Safety Study (ISS) examines design features and aspects of the proposed concept of operations (if available) that will affect the safety of the nuclear weapon system.

8.2. Preliminary Safety Study (PSS) examines design features, hardware, procedures, and aspects of the concept of operations that affect the safety of the nuclear weapon system.

8.3. Interim Safety Study (INSS) reviews any changes to the nuclear weapon system since the Preliminary Safety Study.

8.4. Pre-Operational Safety Study (POSS) examines safety procedures for new or modified systems, and aspects of the concept of operations that will affect the safety of the nuclear weapon system to determine if the DoD nuclear weapon system safety standards are met. This is the first opportunity to draft weapon system safety rules for a new system.

8.5. Operational Safety Review (OSR) examines all operational aspects of a nuclear weapon or nuclear weapon system for safety to determine if the DoD four safety standards are met. The weapon system's first OSR takes place during the second year after the initial approval of safety rules. Recurring OSRs shall be conducted at intervals not to exceed 5 years from the start of the weapon system's preceding OSR.

8.6. Special Safety Studies (SSS) investigate unsafe conditions revealed by operational experience; accidents and/or incidents; modifications, tests, or retrofits involving nuclear safety; significant changes in the concept of operations; additional new equipment and/or weapons; proposed changes to nuclear weapon system safety rules; or inactive storage of nuclear weapons.

8.6.1. Any NWSSG voting member/organization may request that a SSS be conducted. The request shall be in provided in writing to the NWSSG Chair for final determination and scheduling. The request shall contain the rationale and scope of the proposed SSS.

8.7. Transportation Safety Study (TSS) examines transport operations with the nuclear weapon system.

9. NWSSG Study/Review Process:

9.1. NWSSG Support Staff is responsible for scheduling studies and reviews. A 5-year OSR schedule will be provided to OATSD(NCB)/NM and maintained on the AFSC web site. Other types of studies will be updated as soon as possible.

9.2. Pre-NWSSG Study/Review Time Lines.

9.2.1. Six months prior to the study/review MAJCOM submits its Air Staff-approved Operational Plan Data Document (OPDD) including Concept of Operations to HQ AFSC/SEW when a Technical Nuclear Safety Analysis (TNSA) is required. If TNSA is NOT required, submit Concept of Operations, only.

9.2.2. Four months prior to the study/review (12 months for NATO operations) – HQ AFSC/SEW notifies NWSSG members of dates and location(s) of the study/review.

9.2.3. Three months prior to the study/review – HQ AFSC/SEW presents draft agenda to MAJCOM and NWSSG Voting Members, and requests briefings and demonstrations for Phase I and Phase II.

9.2.4. Six weeks prior to the study/review–NWSSG Support Staff submits country clearance for NATO visits.

9.2.5. Four weeks prior to study:

9.2.5.1. AAC/NW provides the TNSA to HQ AFSC/SEW

9.2.5.2. NWSSG Support Staff: Distributes Air Force Data Package to NWSSG members.

9.2.5.3. Confirms clearances of all visitors.

9.2.5.4. Briefing Agencies/Individuals: Provide electronic copy of briefings to NWSSG Support Staff.

9.2.6. Two weeks prior to study/review – NWSSG Support Staff distributes final agenda to NWSSG members.

9.2.7. One week prior to the study/review – NWSSG Support Staff confirms clearances of NWSSG members and technical advisors.

9.3. Conduct of NWSSG Study/Review. Generally, NWSSG studies/reviews will consist of three phases (Phase II will be tailored as necessary depending on maturity of the weapon system under review). Phases I and III will normally be conducted at the Air Force Safety Center and Phase II will be conducted at a location(s) where the system under review is operated.

9.3.1. No phase of the NWSSG Study or Review can be initiated without all permanent voting members identified in paragraph **5.1.** plus the applicable operational MAJCOM and Combatant Command voting member identified in paragraph **5.2.** being present.

9.3.2. Phase I of the study or review will include:

9.3.2.1. Review of the Air Force Data Package

9.3.2.2. Review the status of relevant findings, recommendations, and open corrective actions from previous Nuclear Weapon System Safety Reports (NWSSR).

9.3.2.3. Technical and operational briefings on the weapon system under study.

9.3.2.4. Results and recommendations of available inadvertent and unauthorized launch analyses and related software and physical security analyses.

9.3.3. Phase II of the study or review will include technical briefings and demonstrations of nuclear weapon-related operations with applicable support equipment in a representative sample of operational environments and in substantially unique operational environments. Demonstrations will normally be conducted in the actual work areas/facilities. Areas of interest with respect to the weapon's stockpile-to-target sequence include, but are not limited to:

9.3.3.1. Storage, maintenance, transportation (to include convoy operations), and employment operations (weapon loading as well as maintenance and operations crew procedures).

9.3.3.2. Potential hazards in normal and abnormal environments for impact on safety.

9.3.3.3. Authentication and execution procedures of nuclear control orders at the delivery unit level.

9.3.3.4. Use control procedures in the context of preventing deliberate prearming, arming, launching, or releasing of nuclear weapons without direction by competent authority.

9.3.3.5. Security response procedures (e.g., recapture, denial, alarm response), as well as routine security postures, in the context of ensuring adequate security of nuclear weapons.

9.3.4. Phase III of the study or review will make a determination if the nuclear weapon system is being operated in a manner that meets the DoD nuclear weapon system safety policy and standards. Phase III includes:

9.3.4.1. Discussion and deliberation on findings and items of interest raised during Phase I or Phase II.

9.3.4.2. Preparing safety rules for new weapon systems or recommending changes to existing safety rules that ensure the weapon system meets the DoD nuclear weapon system safety standards or provides improvements to operations.

9.3.4.3. Preparing and signing NWSSG Report for submission to Air Staff.

9.3.5. NWSSG Executive Support Staff will coordinate with the applicable MAJCOM/SEW to make every effort to vary the Phase II locations of studies for multi-unit weapon systems based upon operational availability.

9.3.6. MAJCOMs will coordinate required briefings and demonstrations with subordinate units supporting Phase II and NWSSG Support Staff.

9.3.7. The NWSSG will be disbanded when the Air Staff accepts the NWSSG Report.

10. Safety Rules Processing Responsibilities. DoD 3150.2-M requires prompt report processing.

10.1. NWSSG Support Staff prepares the Air Force Data Package.

10.2. At the conclusion of the study NWSSG Support Staff will create a NWSSG Report. The NWSSG Report will not be changed following the signature of the NWSSG members other than to

correct administrative errors. Within 2 weeks of completing the study, HQ AFSC/SEW will notify OATSD(NCB) of the completion of the study/review and forward electronic copies of the NWSSG Report via classified email to HQ USAF/SEI for Air Staff coordination and comments. HQ USAF/SEI will:

10.2.1. Request appropriate offices/agencies review the NWSSG Report and recommend approval or disapproval of the findings therein. Request that recommendations include sufficient justification.

10.2.2. Request that approved recommendations include corrective actions and a timeline, as required, from the appropriate office/agency.

10.3. Within 3 weeks of receipt of the NWSSG Report, Air Staff agencies review, approve or disapprove with applicable rationale the findings and recommendations, provide any comments to aid with the publishing of an NWSSR, and return report to HQ USAF/SEI. HQ USAF/SEI will consolidate Air Staff reviews and provide them to HQ AFSC/SEW for publishing of the Air Force NWSSR.

10.3.1. HQ AFSC/SEW publishes the NWSSR within 2 weeks of receipt of the Air Staff approval. HQ AFSC/SEW will distribute the NWSSR to appropriate agencies to include: voting members, OPRs for approved recommendations, appropriate commands/agencies, and NWSSG advisors.

10.4. If the NWSSG Report includes proposed rules for new systems, or proposed changes to current rules, HQ AFSC/SEW will prepare a separate Air Force Safety Rules Package and forward it to HQ USAF/SEI for separate coordination and approval with the NWSSR.

10.4.1. HQ USAF/SEI ensures appropriate offices/agencies review proposed safety rules and recommend approval/disapproval. If approval by all offices/agencies cannot be obtained, HQ USAF/SE will forward issues to Vice Chief of Staff, Air Force, for final resolution.

10.4.1.1. Upon receipt of the Air Staff-approved safety rules package, MAJCOMs may distribute the proposed rules for training purposes and preparation for implementation following approval by the SECDEF.

10.4.2. HQ USAF/SEI sends Air Force Safety Rules Package to DTRA for coordination.

10.4.3. After DTRA action on the rules package, SEI will forward the rules package to the Joint Staff for OATSD(NCB)/NM coordination.

10.4.4. OATSD(NCB)/NM reviews the proposed rules and sends to DOE for coordination.

10.4.5. After DOE action, the package is forwarded to the OATSD(NCB)/NM for SECDEF approval.

10.4.6. Upon notification of rules approval, HQ USAF/SEI forwards copy of approved rules to HQ AFSC/SEW. Unless otherwise specified, safety rules and revisions to approved safety rules shall be implemented within 30 days of SecDef approval.

10.5. HQ AFSC/SEW, upon receipt of SecDef-approved rules, will forward copies to the appropriate agencies (responsible MAJCOM safety offices and system program offices) under HQ USAF/SE signature directing immediate implementation of approved rules. HQ AFSC/SEW will publish the approved safety rules in an Air Force Instruction as soon as possible.

10.6. Post-Study Timeline:

10.6.1. 2 weeks following study – forward NWSSG Report to HQ USAF/SEI.

10.6.2. 6 weeks following study – Air Staff completes review of NWSSG Report.

10.6.3. 4 months following study – distribute Air Force NWSSR to NWSSG members and affected agencies. Submit Air Force Safety Rules Package to HQ USAF/SEI for coordination and provide information copies to NWSSG members.

10.6.4. 6 months following study – SecDef approval of Nuclear Weapon System Safety Rules. Notify Nuclear Weapons Directorate with copies of approved rules and start process for submitting Air Force Instruction.

10.6.5. 7 months following study – Rules implementation.

Section D—Supporting Documents and Briefings

11. Air Force Data Package. The Air Force Data package consists of the materials provided to NWSSG voting members prior to the NWSSG study/review for their preparation and use during the study or review. Package includes:

11.1. Weapon system concept of operations (MAJCOM).

11.2. Technical Nuclear Safety Analysis (TNSA) for studies and certain reviews (AAC/NW).

11.3. Technical description of the weapon system and its system safety features, when not included in TNSA (AFMC/MAJCOM).

11.4. Draft or current safety rules (HQ AFSC/SEW).

12. NWSSG Report. An NWSSG report is a summary of NWSSG proceedings. It is not a technical or engineering source document (DoD RCS: AT&L (A) 1994). DoD 3150.2-M, Appendix 3, contains the basic report format as follows:

12.1. Executive Summary will summarize the study results and include an appraisal statement as to whether the system meets DoD nuclear weapon system safety policy and standards.

12.2. Study Overview will summarize the study scope, background, purpose, and comments on the impact of safety on the system's concept of operations.

12.3. Findings, Recommendations and Corrective Actions Section will state facts or conclusions regarding the nuclear safety of the weapon system and recommendations to enhance safety consistent with operational requirements.

12.3.1. A finding or recommendation must be approved by a majority of the NWSSG voting members.

12.3.2. Priority assignments for NWSSG recommendations:

12.3.2.1. Immediate Action. (USE OF THE NUCLEAR WEAPON SYSTEM IS IMMEDIATELY RESTRICTED UNTIL RECOMMENDED ACTIONS ARE COMPLETED.) Reserved for recommendations made to correct deficiencies that prevent the weapon system from meeting one or more of the DoD Nuclear Weapon System Safety Standards. It either restricts certain operations of the nuclear weapon system or completely prohibits use of the system until approved recommendations are complied with.

12.3.2.2. Urgent Action. (USE OF THE NUCLEAR WEAPON SYSTEM MAY BE RESTRICTED IF APPROVED RECOMMENDATIONS ARE NOT COMPLIED WITH BY THE SUSPENSE DATE.) Reserved for those recommendations which conclude that while the system currently meets required safety standards, prompt corrective actions are required to ensure no violation of any of the DoD Nuclear Weapon System Safety Standards occurs in the future. Peacetime restriction of the weapon system may be warranted if approved recommendations are not complied with by the suspense date or if an approved extension to the suspense date is not granted.

12.3.2.3. Time Compliance. (USE OF THE WEAPON SYSTEM IS NOT RESTRICTED.) Reserved for recommendations that simply enhance nuclear surety. These recommendations are intended to make the system better and do not imply any failure to meet existing safety standards. The weapon system may be operated while action is being taken to comply with an approved recommendation. Failure to comply by the stated suspense date will not restrict use of the weapon system.

12.4. Draft Safety Rules for new systems or proposed changes to existing rules are NWSSG recommendations to Air Staff for safe operations of the weapon system based upon NWSSG findings during the study/review.

12.4.1. A safety rule must be approved by a majority of the NWSSG voting members.

12.5. An Addendum of Minority Opinions may be included. It shall be appended to the NWSSG Report if agreement is not reached by the NWSSG through discussion and deliberation and those in the minority deem such an addendum is appropriate. The format will be the same as the findings and recommendations of the basic report and signed by each member supporting the minority position.

12.5.1. The Minority Report shall be submitted for inclusion into the basic report prior to adjourning the Phase III meeting and shall be made available for all members to review.

13. Air Force NWSSR. The Air Force NWSSR presents the Air Force assessment of whether the weapon system meets the four DoD safety standards. The NWSSG Report is the basis for the NWSSR.

13.1. The Executive Summary will summarize the Air Force position on the study results and include an appraisal statement that assesses whether or not the weapon system meets DoD nuclear weapon system safety policy and standards. If there are differences in any portion of the Air Force NWSSR and the NWSSG Report, the Executive Summary will note the differences and rationale for disagreement.

13.2. The Assessment Section will include evaluations and analyses to support the Air Force appraisal statement in the Executive Summary.

13.3. The Findings and Recommendations Section will:

13.3.1. List NWSSG findings and recommendations and minority opinions, and indicate approval or disapproval of each recommendation with rationale.

13.3.2. List corrective actions with a timeline that the Air Force will implement for approved recommendations.

13.3.3. Provide recommendations on the retention, modification, or retirement of the system.

13.4. The NWSSG Report is included as an attachment.

14. Air Force Safety Rules Package. Parts A and B will be consistent with that provided in the Air Force Data Package. The Air Force Safety Rules Package includes:

14.1. Executive Summary: An appraisal of whether or not the weapon system meets the DoD weapon system safety policy and standards; differences between the NWSSG Report and the NWSSR; and a synopsis of the proposed safety rules or changes to current rules.

14.2. Part A: Technical Description of the weapon system and Concept of Operations.

14.3. Part B: Safety Features incorporated in the weapon system.

14.4. Part C: Proposed Safety Rules.

15. Operational Plan Data Document (OPDD). The OPDD is the operating command's statement of how the command operates and maintains (or, if applicable, for a new or significantly modified weapon system, how the command plans to operate and maintain) the nuclear weapon system being studied by the NWSSG. In addition the OPDD serves as a source document for the Technical Nuclear Safety Analysis (TNSA) or abbreviated TNSA when required.

15.1. The OPDD describes:

15.1.1. The nuclear weapon system's current or proposed (for new or significantly modified weapons systems) concept of operations.

15.1.2. General operations commonly performed regardless of geographical location.

15.1.3. Significant variations of the general operations.

15.1.4. Normal operations in the stockpile-to-target sequence during peacetime, wartime, and periods of increased hostilities.

15.1.5. Operations conducted under contingency plans.

15.2. An OPDD will be provided to the NWSSG by the operational MAJCOM. If the OPDD is new or requires changes to support an NWSSG study or review, prepare the OPDD in sufficient time to ensure approval and distribution. If a TNSA is required, the MAJCOM must provide the final approved OPDD (or change) to HQ AFSC/SEW 6 months before the study is scheduled to begin.

15.2.1. Because the OPDD is a planning document, it should not be prepared to the same level of detail as an operational plan. Summarize operations and refer to applicable source documents for greater detail. Include all desired operational and system capabilities in the OPDD. The weapon system safety rules proposed by the NWSSG may not allow all desired capabilities, but they will not even be considered if not included in the OPDD. Commands can NOT add operational capabilities after the SECDEF approves the safety rules without an NWSSG study/review.

16. Technical Nuclear Safety Analysis (TNSA). The TNSA is prepared by the Air Armament Center Nuclear Weapons Directorate (AAC/NW) and is an independent technical analysis of the nuclear weapon system.

16.1. Personnel who prepare the TNSA shall maintain independence from organizations directly responsible for designing, developing, producing, maintaining, operating, or providing logistics for the weapon system under evaluation.

16.2. The TNSA:

16.2.1. Describes the weapon system in depth.

16.2.2. Has a safety and security compliance matrix that shows how weapon system features meet the DoD Nuclear Weapon System Safety Standards (see **Attachment 2**).

16.2.3. Contains a comprehensive engineering analysis of the weapon system design.

16.2.4. States how the weapon system does or does not meet the DoD Nuclear Weapon System Safety Standards in both normal and credible abnormal environments.

16.2.5. Identifies deficiencies and recommended corrective actions for the weapon system to comply with AFI 91-107, *Design, Evaluation, Troubleshooting, and Maintenance Criteria for Nuclear Weapon System*s, or DoD Directive 5210.41, *Security Policy for Protecting Nuclear Weapons*.

16.2.6. Assesses physical security features planned for the weapon system. If appropriate, include an examination of security measures for nonfixed site operations, identify security deficiencies, and propose necessary corrective actions.

16.2.7. Includes a qualitative risk assessment of the weapon's likelihood of violating any of the DoD Nuclear Weapon System Safety Standards or causing plutonium scatter.

16.3. Prepare a preliminary TNSA for phase I of an initial safety study. Prepare a final TNSA for phase II of an initial safety study and a preoperational safety study. **NOTE:** An abbreviated TNSA may be used for a special safety study. It is limited in scope and only covers the specific study topic.

16.4. Provide a preliminary or final TNSA, as appropriate, no later than 4 weeks before the first NWSSG meeting.

17. Support Briefings:

17.1. The operational command, development agency, TNSA authors, subject matter experts, and contractors brief the NWSSG.

17.2. NWSSG Support Staff tells the agencies what topics they must cover in the briefing.

17.3. Topics should include, but are not limited to:

17.3.1. History of Safety Studies, Operational Safety Reviews, and Safety Rules

17.3.2. NWSSG recommendations disapproved by HQ USAF

17.3.3. Deficiency report history

17.3.4. Nuclear surety inspection findings since last review

17.3.5. Weapons system safety assessments and/or TNSA

17.3.6. Unauthorized Launch/Access Analysis

17.3.7. Weapon safety data applicable to the weapon system

17.3.8. Status of nuclear certification actions

17.3.9. Nuclear certified configuration issues

17.3.10. Weapon modifications

17.3.11. Use control

17.3.12. Pending changes to nuclear surety features and procedures affecting nuclear surety

17.3.13. Review of Current Technical Data (including review of any problems with compatibility of technical data with nuclear weapon system safety rules)

17.3.14. Nuclear Surety Concerns (including a review of any unresolved problems relating to nuclear surety)

17.3.15. Weapon System Safety Features Technical Description, Function, and Purpose

17.3.16. Weapon System Support Equipment Technical Description, Function, Purpose, and History

17.3.17. Weapon System Modification Program and Pending Logistical Factors Affecting Nuclear Surety

17.3.18. Weapon System Operations Briefings

17.3.18.1. Operational Capabilities

17.3.18.2. Safety Features

17.3.18.3. Special Preparations for Nuclear Missions

17.3.18.4. Unit Locations, Capabilities, Command and Control

17.3.18.5. Security Procedures

17.3.18.6. Explosive Ordnance Disposal Procedures

17.3.18.7. Accident History

17.3.18.8. Personnel Certification

17.3.18.9. Unique Country and Service Requirements

17.3.18.10. Contingency and Emergency Plans

17.3.18.11. Configurations and Load Limits

17.3.18.12. Nuclear Surety Concerns

17.3.18.13. Flying Restrictions

17.3.18.14. Maintenance Requirements

Section E—Actions Required on NWSSG Recommendations Approved by the Air Staff

18. Implementing Air Staff-Approved Recommendations:

18.1. The designated action agencies must implement all safety recommendations approved by the Air Staff. Each action agency:

18.1.1. Notifies HQ AFSC/SEW of the agency's office of primary responsibility, telephone number (DSN, if available), and point of contact.

18.1.2. Sets up a schedule to implement the recommendations.

18.1.3. Sends HQ AFSC/SEW a status report of NWSSG Studies and Reviews, Recommendations, and Safety Rules (DoD RCS: AT&L (A) 1994) by the 15th of May and November of each

year. Begin reporting after receiving the Air Force NWSSR and include a schedule for completing each action item identified in each recommendation.

18.1.4. Requests HQ AFSC/SEW to close the recommendation after implementing the required actions. A recommendation is not closed until HQ AFSC/SEW notifies the action agency in writing.

18.2. HQ AFSC/SEW monitors agency actions (through biannual status reports) and publishes a semiannual status of recommendations. An annual status report (DoD RCS: AT&L (A) 1994) is due to OATSD(NCB)/NM with informal copies provided to Joint Staff and DOE by July 1.

Section F—Responsibilities

19. Air Force Chief of Safety (HQ USAF/SE):

19.1. Oversees the Air Force Nuclear Weapons Surety Program.

19.2. Manages the safety evaluation process.

19.3. Appoints the NWSSG Chairperson.

19.4. Resolves disagreements between NWSSG and Air Staff.

19.5. Signs the Safety Rules Package and the NWSSR containing the Air Force assessment of compliance with the DoD Safety Standards.

20. Air Force Director of Security Forces (HQ USAF/XOF). Oversees the Air Force Security Program.

21. Office of the Chief of Safety, Issues Division (HQ USAF/SEI):

21.1. Monitors all nuclear surety activities and takes part in actions as directed by HQ USAF/SE.

21.2. Coordinates nuclear surety activities within the Air Staff and with other government agencies.

21.3. Staffs NWSSG reports sent for Air Staff approval.

21.4. Obtains DTRA coordination on nuclear weapon system safety rules.

21.5. Gives HQ AFSC/SEW the status of proposed safety rules.

21.6. Makes initial notification of approved safety rules.

21.7. Staffs the proposed rules need date for new weapon systems, modified weapon systems, or new or modified operational concepts and informs HQ AFSC/SEW of approved dates. HQ USAF/SEI notifies HQ AFSC/SEW of changes to the rules need date.

22. Director of Nuclear and Counterproliferation (HQ USAF/XON): Approves or disapproves the OPDD after consulting with appropriate Air Staff offices.

23. Commander, Air Force Security Forces Center (HQ AFSFC). Designates an NWSSG voting member to represent HQ USAF/XOF interests during studies as determined by the NWSSG Chairman.

24. HQ AFSC Weapons Safety Division:

24.1. Division Chief represents NWSSG interests when group is not convened.

24.2. Provides NWSSG Support Staff.

24.2.1. Serves as the Point of Contact for NWSSG members regarding the timing and conduct of the scheduled studies and reviews.

24.2.2. Schedules NWSSG evaluations and coordinates support with appropriate agencies, and publishes a semiannual NWSSG schedule and a 5-year forecast annually. The NWSSG Chair convenes the evaluations according to the schedule.

24.2.3. Prepares and distributes the Air Force Data Package to NWSSG voting members.

24.2.4. Prepares the NWSSG Report for NWSSG review and signature prior to adjournment of Phase III of the study or review.

24.2.5. Sends NWSSG Report to the Air Staff for coordination through HQ USAF/SEI.

24.3. Manages and tracks the status of the NWSSG Report, NWSSR, and Safety Rules Package.

24.4. Reviews weapon system modifications, changes in operational procedures, or proposed tests to determine if nuclear surety is affected. The support staff requests an OPDD, or OPDD change, and schedules an NWSSG study when nuclear surety is affected.

24.5. Budgets and funds all NWSSG field trips (Phase II) for voting members from Air Force organizations and one TNSA writer. **NOTE:** Each command must budget for additional temporary duty expenses in support of NWSSG activities. The Chairperson determines funding requirements if an NWSSG study calls for additional expertise.

24.6. Serves as the Air Force focal point for DOE field reviews of nuclear weapon system safety rules.

24.7. Assigns an Air Force member to nuclear safety studies or operational safety reviews conducted by other military Services if the Air Force also uses the weapon system under evaluation.

25. MAJCOM:

25.1. Ensures that MAJCOM-developed procedures comply with approved nuclear weapon system safety rules and agree with Air Force-approved operational and technical procedures.

25.2. Evaluates proposed modifications, procedural changes, tests, or other activities involving nuclear weapon systems and coordinates appropriate nuclear certification with AAC/NW.

25.3. Revises the OPDD and requests a special safety study when appropriate.

25.4. Coordinates rules need date with HQ AFSC/SEW to facilitate NWSSG scheduling.

25.5. Designates an individual to serve as an NWSSG member consistent with guidance in this instruction.

25.6. Provides AAC/NW the technical support and data needed to prepare the TNSA or abbreviated TNSA.

25.7. Provides required support to HQ AFSC/SEW and the MAJCOM's NWSSG voting member.

25.8. Hosts and arranges NWSSG field trips to MAJCOM facilities and supports HQ AFSC/SEW on DOE field reviews.

25.9. Implements applicable Air Staff-approved NWSSG recommendations.

M. L. "LEE" MCFANN, Major General
Chief of Safety

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

DoD Directive 3150.2, *Nuclear Weapon System Safety Program*

DoD 3150.2M, *DoD Nuclear Weapon System Safety Program Manual*

DoDD 5210.41, *Security Policy for Protecting Nuclear Weapons*

AFI 90-201, *Inspector General Activities*

AFI 91-101, *Air Force Nuclear Weapons Surety Program*

AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rule*s

AFI 91-103, *Air Force Nuclear Safety Certification Program*

AFI 91-107, *Design, Evaluation, Troubleshooting, and Maintenance Criteria for Nuclear Weapon Systems*

AFMAN 37-139, *Records Disposition Schedule*

AFPD 91-1, *Nuclear Weapons and Systems Surety*

Abbreviations and Acronyms

AFSC—Air Force Safety Center

DoD—Department of Defense

DOE—Department of Energy

DSN—Defense Switched Network

DTRA—Defense Threat Reduction Agency

ISS—Initial Safety Study

INSS—Interim Safety Study

MAJCOM—Major Command

NATO—North American Treaty Organization

NWSSG—Nuclear Weapon System Safety Group

NWSSR—Nuclear Weapon System Safety Report

OPDD—Operational Plan Data Document

OPR—Office of Primary Responsibility

OSR—Operational Safety Review

POSS—Preoperational Safety Study

PSS—Preliminary Safety Study

SecDef—Secretary of Defense

SSS—Special Safety Study

TNSA—Technical Nuclear Safety Analysis

TSS—Transportation Safety Study

USSTRATCOM—US Strategic Command

Attachment 2

SAMPLE FORMAT FOR DOD NUCLEAR WEAPON SYSTEM SAFETY STANDARDS MATRIX

We are submitting the F-15E/B61 Safety Compliance Matrix according with AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rule*s. The matrix indicates features of the weapon system that meet the intent of particular DoD Nuclear Weapon System Safety Standards (figure A1.1). We cover physical security (4th standard) in a separate supplement to the Technical Nuclear Safety Analysis.

The matrix analyzes eleven types of positive nuclear safety features or measures:

1. Power Isolation.
2. Signal Characteristic.
3. Electrical Isolation.
4. Mechanical Restraint.
5. Reversibility.
6. Two-Person Concept Control.
7. Monitor.
8. Code Entry.
9. Data Control.
10. Environmental Parameter.
11. Personnel Reliability Program Control.

The matrix shows how to apply types 1 through 11 in 5 phases of system operations on the ground and in flight, as affected by aircraft power, logic power, aircraft monitoring and control (AMAC) power, AMAC state, and release state. A number in bold, italicized type indicates primary means of control. A dash indicates "not applicable."

Table A2.1. Safety Compliance Matrix.

DoD Standard Concern	Loading	A Ground-Power OFF	B Ground-Logic OFF	C Ground-Safe AMAC ON	D Flight-Safe/ LOCKED	E Flight-Arm/ UNLOCKED
Accidental Yield (1st Standard)	*1* 2 3 - - - - - - - *10* -	*1* 2 3 - - - - - - - *10* -	- *2 3* - - - - - - - 10	- *2 3* - - 6 - 8 - *10* -	- *2 3* - - - - - - - *10* -	- - - - 5 - - - - *10* -
Unauthorized Prearm (2d Standard)	*1* - - - - *6* - - - - 11	*1* - - - - *6* - - - - 11	- - 3 - - *6* - - - - 11	- - - - - *6 7 8* - - 11	- - - - - *6 7 8* - - -	- - - - - - - - - - -
Inadvertent Prearm (3d Standard)	*1* 2 3 - - - - - - - - -	*1* - - - - - - - - - -	- - *3* - - - - - - - -	- *2 3 - 5* *6 7 8 9 10* -	- *2 3 - 5* *6 7 8 9* - -	- - - - - - - - - - -
Inadvertent Release (3d Standard)	*1* - 3 *4* - 6 - - - - -	*1* - - *4* - - - - - - -	- - *3 4* - - - - - - -	- - *3 4 5* *6 7 - 9* - -	- - *3 4 5* *6 7 - 9* - -	- - - - - - - - *9* - -

NOTE: This example is adapted from an actual matrix for illustrative purposes only.