

**BY ORDER OF THE  
SECRETARY OF THE AIR FORCE**

**DEPARTMENT OF THE AIR FORCE  
INSTRUCTION 91-205**



**30 MARCH 2023**

**Safety**

**NON-NUCLEAR MUNITIONS SAFETY  
BOARD**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This publication implements Air Force Policy Directive (AFPD) 91-2, *Safety Programs*, and is consistent with Department of Defense Instruction (DODI) 6055.16, *Explosives Safety Management Program*, Air Force Instruction (AFI) 63-101/20-101, *Integrated Life Cycle Management*, and MIL-STD-882, *Department of Defense Standard Practice, Systems Safety*. It prescribes Air Force Non-Nuclear Munitions Safety Board (NNMSB) operation and defines its membership and mission. This instruction also outlines procedures and responsibilities for conducting and reviewing safety studies on non-nuclear munitions, components, or related items for which the Department of the Air Force (DAF) has an operational, test, development, procurement, or management responsibility. It explains the safety verification and approval process for new or modified non-nuclear munitions. This instruction applies to all Department of the DAF civilian employees and uniformed members of the Regular Air Force, United States Space Force (USSF), Air Force Reserve, Air National Guard (ANG), and those with a contractual obligation to abide by the terms of DAF issuances, except where noted otherwise. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the office of primary responsibility (OPR) using the DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. This DAF Instruction (DAFI) may be supplemented at any level, but all direct supplements are routed to the OPR for coordination prior to certification and approval. The authorities to waive wing/unit level requirements in this publication are

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## ***SUMMARY OF CHANGES***

This document is substantially revised in format and organization and should be completely reviewed. Revisions have been made to the organization of the NNMSB to accommodate changes to Major Command (MAJCOM) and Field Command (FLDCOM) organizations.

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## Chapter 1

### OVERVIEW, ROLES, AND RESPONSIBILITIES

**1.1. Overview/Background.** In 1964, the Assistant Secretary of Defense requested the Services status of Non-Nuclear Armament Safety. In early 1965, the United States Air Force (USAF) identified the need for a disciplined approach to Non-Nuclear Armament Safety. The goal, to improve safety design features of non-nuclear systems. National level urgency ensued due to a disaster at Ben Hoa Air Base in May of 1965. Subsequently, Headquarters (HQ) Air Force Systems Command, now Air Force Materiel Command (AFMC), established the Non-Nuclear Munitions Safety Group in Sept of 1965. Direction was given to the Directorate of Armament Development, now the 96<sup>th</sup> Test Wing/System Safety (96 TW/SES) at Eglin Air Force Base to establish and chair a Non-Nuclear Munitions Safety Group, now the NNMSB.

**1.2. Purpose.** The NNMSB supports requirements delineated in DoDD 5000.01, *The Defense Acquisition System*, for safety throughout the acquisition process and DoDI 5000.02, *Operation of the Adaptive Acquisition Framework*, for safety during development and testing. AFD 91-2 and AFI 91-202, *The US Air Force Mishap Prevention Program*, establishes DAF policy and instructions for a comprehensive safety program. NNMSB activities are part of the DAF comprehensive approach to assure design safety of non-nuclear munitions. This instruction establishes the DAF NNMSB, describes its purpose, operations, scope of authority, and implements its safety policies and procedures.

#### 1.3. Roles and Responsibilities.

##### 1.3.1. AF Chief of Safety (AF/SE)

1.3.1.1. Designates the NNMSB Chairperson with the grade of Colonel (or civilian equivalent) or above from the Air Force Safety Center, Weapons System Division (AFSEC/SEW).

1.3.1.2. Provides mandatory certifications for all new non-nuclear munitions prior to inclusion in the USAF/USSF inventory and operational use, regardless of source. Issues de-certification decisions for inventory items based on NNMSB recommendations.

1.3.2. MAJCOMs/FLDCOMs. The MAJCOMs/FLDCOMs comprising the NNMSB voting members are listed in [Table 1.1](#).

**Table 1.1. NNMSB Voting Members.**

MAJCOMs/FLDCOMs
HQ Air Combat Command (ACC)
HQ Air Education and Training Command (AETC)
HQ Air Force Global Strike Command (AFGSC)
HQ Air Force Materiel Command (AFMC)
HQ Air Force Reserve Command (AFRC)
USSF HQ Space Operation Command (SpOC)
USSF HQ Space Systems Command (SSC)
USSF HQ Space Training and Readiness Command (STARCOM)
HQ Air Mobility Command (AMC)

MAJCOMs/FLDCOMs
HQ Pacific Air Forces (PACAF)
HQ United States Air Forces in Europe – Air Forces Africa (USAFE-AFAFRICA)
Air Force Operational Test and Evaluation Center (AFOTEC)
Air National Guard (ANG)
HQ Air Force Special Operations Command (AFSOC)

1.3.2.1. Each command designates NNMSB members (primary and alternate) to serve at least three years (whenever possible). Voting members must be a field grade officer, Department of Defense (DoD) civilian grade equivalent, or E-7-E9.

1.3.2.2. The primary objective for each MAJCOM/FLDCOM is to select the best individuals (military or civilian) meeting the membership requirements delineated in [paragraph 1.3.7](#) and having the requisite training, operational experience, and technical credibility to efficiently conduct NNMSB business. In addition, members may provide a minority report if the majority position is **not** consistent with their respective MAJCOM/FLDCOM's position.

1.3.2.3. Each command shall ensure members have the authority to provide a comprehensive command review of NNMSB safety studies and analyses.

1.3.3. Staff Agencies. When AFSEC/SEW coordinates chairperson approved NNMSB minutes with staff agencies, the staff agencies must respond to AFSEC/SEW within 30 calendar days indicating their concurrence or non-concurrence with NNMSB findings and recommendations. No response within the prescribed 30-day period constitutes approval. If a staff agency non-concurs with an aspect of the meeting minutes, the staff agency will provide its initial rationale for non-concurrence to AFSEC/SEW within the prescribed 30-day period. If non-concurrence persists after AFSEC/SEW facilitates communication between the staff agency and the NNMSB, the staff agency provides its final rationale for non-concurrence to AFSEC/SEW. This applies to the following staff agencies:

1.3.3.1. The Office of the Assistant Secretary of the Air Force for Acquisition, Directorate of Global Power Programs, SAF/AQP.

1.3.3.2. The Air Force Director of Logistics, Deputy Chief of Staff/Logistics, Installations and Mission Support (Nuclear Weapons Missile and Munitions Division), AF/A4LW.

1.3.4. Chairperson.

1.3.4.1. Schedules and presides over meetings of the NNMSB (see [4.1](#) and [5.1](#)).

1.3.4.2. Determines if extraordinary circumstances warrant the seeking of flight-test approval from NNMSB members individually in lieu of a formal meeting (see [3.2.3.4](#)).

1.3.4.3. To expedite a joint safety review, decides if a special session or an electronic review by specific members of the NNMSB will be convened (see [4.2.3](#)).

1.3.4.4. Designates and approves the composition and quorum of special ad hoc groups to provide NNMSB-related review, approval, and advisory services to programs with special or limited access (see [4.3.3](#)).

1.3.4.5. If the Chairperson anticipates that operational limitations may be imposed as a condition of certification for operational use, the Chairperson will notify the Executive Secretary (ES) (see [4.4.3](#)).

1.3.4.6. During a meeting of the NNMSB, when a stakeholder or proxy from a command or agency affected by the weapons system under review is not represented (see [4.3](#)), or, if the membership holds that inadequate advisory expertise is present to allow proper evaluation of munitions (see [4.5](#)), the Chairperson determines if the meeting will proceed with the available members or if an item's review will be postponed until a subsequent meeting (see [5.2](#)).

1.3.4.7. For a given matter before the NNMSB, the Chairperson casts a vote only when a ballot of members present (including proxy votes) results in a tie (see [5.3.8](#)).

1.3.4.8. Decides on a case-by-case basis if the amount of NNMSB business warrants scheduling additional meetings (see [5.3.9.1](#)).

1.3.4.9. Serves as focal point and signatory for the NNMSB for risk acceptance packages involving non-nuclear munitions and weapon-related systems.

1.3.5. The 96 TW/SES Technical Director is the designated ES for the NNMSB. The ES has duties in the following areas:

1.3.5.1. Administrative.

1.3.5.1.1. Serves as the principal administrative assistant and key advisor to the Chairperson and NNMSB members for conducting NNMSB affairs.

1.3.5.1.2. Informs the Chairperson about NNMSB activities and issues that might affect NNMSB proceedings.

1.3.5.1.3. Maintains a list of appointed NNMSB members and alternates and provides the administrative services necessary to conduct NNMSB meetings. The ES also provides new member orientation.

1.3.5.1.4. Interacts with the Chairperson, members, DAF procuring and modifying agencies, system program offices, or other agencies, as necessary, to ensure the effectiveness of the NNMSB's safety review process.

1.3.5.1.5. Serves as the focal point to manage requests for release of information contained in a staff-approved Technical Munitions Safety Study (TMSS) (see [Attachment 2](#) for instructions), Munitions Safety Analysis (MSA), or Test Hazards Assessment Review (THAR) (see [3.1.5](#)).

1.3.5.1.6. Maintains all NNMSB historical records, including meeting proceedings, indexes of TMSSs and MSAs, logs of administrative closures issued by the ES, and all official correspondence associated with the NNMSB's role as the System Safety Group (SSG) for non-nuclear munitions and as advisor to aircraft design authorities (see [2.10.3](#)). The ES ensures the NNMSB members are provided current copies of these indexes and logs and the NNMSB membership roster.

1.3.5.1.7. Maintains the NNMSB certification database, prepares the catalogue of NNMSB actions and distributes annual catalogue updates to NNMSB members.

- 1.3.5.1.8. Consults with the command procuring organizations, program offices, managers, or other agencies as necessary, to clarify requirements specified in this instruction.
- 1.3.5.2. Safety Standards.
- 1.3.5.2.1. Develops, defines, and represents the command position to national and international standardization activities, including those in the private sector, involving design and performance safety, analysis, and non-nuclear munitions testing, and offers such standards for possible NNMSB approval, as appropriate.
- 1.3.5.2.2. Acts as the USAF/USSF representative to joint safety review processes. The ES provides USAF/USSF coordination for joint weapon systems and munitions that are presented for use by organizations other than the USAF/USSF.
- 1.3.5.3. NNMSB Purview Decisions.
- 1.3.5.3.1. Determines if a non-airborne launched, remotely piloted vehicle will be reviewed by the NNMSB if requested by the program office or a NNMSB member (see [2.3.2](#)).
- 1.3.5.3.2. Ensures safety certification or approval by another service or government does not supersede the required NNMSB review and approval. However, certification and approval actions conducted jointly with another service's certification and approval authority may satisfy the NNMSB review and approval process.
- 1.3.5.4. NNMSB Reviews.
- 1.3.5.4.1. Assigns members to a USAF and/or USSF review group, if needed, to review joint weapons systems and munitions for USAF or non-USAF use (see [2.7](#)).
- 1.3.5.4.2. Provides appropriate guidance to agencies charged with preparing an NNMSB study and maintains up-to-date preparation instructions (i.e., scope, content, level of detail, and format requirements) for TMSS, MSA, THAR, and NNMSB presentations (see [3.4.1.6](#)). (T-2)
- 1.3.5.4.3. Maintains appropriate guidance regarding de-certification procedures and re-establishment of certification in the NNMSB Standard Operation Procedures guide (see [5.3.6.2](#) and [5.6.5](#)). (T-1)
- 1.3.5.4.4. Provides guidance regarding the appropriateness of using an MSA versus a TMSS for a given item under NNMSB purview and makes the initial determination as to whether a TMSS or MSA is required when a munitions item is modified or when a NNMSB member requests a safety study (see [3.2.2.1](#) and [3.2.2.3](#)).
- 1.3.5.5. Scheduling NNMSB Meetings.
- 1.3.5.5.1. Informs the requesting agency requesting a special meeting that funding of the NNMSB members' and Chairperson's travel expenses are a condition for conducting the special meeting, and polls members as to their availability before final special meeting dates are established (see [4.2.2](#)).
- 1.3.5.5.2. Examines all documentation intended for NNMSB review to ensure appropriateness and technical quality, notifies the preparing organization when

- documentation is deemed unacceptable for NNMSB review, and provides guidance on changes needed to produce acceptable quality (see [4.6.3.2](#)). (T-1)
- 1.3.5.5.3. For ambitious meeting agendas (e.g., 4 or 5 studies for complex weapons), distributes some of the draft TMSS(s) and MSA(s) to NNMSB members 45-50 days prior to the meeting (see [4.6.2](#)).
- 1.3.5.5.4. At least 45 days prior to the meeting date, notifies responsible action-item holders to arrange for action item status reports at each regularly scheduled NNMSB meeting (see [4.6.3.1](#)).
- 1.3.5.5.5. Establishes deadlines for submission of safety studies scheduled for review. Deadlines for submission are 30-45 days prior to the meeting date.
- 1.3.5.5.6. Issues meeting announcements at least 30 days in advance of regularly scheduled meetings (see [4.6.4](#)).
- 1.3.5.5.7. Circulates TMSS and MSA to NNMSB membership sufficiently in advance of a meeting to allow 25 days, at a minimum, for review, and requests an AFSEC/SEW waiver of the 25-day requirement when significant unavoidable delays in TMSSs/MSA distribution arise (see [4.6.5](#)).
- 1.3.5.5.8. If any NNMSB member states insufficient time was provided for a proper MAJCOM/FLDCOM review, the ES removes the item in question from the meeting agenda (see [4.4.2](#)).
- 1.3.5.5.9. If the ES is notified by the Chairperson or a NNMSB member that operational limitations may be imposed as a condition of certification for operational use, the ES will advise the organization requesting NNMSB review, the agent having configuration control of the munition, and the lead command for the munition (see [4.4.4](#)).
- 1.3.5.5.10. Ensures read-ahead information to support THARs, SSG activities, and other matters requiring NNMSB action is received by the members at least 14 days before the meeting (see [4.6.6.1](#) and [4.6.6.2](#)).
- 1.3.5.6. During NNMSB Meetings.
- 1.3.5.6.1. Ensures related studies, correspondence, and background material is available for the NNMSB meeting and establishes post-meeting liaison with agencies having a direct interest in the results of NNMSB proceedings.
- 1.3.5.6.2. Maintains on file all Executive Secretary Letters (ESLs) approving or certifying non-complex items under NNMSB purview, and, at each regularly scheduled NNMSB meeting, informs the NNMSB of all such approvals issued since the previous meeting (see [3.3](#) and [5.3.7.1](#)). (T-1)
- 1.3.5.6.3. Informs the NNMSB of administrative action items closures since the previous meeting (see [5.3.7.2](#)).
- 1.3.5.6.4. Finalizes meeting minutes, ensures NNMSB proceedings are fully documented and approved, and (prior to review) ensures minutes are made available for review by the NNMSB members as the last item of meeting business (see [5.3.9.2](#) and [5.4](#)).



#### 1.3.5.7. Post-Meeting of the NNMSB.

1.3.5.7.1. Provides NNMSB SSG guidance to the responsible agent (RA) (see [1.3.9](#)) when inclusion of such guidance in the official NNMSB meeting minutes is deemed inappropriate (see [2.10.2](#)).

1.3.5.7.2. Submits approved minutes and updated TMSS(s) to AFSEC/SEW to initiate the AF/SE and USAF/USSF staff agency approval process (see [5.5.4](#)). (T-1)

1.3.5.7.3. Publishes and distributes final MSA after NNMSB approval to NNMSB members and associates, agencies responsible for implementing NNMSB recommendations, and other interested organizations (see [5.5.6.2.2](#)). (T-2)

1.3.5.7.4. Notifies the RA, test organizations, and unit commanders of design safety approval prior to planned activities and operations based on NNMSB's recommendations (see [5.5.7.1](#)). (T-1)

1.3.5.7.5. When authorized by the NNMSB, monitors actions established as condition(s) of a NNMSB flight test approval, and issues the final approval when actions are completed (see [5.5.7.2](#)).

1.3.5.7.6. If NNMSB flight-test approval is not issued, the ES informs the requesting agency of the reason(s) for non-approval (see [5.5.7.2](#)).

1.3.5.7.7. Notifies agencies responsible for implementing the NNMSB's recommendations and actions (see [5.5.8.1](#)).

1.3.5.7.8. Monitors and periodically requests action-item completion status reports from designated action agencies for all post-meeting actions (see [5.5.8.2](#)). (T-1)

1.3.5.7.9. Closes administrative actions, actions completed upon a specific event, and actions that have become obsolete, such as due to a change in acquisition strategy (see [5.5.8.3](#) and [5.6.4](#)).

#### 1.3.5.8. Post-AF/SE Review.

1.3.5.8.1. Notifies agencies responsible for implementing NNMSB recommendations following AF/SE approval (see [5.6.2](#)).

1.3.5.8.2. In the event an action item cannot be closed expeditiously, the ES places the action item in an "open inactive" category and maintains it in the historical record (see [1.3.5.1.6](#)) until such time the status of the action item changes (see [5.5.8.5](#)).

1.3.5.8.3. Publishes and distributes the final TMSS(s) after AF/SE approval to NNMSB members and associates, agencies responsible for implementing NNMSB recommendations, and other interested organizations (see [5.6.4](#)). (T-2)

1.3.5.8.4. Notifies the RA and Lead Command of a change in certification status of non-nuclear munitions when the AF/SE or a staff agency disapproves a NNMSB recommendation on certification or non-certification (see [5.6.5](#)). (T-1)

1.3.5.8.5. When a previously certified non-nuclear munition or related item's system safety design fails to perform its intended system safety functions at adequate levels, the ES (in conjunction with the appropriate NNMSB member(s)) will gather all relevant substantiating information relative to the safety design issue(s) and present it

to the full NNMSB for review and possible de-certification decision. If warranted, the ES shall advise the RA that corrective action is urgently needed (see [2.5.13](#)).

#### 1.3.6. 96 TW/SES.

1.3.6.1. Serves as the engineering support function responsible for conducting NNMSB studies and analyses (the 96 TW/SES Chief of System Safety determines workload priorities and assignments within the organization).

1.3.6.2. Sets up the necessary operating procedures to ensure the timely acquisition of supporting information and the completion of TMSS, MSA, and THARs for presentation to the NNMSB.

1.3.6.3. Works with RAs to ensure studies, review presentations, and supporting documents are provided at scheduled NNMSB meetings (see [5.3.1](#)).

1.3.6.4. As munitions design safety experts, contributes to national and international standardization activities involving design and performance safety, analysis, and nonnuclear munitions testing, and offers such standards for possible NNMSB approval, as appropriate.

#### 1.3.7. NNMSB Members. The NNMSB is comprised of experienced individuals designated by their command or agency. NNMSB members shall:

1.3.7.1. Have expert knowledge of USAF/USSF non-nuclear munitions, related systems, and associated operational safety policies and procedures, and be able to act as USAF/USSF technical authorities for the purposes of the NNMSB.

1.3.7.2. Be knowledgeable of their command's unique policies, procedures and operational limitations and constraints. Staff within their commands or agencies all read-ahead material, resolve differences, and bring command positions to the NNMSB meetings. Thoroughly evaluate each study and review documents prior to a NNMSB meeting.

1.3.7.3. Under extraordinary circumstances, and, when authorized by the Chairperson, review requests for flight testing individually in lieu of a formal meeting (see [3.2.3.4](#)).

1.3.7.4. When notified of appointment to the NNMSB, arrange for an orientation with the ES. This orientation may be done in conjunction with a normally scheduled convening of all NNMSB members. If this option is used, the new member coordinates his/her orientation with the ES at least two weeks prior to the meeting (see [4.6.6.3](#)).

1.3.7.5. If inviting advisors and consultants to NNMSB meetings, notify the ES of those attendees at least 60 days prior to the meeting (see [4.6.2](#)).

1.3.7.6. If NNMSB members have questions or identify concerns during preparatory review of read-ahead information, they inform the TMSS or MSA preparing activity within meeting timelines so that additional information may be made available at the NNMSB meeting (see [4.4.2](#)).

1.3.7.7. If any NNMSB member anticipates that operational limitations may be imposed as a condition of certification for operational use, the member will notify the ES (see [4.4.4](#)).

1.3.7.8. Actively participate in all NNMSB meetings. Present their command's position and strive to resolve all conflicts based on the best interest of the USAF/USSF. Arrange for a proxy when attendance at a meeting is not possible.

1.3.7.9. During NNMSB meetings, determine if adequate advisory expertise is present to allow proper evaluation of munitions (see [4.5.2](#)).

1.3.7.10. During NNMSB meetings, make a concerted effort to reach unanimous agreement for each matter requiring a NNMSB position. When representing the minority position, members may, at their discretion, prepare a minority report for inclusion in the official meeting minutes (see [5.3.8](#)).

1.3.7.11. Possess the authority needed to ensure a comprehensive technical review within their command or agency of the safety studies and analyses on which NNMSB safety evaluations are based.

1.3.7.12. When a previously certified non-nuclear munition or related item's system safety design fails to perform its intended system safety functions at adequate levels, applicable NNMSB member(s) (in conjunction with the ES) gather all relevant substantiating information relative to the safety design issue(s) and present it to the full NNMSB for review and possible de-certification decision (see [2.5.13](#)).

### 1.3.8. AFSEC/SEW.

1.3.8.1. Reports unfavorable mishap trends identified for munitions previously certified by the NNMSB that may require reevaluation by the NNMSB.

1.3.8.2. Appoints voting members of the Insensitive Munitions Technical Working Group (IMTWG) to include, as a minimum, a Chairperson, an AFSEC/SEW member, and the ES from the NNMSB.

1.3.8.3. If not designated as the Chairperson, AFSEC/SEW provides the NNMSB with a representative to function as an advisor or consultant to the NNMSB at every meeting, within program access limitations (see [4.3.4](#)).

1.3.8.4. Acts as approval authority for requests to deviate from mandatory design requirements (see [3.4.3.5](#)).

1.3.8.5. Acts as coordinating agency, facilitator, and technical lead for resolving any issues arising during staff agency coordination of minutes and studies. Upon receipt of concurrences, submits TMSS(s) to AF/SE for approval, and forwards signed approvals to the ES (see [5.5.5.1](#)).

1.3.8.6. Upon receipt of concurrences, successful resolution of non-concurrences, or final rationale for non-concurrence, AFSEC/SEW submits the minutes and appropriate documentation to AF/SE for approval and forwards signed approvals and final non-concurrences to the ES. (See [5.5.5.3](#)).

1.3.8.7. If a staff agency disagrees with the NNMSB's certification recommendation(s), AFSEC/SEW may notify applicable commanders of potential disapproval and/or subsequent modification, if required, of interim approval or certification (see [5.5.5.2.2](#)).

1.3.8.8. If AF/SE disagrees with the NNMSB's certification recommendation(s), AFSEC/SEW notifies the ES and applicable commanders of disapproval and/or subsequent modification, if required, of interim approval or certification (see [5.6.5.1](#)).

1.3.9. The RA. The agent responsible for procuring or modifying non-nuclear munitions and related items under NNMSB purview (see [2.2](#), [2.3](#), and [2.4](#)) is responsible for ensuring the requirements of this directive are satisfied. The RA:

1.3.9.1. Ensures a munitions item requiring NNMSB study and review is identified to the ES or his/her designated Systems Safety Engineer early in the design or acquisition process, including Special Access Program positions as required in accordance with AFI 16-701, *Management, Administration and Oversight of Special Access Programs*. This allows review and certification actions to begin early enough to minimize any effect of the NNMSB review on schedule and procurement costs.

1.3.9.2. Ensures standards (reference [Attachment 3](#)) are followed and appropriately tailored (in consultation with the SSG) (see [3.4.3.1](#)).

1.3.9.3. Ensures adequate resources are allocated for explosives hazard classification and insensitive munitions action (including testing as specified in TB 700-2/NAVSEAINST 8020.8C, TO 11A-1-47, *DoD Ammunition and Explosives Hazard Classification Procedures*, and MIL-STD-2105, *Department of Defense Test Method Standard, Hazard Assessment Tests for Non-nuclear Munitions*).

1.3.9.4. Ensures appropriate safety studies (TMSS, MSA, or THAR) are accomplished at the earliest date possible in the development cycle as outlined below. In addition, early reviews by the NNMSB are highly desirable so impacts of safety related design changes, if any, are minimized.

1.3.9.5. If assigned actions from the NNMSB, initiates and monitors NNMSB action items (see [5.6.2](#)).

1.3.9.6. When presenting to the NNMSB, ensures essential supporting personnel (e.g., program management authorities, contractor representatives, etc.) are present to participate as needed during the presentation and discussions (see [4.6.4](#)).

1.3.9.7. When requested by the ES, provides action-item status at least five days prior to the next scheduled NNMSB meeting (see [4.6.7](#)).

1.3.9.8. If notified by the ES that operational limitations may be imposed as a condition of certification for operational use, the RA requests participation by one or more advisory representatives (see [4.5](#)) of the affected DAF Secretariat or Air Staff offices (see [4.4.3](#)).

1.3.9.9. When seeking re-certification of an item that has been de-certified, the RA provides evidence and ensures corrective actions or design changes have been implemented to restore adequate levels of design safety (see [5.3.6.3](#)).

1.3.9.10. When advised by the ES of de-certification action(s), RAs are responsible for advising respective Foreign-Military Sales (FMS) customers (see [5.6.5](#)).

## Chapter 2

### NNMSB MISSION

#### 2.1. Overview.

2.1.1. The NNMSB functions as an overall design review authority and SSG for non-nuclear munitions and conducts assessments, approvals, and certifications throughout munitions research, development, test and evaluation, production, deployment, and operational life cycle. Safety certification or approval by another military service or foreign government does not replace NNMSB review and certification requirements. **(T-0)**

2.1.2. The AF/SE designates the NNMSB Chairperson with the grade of Colonel (or civilian equivalent) or above from the AFSEC/SEW.

2.1.3. NNMSB membership is composed of one voting representative from each of the commands and agencies listed in [1.3.2](#).

2.1.4. The NNMSB may charter special projects and ad hoc groups as required.

2.1.5. The NNMSB recommends policies, controls, and procedures to minimize hazards during non-nuclear munitions operations.

2.1.6. In coordination with AF/JAO as appropriate, General Counsel (SAF/GCI) shall conduct legal review of each weapon developed within a Special Access Program. **(T-1)**

**2.2. Items under NNMSB Purview.** The following non-nuclear munitions systems, subsystems, components, and related equipment items are within the purview of the NNMSB:

2.2.1. Non-nuclear Explosive Devices. All types of warheads, projectiles, bombs, mines, and grenades (plus their training configurations) capable of producing a hazardous reaction and implements of war or training containing conventional energetics/explosives.

2.2.2. Non-nuclear Missiles (and Thrust-Augmented Munitions). This category includes non-nuclear missiles designed for air-to-surface, air-to-air, air-to-space, surface-to-surface, surface-to-air, surface-to-space, space-to-surface, space-to-air, and space-to-space.

2.2.3. Release, Launch, Control, Suspension, and Dispersal Devices. All suspension systems (for example racks, launchers, rails), dispensers, or packaging devices used to contain or disperse non-nuclear explosive devices or used as the direct launching platform for a complete non-nuclear munitions system. See the definition for weapon-related system IAW DoDI 5000.69, *DoD Joint Services Weapon and Laser System Safety Review Processes*, and see DoDM 5000.69, *Joint Services Weapon Safety Review (JSWSR) Process*, that defines the NNMSB as the DAF weapon-safety review board.

2.2.4. Safing, Arming, and Target-Detecting Devices. All components used to safe, arm, and/or fire non-nuclear explosive devices or propulsion devices, including all fuzes and explosive or pyrotechnic transfer elements. Also, this category includes all components of munitions used to detect a target and issue signals for initiation of the kill mechanism (warhead, bomb, etc.).

2.2.5. Guidance and Control Mechanisms. All components integral to a non-nuclear munitions system used to direct a munitions item from the launching platform to safe separation. These

include aerodynamic control surfaces, thrust vectoring devices, and retardation devices, and their associated control logic, seekers, and stored-energy sources.

2.2.6. Igniters and Initiators. All devices used in igniting or directing the initiation of non-nuclear explosive or pyrotechnic devices, fuzes, propulsion devices, stored-energy sources, or dispersal and suspension devices.

2.2.7. Guns and Ammunition. All guns (e.g., large caliber, small arms, etc.) and associated control, safing, and firing mechanisms, and all gun-fired ammunition (includes aircraft guns and small arms). Ammunition propellant is certified for stability if it is not in the DoD inventory.

2.2.8. Miscellaneous. Flares and markers, photoflash devices, explosive dispensers or decoy devices, explosives simulators, destructors, flight vehicles that are intended to carry, launch, and fire or release non-nuclear munitions, demolition material, Explosive Ordnance Disposal (EOD) equipment using explosives or controlling the initiation of explosives, chemical agents and dispensers, training and scoring items, targets that contain hazardous components, flight termination system and other munitions-related explosive items.

2.2.9. Propulsion Devices. Rocket motors and engines that produce thrust by release of energy and used to propel any of the devices or mechanisms defined in paragraphs 2.2.1 through 2.2.8 above.

2.2.10. Support and Test Equipment. All handling, storage, test, maintenance, and transport equipment for use with or in support of non-nuclear munitions, including locally manufactured equipment, data scanners, and radio frequency identification device systems and components. Test equipment includes commercially available equipment, used for testing safety critical functions (e.g., arming or firing circuits) of non-nuclear munitions systems, subsystems, and components. Contact 96 TW/SES for requirements when locally manufactured support and test equipment is submitted for NNMSB review and certification.

**2.3. Items Excluded from NNMSB Purview.** The NNMSB does **not** evaluate the following areas:

2.3.1. Explosive components of aircraft egress and life support systems.

2.3.2. Non-airborne launched remotely piloted vehicles (e.g., target, decoy, and surveillance drones) except their explosive flight termination systems or unless the vehicle is designed to deliver non-nuclear munitions or use rocket-assisted launch mechanisms. However, a non-airborne launched remotely piloted vehicle shall be reviewed by the NNMSB at the request of the program office, a NNMSB member and with concurrence of the ES.

2.3.3. Nuclear and nuclear missile systems requiring separate SSGs including subsystems dedicated to the purpose of servicing or delivery of nuclear systems.

2.3.4. General purpose equipment such as ground transport and passenger vehicles and commercial forklifts.

2.3.5. Joint systems that will **not** be used by DAF personnel and will **not** be used on DAF aircraft.

2.3.6. Contractor Owned, Contractor Operated (COCO) testing.



2.3.7. Directed Energy Systems. Evaluation of directed energy systems, including weapons or weaponized items, shall be done in accordance with AFI 91-401, *Directed Energy System Safety*. (T-1)

#### 2.4. Special Cases of NNMSB Purview.

2.4.1. For munitions under NNMSB purview that are not intended for USAF/USSF operational use, not intended for entry into the USAF/USSF inventory, but developed (e.g., Air Force Research Laboratory, Research and Development activities), tested, procured (that is, FMS activities), or otherwise obtained (e.g., contractor-furnished equipment) by USAF/USSF:

2.4.2. The NNMSB retains review and SSG authority and responsibility. Note: SSGs are only required for Acquisition Category (ACAT) 1 programs. Research and development acquisition is ineligible for ACAT status of any level.

2.4.3. For United States-manufactured, non-nuclear munitions items intended solely for foreign-military use, the NNMSB may conduct a TMSS or MSA requested by a NNMSB member or the RA, but the NNMSB will **not** act as certification authority. Items will receive the same level of design safety review as munitions certified by the NNMSB, but the findings of requested reviews will be advisory only.

2.4.4. For foreign-manufactured, non-nuclear munitions items intended solely for foreign-military use, the NNMSB will **not** conduct a requested TMSS or MSA reviews and will **not** act as certification authority.

2.4.5. For non-nuclear munitions items not intended solely for foreign-military use, they may conduct a TMSS or MSA if requested by a NNMSB member or the item's RA.

**2.5. Safety Responsibilities.** When non-nuclear munitions within the NNMSB's purview (2.2, 2.3, and 2.4) are intended for operational use or training by USAF/USSF, the NNMSB has the following technical safety responsibilities:

2.5.1. Reviews and establishes design safety and qualification test criteria, standards, and requirements for non-nuclear munitions and related items.

2.5.2. Maintains safety awareness over all new or modified non-nuclear munitions, including those developed by the USAF/USSF, those obtained from other United States military Services, and those obtained from foreign sources.

2.5.3. Ensures a munitions or equipment item that is safety certified under DAFI 91-101, *Air Force Nuclear Weapons Surety Program*, is certified for non-nuclear use, provided the non-nuclear portion of the system was evaluated. Such nuclear certified munitions and equipment items are not reviewed by the NNMSB unless specifically requested by a NNMSB member.

2.5.4. Verifies whether loss of nuclear certification (that is, restricted from use or removal from the Master Nuclear Certification List) has resulted in the loss of non-nuclear certification.

2.5.5. Identifies and evaluates hazards in the design of munitions systems, subsystems, components, or related items using the system safety engineering principles outlined in the MIL-STD-882. In addition, the NNMSB recommends methods to reduce the risk of hazards identified during NNMSB proceedings to obtain a level acceptable to the USAF/USSF. Where

risk of hazards cannot be adequately reduced, the NNMSB-adjudicated risk assessment shall be accepted by the appropriate authority determined IAW AFI 91-202, Chapter 11.

2.5.5.1. Non-nuclear weapon systems risk assessments shall be coordinated with both 96 TW/SES and NNMSB prior to submittal.

2.5.5.2. Mishap risks for systems that interface with, or transport, armaments shall include the NNMSB within the coordination of the risk acceptance.

2.5.6. Provides guidance to agents responsible for munitions on the criteria for safety certification reviews.

2.5.7. Develops safety recommendations which minimize risk during the life cycle of non-nuclear munitions taking into consideration the mission requirements, employment concepts, operating environments, storage, and handling.

2.5.8. Recommends procedures and warnings to help protect personnel, equipment, and property when hazards cannot be eliminated.

2.5.9. Shall identify and include applicable standards during the development phase of munitions systems, subsystem, component, or related item (see [2.6](#)).

2.5.10. Uses historical safety data and lessons learned from similar munitions programs to help evaluate new designs.

2.5.11. Issues MSA approval.

2.5.12. Makes certification recommendations to AF/SE based on the results of a TMSS.

2.5.13. When a previously certified non-nuclear munition or related item's system safety design fails to perform its intended system safety functions at adequate levels, the appropriate NNMSB member(s) and ES will gather all relevant substantiating information relative to the safety design issue(s) and present it to the full NNMSB for review and possible de-certification determination. If warranted, the NNMSB shall recommend de-certifying the system to AF/SE.

2.5.14. Performs the actions in section [3.4.1](#) during the safety study and review program.

**2.6. Design Safety Standards.** The NNMSB is the USAF/USSF focal point for the development, adoption, and/or tailoring of design and performance safety standards and requirements for non-nuclear munitions systems, subsystems, components, and related items. Once approved by the NNMSB, mandatory design safety standards for items under NNMSB purview are submitted by AFSEC/SEW to AF/SE for final approval (See [Attachment 3](#) for examples of applicable standards).

**2.7. Joint Safety Reviews.** If joint weapon systems and munitions within NNMSB purview are to be used by USAF/USSF personnel, for USAF/USSF-approval/certification, the respective agencies must follow the instructions outlined in this document. **(T-0)** The ES has authority to assign members to a USAF/USSF review group if needed to review joint weapons systems and munitions for USAF/USSF or non-USAF/USSF use.

**2.8. THAR Applicability.** NNMSB approval is generally required prior to testing non-nuclear munitions items under its purview. However, NNMSB approval is **not** required prior to testing in the following situations:

2.8.1. If the test item is **not** flown captive carried on a USAF/USSF aircraft.



2.8.2. If the test item is a USAF/USSF-certified munition, tested on a previously approved aircraft, and tested within the previously approved environmental envelope.

2.8.3. If testing is limited to captive carriage (that is, no release) of a completely inert item (that is, no energetics or initiating devices of any kind).

2.8.4. The NNMSB shall **not** conduct a THAR, even if requested, when the following conditions are all met: the item is intended solely for foreign-military use after development, testing does not involve DAF aircraft, and testing does **not** involve USAF/USSF personnel.

**2.9. IMTWG.** The IMTWG is an established subgroup of the NNMSB and assists and acts on behalf of the NNMSB with respect to its role in the Air Force Insensitive Munitions Program. The IMTWG serves as a source of expertise to advise the NNMSB on all matters pertaining to Insensitive Munitions Program management and technical requirements. The IMTWG briefs current activities to the NNMSB during regularly scheduled meetings.

### **2.10. System Safety Group.**

2.10.1. The NNMSB functions as the SSG for non-nuclear munitions as defined in AFI 91-202. In its capacity as the USAF/USSF non-nuclear munitions SSG, the NNMSB provides munitions safety guidance to agents responsible for acquisition/development of non-nuclear munitions, non-nuclear munitions systems and components under the purview of this instruction. Guidance may be on design safety, analysis, and testing matters affecting certification.

2.10.2. Guidance formulated by the NNMSB will be documented in the meeting proceedings. **(T-1)** If an RA believes this approach might impact acquisition strategy, the NNMSB may direct the ES to provide the guidance to the agent.

2.10.3. For offices that maintain configuration control of aircraft-munitions interface equipment, the NNMSB provides guidance to such offices relative to integration of specific non-nuclear munitions with their aircraft-munitions interface equipment. If during the design safety evaluation of a non-nuclear munition the NNMSB identifies design characteristics of aircraft-munitions interface equipment that could adversely impact overall weapon system design safety, the NNMSB will provide the office an assessment of the risk associated with the design characteristics identified. **(T-1)** The risk assessment will be documented in an ESL, endorsed by the NNMSB Chairperson. **(T-1)**

2.10.4. All official correspondence associated with the NNMSB's role as SSG for non-nuclear munitions and as advisor to aircraft design authorities will be maintained by the ES as part of the permanent NNMSB records (see [1.3.5.1.6](#)). **(T-1)**

## Chapter 3

### NNMSB SAFETY STUDIES

#### 3.1. Overview.

3.1.1. The primary tool used by the NNMSB to evaluate non-nuclear munitions and related equipment items under its purview is an independent safety study and safety program review as set forth in MIL-STD-882. Application of MIL-STD-882 techniques provides assurance that non-nuclear munitions and associated support and test equipment items, other munitions related items, and all operating procedures and technical data meet the highest safety standards.

3.1.2. The safety evaluation process considers design, logistics, and operational requirements throughout a munitions item's life cycle.

3.1.3. The safety study requires maximum use of existing safety documentation and lessons learned.

3.1.4. Safety studies should not be used as source-data for munitions.

3.1.5. Requests for release of information contained in a staff approved TMSS, MSA, or THAR are submitted to the ES.

#### 3.2. Types of Safety Studies.

##### 3.2.1. TMSS.

3.2.1.1. A TMSS is a detailed, comprehensive safety study of non-nuclear munitions and related items under the NNMSB's purview. It is used to document safety-engineering evaluations and findings, and to submit safety recommendations for NNMSB review.

3.2.1.2. A TMSS contains sufficient information to fully support the certification recommendations formulated by the NNMSB. It should present only the necessary design/performance details required for system evaluation and may contain proprietary and/or privileged information.

3.2.1.3. A TMSS is subject to AF/SE approval after NNMSB review.

3.2.1.4. A TMSS is usually prepared following the start of developmental test and evaluation or following the start of the initial operational test and evaluation portion of a combined developmental test and evaluation/initial operational test and evaluation.

##### 3.2.2. MSA.

3.2.2.1. An MSA is a less comprehensive safety study than a TMSS and is typically prepared for munitions support equipment and less complex systems (e.g., countermeasure flares and flight termination systems for drones). An MSA is also required for newly designed or modified unique or peculiar support equipment used with non-nuclear munitions. When a munitions item is modified, or, when a NNMSB member requests a safety study, the ES will make the determination as to whether a TMSS or MSA is required. The NNMSB reserves the right to direct a complete TMSS in lieu of an MSA (see [5.5.6.1](#)).

3.2.2.2. Similar to a TMSS, an MSA must fully support NNMSB positions, but unlike a TMSS, an MSA is **not** subject to AF/SE approval after NNMSB review. An MSA should

present only the necessary design/performance details required for system evaluation and may contain proprietary and/or privileged information.

3.2.2.3. An MSA should **not** be used as the basis for NNMSB action when a certification issue regarding higher level management attention is expected, regardless of the development status or intended use of the item under review. The ES is available to provide guidance as to the appropriateness of the MSA versus the TMSS for any given item.

### 3.2.3. THAR.

3.2.3.1. A THAR is the means to attain NNMSB approval of testing that falls under its purview (see 2.8 for cases that do not fall under the NNMSB's purview).

3.2.3.2. A THAR should be considered to carry the same limitations on disclosure as other safety documentation used expressly for mishap prevention.

3.2.3.3. A THAR contains a physical and functional description of the item and sufficient analysis to ensure the item is safe for use by air and ground crew within the controlled test environment.

3.2.3.4. THARs are generally reviewed at NNMSB meetings, but under extraordinary circumstances, NNMSB members may be requested to issue design safety approval for flight-testing individually in lieu of a formal meeting. In this situation, NNMSB approval must be unanimous. **(T-1)** This procedure may be used only with the agreement of the Chairperson and a quorum of the members.

**3.3. ESL.** For non-complex review and approval or certification actions under NNMSB purview (e.g., use of a modified bomb sling, flight testing of a practice bomb with a spotting charge, or certification of small arms, or small arms ammunition), the NNMSB has delegated approval or certification authority to the ES. Such items are certified by the ES and approved using of an ESL. These letters are maintained on file by the ES. At each regularly scheduled meeting of the NNMSB, the ES will inform the NNMSB of such approvals or certifications accomplished since the previous meeting. **(T-1)**

**3.4. Safety Study and Review Program.** During the conduct of the NNMSB's safety study and review program:

#### 3.4.1. The NNMSB:

3.4.1.1. Ensures that munitions are evaluated against USAF/USSF safety criteria, standards, and requirements and evaluations are based on analysis results and data obtained from engineering, development, and operational testing.

3.4.1.2. Verifies (through results of evaluations) that required level of design and performance safety is achieved during the munitions item's life cycle. An item's life cycle includes all phases of development, production, and USAF/USSF operational use (including transportation, storage, handling, maintenance, employment, and disposal) from program initiation through item removal from the USAF/USSF inventory.

3.4.1.3. Reviews the safety aspects of explosives operations, when requested by a NNMSB member or AF/SE office and recommends to the responsible organization actions to improve safety or occupational health provisions of the operation.

3.4.1.4. Will not recommend munitions or related equipment items be certified for operational use until published technical orders (maintenance, storage, loading, EOD procedures, etc.) are available to the user, Hazards of Electromagnetic Radiation to Ordnance (HERO) certification from AFSEC/SEW is received, and all NNMSB-assigned actions are closed.

3.4.1.5. Will not recommend final certification until final hazard classification actions are completed.

3.4.1.6. The ES provides appropriate guidance to agencies charged with preparing an NNMSB study and maintains up-to-date preparation instructions (that is, scope, content, level of detail, and format requirements) for TMSS, MSA, THAR, and NNMSB presentations.

3.4.2. The 96 TW/SES office serves as the primary engineering support function responsible for conducting NNMSB studies and analyses, but studies may be prepared by any other organization possessing sufficient safety engineering expertise as determined by the NNMSB. Draft studies must be developed and distributed to meet the timelines established in 4.6.

3.4.3. NNMSB-Approved Standards. Standards for munitions (once approved by the NNMSB) play a major role in determining a munition's design-safety adequacy. This applies equally to munitions developed or procured for performance or commercial specifications. Program Managers must ensure standards are followed and appropriately tailored (in consultation with the SSG). **(T-1)**

3.4.3.1. Munitions design safety standards incorporate a life cycle approach to ensure munitions can be safely handled, stored, and operated in all environments the items can reasonably be expected to experience throughout its life cycle. This includes ensuring munitions meet the requirements of HERO certification.

3.4.3.2. Design safety standards are given equal consideration along with logistics and operational requirements.

3.4.3.3. **Attachment 3** lists standards currently approved by the NNMSB and considered applicable to the design, development, test, and evaluation of non-nuclear munitions intended for use by DAF units.

3.4.3.4. AFSEC/SEW acts as approval authority for requests to deviate from mandatory design requirements. Deviations are authorized only with the NNMSB's recommendation and the approval of AFSEC/SEW.

3.4.3.5. Deviations from munitions design safety standards are not considered unless alternative design concepts or procedures are provided, with the concurrence of the NNMSB, and meet the intent of the applicable standard.

## Chapter 4

### ASSEMBLING THE NNMSB

**4.1. Overview.** This chapter describes the procedures and timelines for scheduling a meeting of the NNMSB. Meetings of the NNMSB are scheduled only by the chairperson, or an individual appointed by the chairperson to act in their place.

#### **4.2. Types of NNMSB Meetings.**

4.2.1. **Scheduled Meetings.** Scheduled meetings of the NNMSB are held three times a year. Scheduled meetings generally do not exceed once each quarter.

4.2.2. **Out-of-Cycle Meetings.** Out-of-cycle meetings may be held to support time-critical munitions development program milestones. Out-of-cycle meetings follow the same process and timelines as scheduled meetings. For out-of-cycle meeting, the ES informs the agency requesting a special meeting that funding of the NNMSB members' and Chairperson's travel expenses are a condition for conducting the special meeting. For out-of-cycle meetings, the ES polls NNMSB members as to their availability before meeting dates are established.

4.2.3. **Joint Safety Reviews.** If a NNMSB meeting will review a Joint Development Program, the NNMSB may conduct joint reviews with the weapons safety certification bodies of other Services. Joint reviews are co-chaired and can include participation of members from multiple Services. Joint meeting minutes may also serve as official NNMSB minutes. To expedite a joint safety review, the convening of a special session or an electronic review by specific members of the NNMSB will be decided by the NNMSB Chairperson. **(T-1)**

#### **4.3. Required Participation.**

4.3.1. Minimum membership attendance must be at least 7 of the 14 standing voting representatives to be considered a quorum sufficient for conducting NNMSB business. Members from commands and agencies affected by the weapons system under review must be present to represent the effected user community of that weapons system as a stakeholder.

4.3.2. Under unusual situations, such as a short notice or conflicting requirements, voting members may delegate their votes to another member (proxy), provided the proxy member and the NNMSB chairperson agree to the delegation.

4.3.3. The NNMSB chairperson designates and approves the composition and quorum to provide NNMSB-related review, approval, and advisory services to limited/special access programs.

4.3.4. If **not** designated as the Chairperson, AFSEC/SEW will provide the NNMSB with a representative to function as an advisor or consultant to the NNMSB at every meeting within access limitations.

#### **4.4. NNMSB-Member Review of Read-Ahead Information.**

4.4.1. The Chairperson and NNMSB members are provided read-ahead information prior to meeting with sufficient time to allow proper review within the members' MAJCOMs/FLDCOMs.

4.4.2. If during their preparatory review of read-ahead information provided at the 45-to-50, 45, 25, or 15-day deadlines, NNMSB members have questions or identify concerns, they inform the TMSS or MSA preparing activity and the ES so that additional information may be made available at the NNMSB meeting.

4.4.3. If any NNMSB member states insufficient time was provided by the ES for a proper MAJCOM review, then the item in question is removed from the meeting agenda.

4.4.4. If any NNMSB member, including the Chairperson and ES, anticipates that operational limitations may be imposed as a condition of certification for operational use:

4.4.4.1. The ES will be notified.

4.4.4.2. The ES will advise the organization requesting NNMSB review, the agency having Configuration Control of the munition, and the Lead Command for the Munition.

4.4.4.3. The organization requesting NNMSB review will request participation by one or more advisory representatives of the affected DAF Secretariat, Air Staff, or Chief of Space Operations offices.

#### 4.5. Advisory Personnel.

4.5.1. Advisory personnel are invited to attend NNMSB meetings, as needed. Advisory personnel include representatives from EOD (Air Force Civil Engineer Center, Joint EOD Technology Division (AFCEC/CXE) and Naval Surface Warfare Center Indian Head Division (NSWC IHC)), Air Force Sustainment Center, 96th Test Wing/AF SEEK EAGLE Office, Air Force Life Cycle Management Center (AFLCMC) Airworthiness, Authorizing Official or security control assessor, United States Navy Weapons System Explosives Safety Review NNMSB and the Space Rapid Capabilities Office (SprCO).

4.5.2. Core Advisory Personnel. Core advisory personnel are consultants from other centers or agencies that utilize NNMSB safety studies as part of their processes and include:

4.5.2.1. AFLCMC Airworthiness.

4.5.2.2. Air Force SEEK EAGLE Office.

4.5.2.3. NSWC IHC and AFCEC/CXE.

4.5.2.4. United States Navy Weapons System Explosives Safety Review NNMSB Executive Secretary.

4.5.2.5. Air Force Research Laboratory, Detachment 3.

4.5.3. At times attendance by such advisors may be essential to the effective conduct of NNMSB business. Advisors do **not** exercise a vote during the formal proceedings. If the membership holds that inadequate advisory expertise is present to allow proper evaluation of munitions, then at the discretion of the Chairperson, review of the item may be postponed until a subsequent meeting.

4.5.3.1. Representatives, advisors, and consultants from other offices or government agencies, as necessary, may be invited to attend NNMSB meetings when their munitions (or munitions requiring their expertise) are under review.

4.5.3.2. Other advisors whose attendance may be appropriate are representatives of the USAF/USSF procuring or modifying activity, the lead developmental test and evaluation organization, and the user organization or unit.

4.5.4. Knowledgeable medical personnel must be invited to attend when items under review contain chemical agents, depleted uranium, radiant energy (e.g., from electronic, optical, or sonic sources), or other biomedical hazards. **(T-1)**

**4.6. Meeting Timeline.** All timelines in this section refer to calendar days and apply to scheduled and out-of-cycle meetings.

4.6.1. Ninety Days Prior to Meeting. Designated Systems Safety Engineers will work with RAs to ensure final design details (drawings, electronics diagrams, copies of fault tree analyses, etc.) are provided by the responsible agency no later than 90 days prior to the NNMSB meeting. **(T-1)**

4.6.2. Forty-Five to Fifty Days Prior to Meeting. For ambitious meeting agendas (e.g., 4 or 5 studies for complex weapons), to level the members' review workload, some of the draft TMSSs and MSAs are distributed 45-50 days in advance of the meeting.

4.6.3. Forty-Five Days Prior to Meeting.

4.6.3.1. The ES notifies responsible action-item holders to arrange for action item status reports at the next regularly scheduled Non-Nuclear Munitions Safety NNMSB meeting at least 45 days prior to the NNMSB meeting.

4.6.3.2. Designated Systems Safety Engineers will work with the RA to ensure a copy of the TMSS, MSA, or THAR is submitted to the ES at least 45 days prior to the NNMSB meeting. If the ES deems documentation is unacceptable for NNMSB review, the ES notifies the preparing organization, and the preparing organization will make necessary changes and resubmit to the ES for approval in sufficient time to support deadlines for providing read-ahead information to NNMSB members.

4.6.4. Thirty Days Prior to Meeting. The ES issues the meeting announcement. Agencies with presentations to the NNMSB should ensure essential supporting personnel (e.g., program management authorities, contractor representatives, etc.) are present to participate as needed during the presentation and discussions.

4.6.5. Twenty-Five Days Prior to Meeting. The ES circulates TMSS and MSA studies to NNMSB membership. For two or fewer straightforward weapon studies, a minimum of 25 days is required for review. When significant unavoidable delays in TMSS/MSA distribution arise, the ES requests a waiver from AFSEC/SEW for the 25-day requirement.

4.6.6. Fourteen Days Prior to Meeting.

4.6.6.1. The NNMSB members and Chairperson will be provided read-ahead information at least 14 days prior to conducting a THAR. **(T-2)** Such information may be a simple point paper for non-complex items, or it may be a comprehensive technical data package for test munitions.

4.6.6.2. The ES ensures read-ahead information for other non-certification meeting business requiring a NNMSB decision (such as SSGs, design safety standards, and policy updates) is provided to NNMSB members at least 14 days prior to the meeting.

4.6.6.3. For new NNMSB members arranging for an orientation with the ES in conjunction with a normally scheduled convening of all NNMSB members, the new member coordinates the orientation with the ES at least 14 days prior to the meeting.

4.6.6.4. NNMSB members inviting advisors/consultants to the meeting must notify the ES of those attendees at least 14 days prior to the meeting.

4.6.7. Five Days Prior to Meeting. Action-item status from action item holders is provided to the ES at least 5 days prior to the meeting.



## Chapter 5

### NNMSB MEETINGS, ACTION ITEMS, AND APPROVALS

**5.1. Overview.** The Chairperson presides at NNMSB meetings. NNMSB members and advisory personnel will meet in formal session when called by the chairperson or an individual appointed by the chairperson to act in their place. **(T-1)**

**5.2. Required Participation.** When a stakeholder or proxy from a command or agency affected by the weapons system under review is **not** represented (see **4.3**), or, if the membership holds that inadequate advisory expertise is present to allow proper evaluation (see **4.5**), the Chairperson determines if the meeting will proceed with the available members or if an item's review will be postponed until a subsequent meeting.

#### **5.3. Meeting Activities.**

5.3.1. TMSS, MSA, or THAR Review. During a formal session, the NNMSB completes a comprehensive review of any TMSS, MSA, or THAR presented for developmental, prototype, and existing non-nuclear munitions and associated support equipment. Reviews consider related issues (such as the potential requirement for shields and barricades during electrical testing, the safety adequacy of packaging concepts, the availability of required technical data, EOD procedures, explosive hazard classification, and HERO) to identify areas of design-safety deficiency. The NNMSB specifies conditions for certification when such deficiencies are noted. Designated systems safety engineers work with RAs to ensure studies, review presentations, and supporting documents are provided at the scheduled meeting. The purpose of presentations is to address design safety issues of the items under review and to respond to any concerns or questions the NNMSB members may have. Guidance on presentation scope, level of detail, and format should be requested from the ES.

5.3.2. Joint Safety Review. If a meeting of the NNMSB is held concurrently with other service safety boards, the NNMSB reserves the prerogative to deliberate separately to achieve a USAF/USSF position.

5.3.3. SSG. During a formal session, for ACAT 1 non-nuclear munition programs, the following SSG topics are presented:

5.3.3.1. Munition fleet status including status of safety modifications and Time Compliance Technical Orders (to include risk hazard assessment using AFI 91-202, Attachment 15 as a guide). **(T-1)**

5.3.3.2. Status of safety investigation recommendations affecting the system including a discussion of high accident potential reports. **(T-1)**

5.3.3.3. Status of all High and Serious hazards (defined in MIL-STD-882) and status of any mitigating actions to reduce the hazard. **(T-1)**

5.3.3.4. Status of major modifications and engineering proposals that could impact safety hazards.

5.3.3.5. Status of surveillance testing.

5.3.4. IMTWG. The IMTWG briefs current activities to the NNMSB during regularly scheduled meetings.

5.3.5. Standards. The NNMSB is the USAF/USSF focal point for the adoption, and/or tailoring of design/performance standards/requirements for non-nuclear munitions systems, subsystems, components, and related items. During NNMSB meetings, applicable standards are reviewed, evaluated, and/or recommended for USAF/USSF use, as appropriate.

#### 5.3.6. De-Certification.

5.3.6.1. There may be occasions when a previously certified non-nuclear munition or related item's system safety design fails to perform its intended system safety functions at adequate levels. In such cases, the appropriate NNMSB member(s) and ES will gather all relevant substantiating information relative to the safety design issue(s) and present it to the NNMSB for review and possible de-certification decision. If warranted, the NNMSB shall recommend de-certifying the system to AF/SE, and the ES shall advise the RA that corrective action is urgently needed. De-certification of an inventory item is issued by AF/SE.

5.3.6.2. De-certification recommendation, if warranted, will follow the same approval procedures as any operational certification action. The ES will maintain appropriate guidance regarding de-certification procedures and re-establishment of certification in the NNMSB Standard Operation Procedures guide. **(T-1)**

5.3.6.3. Re-certification recommendation(s) will follow the same process as obtaining initial design safety certification. The RA should provide evidence and ensure corrective actions or design changes have been implemented to restore adequate levels of design safety.

#### 5.3.7. Delegated ESL Approvals and Action-Item Closures.

5.3.7.1. For non-complex review, and approval or certification actions under NNMSB purview (e.g., use of a modified bomb sling, flight testing of a practice bomb with a spotting charge, or certification of small arms, or small arms ammunition), the NNMSB may delegated approval or certification authority to the ES using an ESL. At each regularly scheduled meeting of the NNMSB, the ES will inform the NNMSB of such approvals or certifications accomplished since the previous meeting. **(T-1)**

5.3.7.2. In specific cases, the ES has the authority to close certain types of action items (e.g., purely administrative action items, actions that are satisfied upon completion of a specific event, and action items that have become moot due to a change in acquisition strategy). At each regularly scheduled meeting of the NNMSB, the ES will inform the NNMSB of action-item closures authorized under this authority that have been accomplished since the previous meeting.

#### 5.3.8. Voting.

5.3.8.1. NNMSB Members will make a concerted effort to reach unanimous agreement for each matter requiring a NNMSB position. When unanimous agreement is not possible, the majority position is established by open ballot of the members.

5.3.8.2. For a given matter before the NNMSB, the Chairperson casts a vote only when a ballot of members present (including proxy votes) results in a tie.

5.3.8.3. Members representing the minority position may, at their discretion, prepare a minority report for inclusion in the official meeting minutes.

#### 5.3.9. Closing Business.

5.3.9.1. On a case-by-case basis, the Chairperson decides if the amount of NNMSB business warrants scheduling additional meetings.

5.3.9.2. The ES ensures NNMSB proceedings are fully documented and approved, and prior to review, are made available for review by the NNMSB members as the last item of meeting business.

**5.4. Meeting Minute Contents.** For each meeting, NNMSB proceedings are documented with a comprehensive set of minutes. (T-2) Joint meeting minutes may also serve as official NNMSB minutes (see 5.5). NNMSB minutes are finalized by the ES and include:

5.4.1. Final NNMSB member or proxy attendance.

5.4.2. If studied munitions are acceptable or not acceptable for further testing or use from a design-safety viewpoint.

5.4.3. Applicable findings, recommendations, and required additional actions for each item under review.

5.4.4. The NNMSB-endorsed action item status, including actions closed, actions placed into monitor, and actions placed into “open inactive” status.

5.4.5. The primary action agency for items under NNMSB review, as designated by the Chairperson.

5.4.6. If final certification of an item has been attained, including if certification and approval actions conducted jointly with another service’s certification and approval authority satisfy the NNMSB review and approval process.

5.4.7. If unanimity could **not** be achieved (see 5.3.8), any minority report(s) prepared by dissenting member(s).

5.4.8. As appropriate, guidance formulated by the NNMSB while serving in its capacity as the DAF SSG for RAs.

**5.5. Chairperson-Approval of Minutes.** When NNMSB meeting minutes are signed by each member and approved by the Chairperson:

5.5.1. The approved minutes become the official NNMSB position.

5.5.2. The NNMSB’s design safety conclusions and certification recommendations are included in any reviewed TMSS or MSA. Updated TMSSs are prepared for release to AF/SE, Secretary Air Force, and Chief of Space Operations offices.

5.5.3. Prior to entry of new non-nuclear munitions into the USAF/USSF inventory, regardless of source, an AF/SE certification for operational use is mandatory (AF/SE safety certification decisions are issued using NNMSB recommendations, and NNMSB recommendations are informed by a TMSS). NNMSB meeting minutes constitute interim fulfillment of approval or certification of munitions requirements and grant interim safety approval or certification for non-nuclear munitions or related items. Commanders may proceed at risk with munitions operations while AF/SE concurrence is pursued by AFSEC/SEW (see 5.5.4 and 5.6).

5.5.4. Final certification of a munitions item occurs once the NNMSB acknowledges all action items related to munitions certification are closed.

5.5.5. Signed NNMSB minutes and TMSSs updated with relevant findings and recommendations are forwarded by the ES to AFSEC/SEW, 9700 G Ave SE, Kirtland Air Force Base, NM 87117-5670. **(T-1)** AFSEC/SEW then acts as the coordinating agency to obtain staff agency review and AF/SE approval:

5.5.5.1. AFSEC/SEW coordinates the approved minutes and updated TMSS(s) with the staff agencies listed in **1.3.3**. These agencies must respond to AFSEC/SEW within 30 calendar days indicating their concurrence or non-concurrence with NNMSB findings and recommendations. No response within 30 days constitutes approval.

5.5.5.2. If a staff agency non-concurs with an aspect of the meeting minutes, the staff agency will provide its rationale for non-concurrence to AFSEC/SEW within the prescribed 30-day period. If non-concurrence persists after AFSEC/SEW facilitates communication between the staff agency and the NNMSB:

5.5.5.2.1. The staff agency will provide its final rationale for non-concurrence to AFSEC/SEW.

5.5.5.2.2. AFSEC/SEW may notify applicable commanders of potential disapproval and/or subsequent modification of interim approval or certification, if required.

5.5.5.2.3. The ES may notify the RA and Lead Command of a potential change in certification status of non-nuclear munitions. **(T-1)**

5.5.5.2.4. RAs advised by the ES of de-certification action(s) may advise respective FMS customers of a potential change in certification status.

5.5.5.3. Upon receipt of concurrences, successful resolution of non-concurrences, or final rationale for non-concurrence from staff agencies:

5.5.5.3.1. AFSEC/SEW forwards signed approvals and final non-concurrences to the ES.

5.5.5.3.2. AFSEC/SEW submits the minutes and appropriate documentation to AF/SE for approval.

5.5.5.4. Approval of a recommendation to develop or modify a system signifies staff agency awareness that such action would be desirable from a safety viewpoint. It does **not** mean that such an action is officially proposed, initiated, or funded by a staff agency as a direct result of the recommendation. This is the primary responsibility of the action agency.

5.5.6. For Chairperson-Approved Minutes with an MSA review:

5.5.6.1. If the NNMSB directed that a complete TMSS be prepared on the item in lieu of the MSA, then a TMSS will be developed per the standard process.

5.5.6.2. The MSA is updated with NNMSB's design safety conclusions and certification recommendations. If signed, minutes provide certification:

5.5.6.2.1. Final operational use of the item is authorized.

- 5.5.6.2.2. The ES publishes and distributes the final MSA to NNMSB members and associates, agencies responsible for implementing NNMSB recommendations, and other interested organizations.
- 5.5.7. For Chairperson-Approved Minutes with a THAR:
- 5.5.7.1. Test approval is authorized via signed minutes stating test approval. If NNMSB flight-test approval is issued, the ES notifies RA(s), test organizations, and unit commanders of design safety approval prior to planned activities and operations based on NNMSB recommendations. **(T-1)**
- 5.5.7.2. If NNMSB flight-test approval is not issued, the ES informs the requesting agency of the reason(s) for non-approval.
- 5.5.8. For Chairperson-Approved Minutes with Action Items:
- 5.5.8.1. The ES notifies agencies responsible for implementing the NNMSB's recommendations and actions.
- 5.5.8.2. The ES monitors and periodically requests action item completion status reports from designated action agencies for all post-meeting actions. **(T-1)**
- 5.5.8.3. Unless otherwise directed by the NNMSB, the ES has the authority to close administrative action items or to close a given action item upon the completion of a specific event (e.g., the publication of a technical order). For all other actions, the NNMSB determines when an action item has been successfully completed.
- 5.5.8.4. Action items that have become irrelevant, such as due to a change in acquisition strategy, may be administratively closed by the ES.
- 5.5.8.5. In the event an action item cannot be closed expeditiously, the action item will be placed in an "open inactive" category by the ES and maintained in the historical record (see [1.3.5.1.6](#)) until such time the status of the action item changes.

**5.6. AF/SE Approval of Minutes and TMSS(s).** After AF/SE approval of minutes and TMSS:

- 5.6.1. A NNMSB recommendation becomes directive on the designated action agencies.
- 5.6.2. The ES notifies agencies responsible for implementing NNMSB recommendations following AF/SE approval.
- 5.6.3. The action-item agency initiates and monitors the action and makes periodic status reports to the ES until action item closeout.
- 5.6.4. The ES publishes and distributes the final TMSS to NNMSB members, NNMSB associates, agencies responsible for implementing NNMSB recommendations, and other interested organizations. **(T-2)**
- 5.6.5. When AF/SE disapproves a NNMSB recommendation on certification or non-certification:
- 5.6.5.1. AFSEC/SEW notifies the ES and applicable commanders of disapproval and/or subsequent modification, if required, of interim approval or certification.
- 5.6.5.2. The ES notifies the RA and Lead Command of a change in certification status.

5.6.5.3. RAs advised by the ES of de-certification action(s) are responsible for advising respective FMS customers.

5.6.5.4. The ES will maintain appropriate guidance regarding de-certification procedures and re-establishment of certification in the NNMSB Standard Operation Procedures guide. **(T-1)**

JEANNIE M. LEAVITT, Maj Gen, USAF  
Chief of Safety

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

DoDD 5000.01, *The Defense Acquisition System*, 9 September 2020

DoDI 5000.02, *Operation of the Adaptive Acquisition Framework*, 23 January 2020

DoDI 6055.16, *Explosives Safety Management Program*, 29 July 2008

DoDI 5000.69, *DoD Joint Services Weapon and Laser System Safety Review Processes*, 9 November 2011

DoDM 5000.69, *Joint Services Weapon Safety Review (JSWSR) Process*, 30 July 2014

AFPD 91-2, *Safety Programs*, 3 September 2019

DAFI 91-101, *Air Force Nuclear Weapons Surety Program*, 26 March 2020

DAFMAN 90-161, *Publishing Processes and Procedures*, 15 April 2022

AFI 16-701, *Management, Administration and Oversight of Special Access Programs*, 18 February 2014

AFI 33-322, *Records Management and Information Governance Program*, 23 March 2020,

AFI 51-401, *The Law of War*, 3 August 2018

AFI 63-101/20-101, *Integrated Life Cycle Management*, 30 June 2020

AFI 91-202, *The US Air Force Mishap Prevention Program*, 12 March 2020

AFI 91-401, *Directed Energy System Safety*, 28 November 2018

MIL-STD-331D, *Department of Defense Test Method Standard, Test Method Standard, Fuzes, Ignition Safety Devices and Other Related Components, Environmental and Performance Test For*, 31 May 2017

MIL-STD-882E, *Department of Defense Standard Practice, System Safety*, 11 May 2012

MIL-STD-1316F, *Department of Defense Design Criteria Standard, Fuze Design, Safety Criteria*, 18 August 2017

MIL-STD-1901A, *Department of Defense Design Criteria Standard, Munition Rocket and Missile Motor Ignition System Design, Safety Criteria For*, 6 June 2002

MIL-STD-2105E, *Department of Defense Test Method Standard, Hazard Assessment Tests for Non-nuclear Munitions*, 6 January 2022

TB 700-2/NAVSEAINST 8020.8C/TO 11A-1-47, *Department of Defense Ammunition and Explosives Hazard Classification Procedures*, 30 July 2012

***Prescribed Forms***

None

*Adopted Forms*

DAF Form 847, *Recommendation for Change of Publication*

*Abbreviations and Acronyms*

**ACC**—Air Combat Command

**ACT**—Acquisition Category

**AETC**—Air Education and Training Command

**AFGSC**—Air Force Global Strike Command

**AFI**—Air Force Instruction

**AFCEC**—Air Force Civil Engineer Center

**AFLCMC**—Air Force Life Cycle Management Center

**AFMC**—Air Force Materiel Command

**AFOTEC**—Air Force Operational Test and Evaluation Center

**AFPD**—Air Force Policy Directive

**AFSEC**—Air Force Safety Center

**AFSOC**—Air Force Special Operations Command

**AMC**—Air Mobility Command

**ANG**—Air Force National Guard

**AOP**—Allied Ordnance Publications

**COCO**—Contractor Owned, Contractor Operated

**DAF**—Department of the Air Force

**DAFI**—Department of the Air Force Instruction

**DAFMAN**—Department of the Air Force Manual

**DoD**—Department of Defense

**DoDD**—Department of Defense Directive

**DoDI**—Department of Defense Instruction

**DoDM**—Department of Defense Manual

**e-Publishing**—e-Publishing website ([www.e-publishing.af.mil](http://www.e-publishing.af.mil))

**EOD**—Explosive Ordnance Disposal

**ES**—Executive Secretary

**ESL**—Executive Secretary Letter

**FLDCOM**—Field Command

**FMS**—Foreign-Military Sales



**HERO**—Hazards of Electromagnetic Radiation to Ordnance

**HQ**—Headquarters

**IAW**—in accordance with

**IMTWG**—Insensitive Munitions Technical Working Group

**JOTP**—Joint Ordnance Test Procedure

**JSWSR**—Joint Services Weapon Safety Review

**MAJCOM**—Major Command

**MSA**—Munitions Safety Analysis

**NNMSB**—Non-Nuclear Munitions Safety NNMSB

**NSWC**—Naval Surface Warfare Center

**OPR**—office of primary responsibility

**PACAF**—Pacific Air Forces

**RA**—responsible agent

**SpOC**—Space Operations Command

**SSC**—Space Systems Command

**SSG**—System Safety Group

**STARCOM**—Space Training and Readiness Command

**THAR**—Test Hazards Assessment Review

**TMSS**—Technical Munitions Safety Study

**USAF**—United States Air Force

**USAFE-AFAFRICA**—United States Air Forces in Europe – Air Forces Africa

**USSF**—United States Space Force

### *Office Symbols*

**96 TW/AF SEEK EAGLE**—96<sup>th</sup> Test Wing, Air Force SEEK EAGLE Office

**96 TW/SES**—96<sup>th</sup> Test Wing, System Safety

**AF/SE**—Department of the Air Force Chief of Safety

**AFCEC/CXE**—Air Force Civil Engineer Center, Joint EOD Technology Division

**AFSEC/SEW**—Air Force Safety Center, Weapons Safety Division

**AF/A4LW**—The Air Force Director of Logistics, Deputy Chief of Staff/Logistics, Installations and Mission Support (Nuclear Weapons Missile and Munitions Division)

**AF/JAO**—Air Force Operations and International Law Directorate

**SAF/AQP**—The Office of the Assistant Secretary of the Air Force for Acquisition, Directorate of Global Power Programs

**SAF/GCI**—The General Counsel of the Department of the Air Force

**SpROC**—Space Rapid Capabilities Office

## Attachment 2

### TMSS INSTRUCTIONS

**A2.1. Overview.** A TMSS is a detailed safety study for a conventional complex weapon system and forms the basis to obtain safety certification for operational use. In general, a draft TMSS is furnished to NNMSB for review and the ES maintains up-to-date preparation instructions for TMSS. The TMSS document is divided into three distinct sections as follows: the prefatory pages, the report body, and the appendices.

**A2.2. Prefatory Pages.** The prefatory section is a set of standardized formatted pages designed to facilitate HQ USAF and Secretary of the Air Force distribution and approval. The prefatory section includes i) Title Page, ii) HQ USAF Directives/Actions, iii) Foreword, iv) Abstract, v) Table of Content, vi) List of Figures and Tables, vii) Recommendations of the USAF NNMSB, and viii) Signature Page. NOTE: The Title page will have the word “DRAFT” printed.

#### **A2.3. Report Body.**

A2.3.1. The study report includes the following sections: a) Purpose and Scope, b) Criteria, Assumptions, and Limitations, c) Physical and Functional Description, d) Safety Analysis, e) Testing, f) Technical Orders, EOD procedures, Explosive Hazard Classifications, and HERO certifications, and g) Findings.

A2.3.2. Purpose and Scope. Self-explanatory

A2.3.3. Criteria, Assumptions, and Limitations. The criteria are the sources, requirements, or guidelines on which the evaluation, assessment, study, or analysis is based. List the assumptions that are an integral consideration in the safety evaluation. State the limitations that are the bounds beyond which the report is not necessarily valid.

A2.3.4. Physical and Functional Description. The physical description should be based on actual production representative hardware. It can be broken into any number of distinct sections as necessary to provide a complete explanation of the components that make up the system under review. Ensure safety devices/features and energetic components (e.g., explosives, batteries, springs, compressed gas, etc.) within the system and/or components are properly identified and adequately described. The functional description is the logical description of the munition’s operational cycle from storage to target, pulling together in a logical sequence the various events and operations of components described within the physical description. Ensure all safety critical functions are included in the sequence. A timeline figure may be used to clarify the sequence.

A2.3.5. Safety Analysis. This section focuses on hazard analysis (include both safety-critical hardware and software) and must be technically accurate and complete. Discuss the degree of design safety of the weapon and provide a structured evaluation of all significant credible hazards applicable to the environment in which the weapon is intended to operate. This section should include the following: a) Credible Hazards b) Safety Analysis Approach, c) Safety Analysis Results, and d) Analysis Summary. Ensure that the hazard mitigation features for each identified hazard is based on safety design features, substantiating analyses, or summaries of analyses, and safety performance testing. The safety analysis section should reference and summarize any Fault Tree Analysis, comparison of weapon design features to Military Standards (e.g., MIL-STD-1316, etc.) and any other appropriate substantiating analyses. For

each hazard addressed, provide a statement as to how is the hazard adequately controlled (design/procedures/etc.) and whether they are eliminated, controlled, mitigated, or need risk acceptance.

A2.3.6. Testing. This section provides a summary of the Qualification and performance tests that substantiate the level of design safety. Appropriate tests are those that support the safety conclusions relative to hazard mitigation design features. For each test, address the methodology (e.g., MIL-STD-331D, *Department of Defense Test Method Standard, Test Method Standard, Fuzes, Ignition Safety Devices and Other Related Components, Environmental and Performance Test For*), test asset quantity, test configuration and level of assembly and, whether it is sequential or stand-alone testing. The test summaries can be narrative or tabular (preferred) format and structured in such a manner as to succinctly support the conclusions of the safety study.

A2.3.7. Technical Orders, EOD Procedures, Hazard Classification, and HERO Certification. This section contains the status of availability and fielding appropriate technical orders, EOD procedures, explosive hazard classifications, and HERO assessments and/or certifications.

A2.3.8. Findings. This section is where the author makes his/her recommendation(s) for certification. This section must also list any actions the author feels must be accomplished prior to operational use or final certification.

**A2.4. Appendices.** Include appropriate appendices that contain essential information to support hazard analyses such as MIL-STD-1316, and MIL-STD-1901A, *Department of Defense Design Criteria Standard, Munition Rocket and Missile Motor Ignition System Design, Safety Criteria For*, comparisons, Fault Tree Analyses, etc. Also include applicable technical references such as Systems Performance Specification, Test Reports used in the development of the TMSS.

#### **A2.5. Distribution.**

A2.5.1. Studies may be distributed by hard copy, disk (CD/DVD), or e-mail. If the information in the study is proprietary in nature, be sure to mark it as such and if sent electronically, encrypt it or password-protect the information.

A2.5.2. The draft TMSS discussed in [paragraph A2.1](#) above is distributed only to the originating agency, the NNMSB ES, AFSEC/SEW, and the NNMSB members. The NNMSB members also may distribute it within their commands.

A2.5.3. After the NNMSB has approved the study and made the necessary corrections, the ES will add a section to the front of the study. This section shows the NNMSB's recommendations and includes a signature page for approval coordination.

A2.5.4. Replace the cover with one annotated by the words "AIR STAFF APPROVAL COPY". Forward copies to AFSEC/SEW for staff agency review and DAF/SE approval if sent as hard copy or on disk.

A2.5.5. Coordination functions are discussed in [Chapter 5](#).

A2.5.6. When approved by DAF/SE, the ES will publish the final TMSS edition. Replace the cover with one annotated with the words, "AIR STAFF APPROVED SAFETY REPORT."

### Attachment 3

#### STANDARDS AND SPECIFICATIONS APPROVED BY THE NNMSB

**A3.1. Overview.** The NNMSB has approved documents containing safety design and performance, test, and analysis criteria for the design and evaluation of non-nuclear munitions.

**A3.2. The approved documents are as follows:**

A3.2.1. MIL-STD-331D, *Department of Defense Test Method Standard, Fuze and Fuze Components, Environmental and Performance Tests For*, 31 May 2017

A3.2.2. MIL-STD-461G, *Department of Defense Interface Standard, Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment*, 11 December 2015

A3.2.3. MIL-STD-464D, *Department of Defense Interface Standard, Electromagnetic Environmental Effects, Requirements for Systems*, 24 December 2020

A3.2.4. MIL-STD-648E, *Department of Defense Design Criteria Standard, Specialized Shipping Containers*, 1 November 2016.

A3.2.5. MIL-STD-810H(1), *Department of Defense Test Method Standard, Environmental Engineering Considerations and Laboratory Test*, 18 May 2022

A3.2.6. MIL-STD-882E, *Department of Defense Standard Practice, System Safety*, 11 May 2012

A3.2.7. MIL-STD-1316F, *Department of Defense Design Criteria Standard, Fuze Design, Safety Criteria For*, 18 August 2017

A3.2.8. MIL-STD-1365D, *Department of Defense Design Criteria Standard, General Design Criteria for Handling Equipment Associated with Weapons and Related Items*, 20 October 2020.

A3.2.9. MIL-STD-1466, *Military Specification: Safety Criteria and Qualification Requirements for Pyrotechnic Initiated Explosive (PIE) Ammunition, Notice 3*, 26 October 2015

A3.2.10. MIL-STD-1472H, *Department of Defense Design Criteria Standard, Human Engineering*, 15 September 2020

A3.2.11. MIL-STD-1760E, *Department of Defense Interface Standard, Aircraft Stores Electrical Interconnection System*, 24 October 2007

A3.2.12. MIL-STD-1901A, *Department of Defense Design Criteria Standard, Munitions Rocket and Missile Motor Ignition System Design, Safety Criteria For*, 6 June 2002

A3.2.13. MIL-STD-1911A, *Military Standard: Hand-Emplaced Ordnance (HEO) Design, Safety Criteria For*, 24 July 2014

A3.2.14. MIL-STD-2088B, *Department of Defense Design Criteria Standard, Bomb Rack Unit (BRU), Aircraft*, 19 October 2012

A3.2.15. MIL-STD-2105E, *Department of Defense Test Method Standard, Hazard Assessment Tests for Non-nuclear Munitions*, 6 January 2022

- A3.2.16. MIL-STD-8591 w/Change 1, *Department of Defense Design Criteria Standard, Airborne Stores, Suspension Equipment and Aircraft-Store Interface (Carriage Phase)*, 16 November 2012.
- A3.2.17. MIL-HDBK-454C, *Department of Defense Handbook, General Guidelines for Electronic Equipment*, 21 September 2021
- A3.2.18. MIL-HDBK-1455, *Military Handbook, Dispenser and Sub-Munition, Air Delivered, Safety Design and Safety Qualification Criteria For*, 14 February 1987
- A3.2.19. MIL-HDBK-1512, *Department of Defense Handbook, Electro-Explosive Subsystems, Electrically Initiated, Design Requirements and Test Method*, 30 September 1997
- A3.2.20. MIL-PRF-28800G, *Performance Specification: Test Equipment for Use with Electrical and Electronic Equipment, General Specification For*, 17 November 2021
- A3.2.21. MIL-DTL-23659F, *Detail Specification, Initiators, Electric, General Specification For*, 18 March 2015
- A3.2.22. MIL-T-7743F, *Store Suspension and Release Equipment, General Specification For*, 23 August 2019.
- A3.2.23. Allied Ordnance Publication (AOP)-7, Ed 2-U.S. Section, *Manual of Data Requirements and Tests for the Qualification of Explosive Materials for Military Use*, 1 June 2003
- A3.2.24. AOP-52 Ed B, *Guidance on Software Safety Design and Assessment of Munition-Related Computing Systems*, 29 November 2016
- A3.2.25. Joint Ordnance Test Procedure (JOTP)-050A, *Safety Design Requirements for Active Hazard Mitigation Devices (AHMD) Employed to Address Fast and Slow Cook-Off Thermal Threat*, 24 June 2019
- A3.2.26. JOTP-051, *Technical Manual for the Use of Logic Devices in Safety Features*, 10 February 2012
- A3.2.27. JOTP-052, *Guideline for Qualification of Fuzes Safe and Arm (S&A) Devices, and Ignition Safety Devices (ISD)*, 17 Mar 2012
- A3.2.28. JOTP-053, *Electrical Stress Test (EST)*, 3 November 2015
- A3.2.29. JOTP-054, *Guidelines for the Design of Low Voltage Command-Arm (LVCA) Distributed Fuzing Systems*, 17 October 2019.
- A3.2.30. JOTP-061, *Hazards of Electromagnetic Radiation to Ordnance (HERO) Safety Test*, 10 January 2013.
- A3.2.31. JOTP-062, *Personnel-borne ElectroStatic Discharge (PESD) and Helicopter-borne ElectroStatic Discharge (HESD) Requirements for Ordnance*, 4 August 2015.
- A3.2.32. NAVSEA S9310-AQ-SAF-010, *Navy Lithium Battery Safety Program Responsibilities and Procedures*, 3 November 2020.
- A3.2.33. TB 700-2/NAVSEAINST 8020.8C/TO 11A-1-47, *Department of Defense Ammunition and Explosives Hazard Classification Procedures*, 30 July 2012.