DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
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IN REPLY REFER TO
NAVSEAINST 8020.6D
Ser N00/02
15 Jan 97

NAVSEA INSTRUCTION 8020.6D

From: Commander, Naval Sea Systems Command

Subj: NAVY WEAPON SYSTEM SAFETY PROGRAM

Ref: (a) OPNAVINST 8023.2C
(b) OPNAVNOTE 5450 of 14 Oct 93
(c) NAVSEAINST 5450.72
(d) SECNAVINST 5000.2B
(e) DoD Regulation 5000.2-R
(f) DoD Directive 5000.1
(g) MIL-STD-882C
(h) OPNAVINST 5000.42C
(i) NAVSEAINST 9070.5A
(j) NAVSEAINST 8020.5B
(k) OPNAVINST 9072.2
(l) NAVSEAINST 8020.11A

Encl: (1) Membership, Responsibilities and Procedures of the Navy's Weapon System Explosives Safety Review Board
(2) Definition of Terms
(3) List of Acronyms
(4) Sample Weapon System Safety Program During The Acquisition Process
(5) Guidelines for Programs Presenting to the Weapon System Explosives Safety Review Board
(6) Additional Data Requirements And Technical Appendices Recommended For Weapon System Explosives Safety Review Board Data Packages
(7) Review Criteria for Ordnance Related Software System Safety Technical Review Panels

1. Purpose. The purpose of this instruction is to update and re-issue the responsibilities, authorities, and operational procedures of the Navy's Weapon System Explosives Safety Review Board (WSESRB) under the explosives safety authority assigned by reference (a) for the Department of the Navy (DON). This is a major revision and must be read in its entirety.

2. Cancellation. NAVSEAINST 8020.6C.

3. Objective. The objective of this instruction is to describe the organization of the WSESRB and the operational processes used by the Board to assess through independent oversight, the adequacy of the safety effort applied to a given ordnance item, weapon system, ordnance development or Product Improvement Program (PIP), to evaluate the resulting degree of compliance with safety guidelines and standards, and to assist in characterization of safety risks associated with its life cycle.

4. Authority. While weapon system and ordnance safety is the responsibility of cognizant program management organizations, the Chief of Naval Operations (CNO) and Commander, Naval Sea Systems Command (COMNAVSEASYSCOM), in accordance with references (a), (b) and (c), have designated the Commander, Naval Ordnance Center (COMNAVORDCEN) as the DON's technical authority for explosive safety. Under that authority, COMNAVORDCEN is empowered to assess the safety aspects of weapon systems and explosives systems and to make recommendations to the responsible Navy and Marine Corps Commands, Program Managers (PMs), and Milestone Decision Authorities (MDAs).

5. The Weapon System Explosives Safety Review Board

a. Under the authorities described, the WSESRB has responsibility for independent oversight of the safety effort associated with all ordnance items, weapon devices, or systems used, handled, stored or tested aboard a Navy ship or aircraft. Reference (d) issues guidance for DON implementation of the acquisition policy of references (e) and (f). The WSESRB functions according to those instructions by providing safety-related guidance and recommendations to acquisition programs and MDAs. Following guidance in reference (a), the WSESRB also provides recommendations to MDAs regarding safety approval of designs entering low-rate initial production (LRIP) and/or prior to final production approval for weapon systems, related systems and materials, and weapon system software considered for use by the DON.

b. The Safety, Security and Environmental Directorate of NAVORDCEN provides the chairperson, vice-chairperson and the permanent secretariat of the WSESRB. The WSESRB consists of representatives from the Naval Systems Commands and other Naval activities as deemed appropriate by the chairperson. WSESRB members may seek assistance in technical reviews and may request attendance of technical experts at WSESRB meetings, as necessary. CNO and the Commandant of the Marine Corps may provide substitutes to the WSESRB meetings, as desired. Enclosure (1) provides a description of the membership, responsibilities, and procedures of the WSESRB.

6. Scope

a. The scope of this instruction extends to:

(1) All ordnance items, explosives systems, weapon systems, related fire control systems, conventional components of nuclear weapons containing energetic materials, and weapon devices or systems; and

(2) Demonstration firings or evaluations or foreign comparative testing of the above listed items, regardless of the country of origin, military service proponency, design source, or

manufacturing source when their use or stowage will be aboard a Navy owned or contracted vessel or aircraft.

b. The scope of this instruction does not extend to ships contracted to support the Marine Corps Maritime Prepositioning Ship (MPS) Program.

7. Applicability. This instruction is applicable to all PMs, as defined in enclosure (2), who are responsible for ordnance items that are carried, stored, or tested aboard a Navy ship, submarine or aircraft. It is also applicable to PMs of other services, other Department of Defense (DoD) agencies, and Special Operations Forces (SOF) responsible for ordnance items which are carried aboard Navy ships, submarines or aircraft, or when they are to be handled, stored, or tested in Navy facilities.

8. Background. The WSESRB was established in 1967 following several mishaps which occurred aboard aircraft carriers. Although weapon system and ordnance safety is clearly the responsibility of the Program Office, it was determined that an independent oversight of a weapon program's safety effort was needed to ensure maximum compliance with long standing weapon safety requirements. The ultimate goal is to prevent mishaps involving ammunition, explosives and related systems; thereby, eliminating deaths, injuries, lost work days, and property and environmental damage. The purpose of the WSESRB's review of programs is to provide an independent and highly technical review of the adequacy of the development or PIP's safety effort.

9. Definitions. The terms used in this instruction are defined in enclosure (2) and a list of acronyms is provided in enclosure (3).

10. Policy

a. Action

(1) Acquisition Programs. All PMs, weapon system designers, producers, processors, packagers, handlers, or users of a weapon or related system are accountable for safety within their areas of responsibility. No weapon system program, regardless of acquisition category (ACAT) level (including those programs with no ACAT designation) will proceed to shipboard or aircraft testing, LRIP (if the end item will be given to the Fleet for use or transport), or to production approval (MS III) without an appropriate WSESRB review and safety approval recommendation, in writing, to the MDA or PM. Enclosure (4) shows typical times during the acquisition process when a program would schedule WSESRB reviews.

(2) In general, the MDA and PM should consider a successful WSESRB review as one of the exit criteria, described in reference (e), for a program completing one milestone phase

and advancing to another. Enclosures (5) and (6) provide guidelines for the submission of WSESRB technical data packages and address the additional data requirements for these reviews.

(3) No changes or PIPs to previously approved weapon systems, including the ordnance related software, which affect the safety of the system or the safety of other systems shall be introduced into the Fleet without an appropriate WSESRB review and safety approval recommendations. This requirement also extends to programs conducted as non-ACAT programs, engineering change proposals (ECPs), ordnance alterations (ORDALTs) and/or PIPs, and programs which directly acquire non-developmental items (NDI) and seek to introduce them into the Fleet either with or without modification. ECPs and ORDALTs are routinely reviewed by the WSESRB Secretariat and a full WSESRB review is generally not required.

(4) Any non-developmental or commercially available ordnance item, weapon system or control system must satisfy the same WSESRB safety requirements as any developmental item. The weapon system in this case includes all interface elements required to adapt the item's use to the platform.

(5) For ship installations that are the first of a class, or where there are significant variations in the class, installation of a weapon system must be formally reviewed and safety approval recommendations made during the weapon or ship design phase. Change proposals, ORDALTS or ship alterations (SHIPALTS) which, in the judgment of the PM, impact weapon system safety must also be reviewed by the WSESRB and safety approval recommendations provided.

(6) WSESRB recommendations for safety approval shall be obtained before initial delivery of test, prototype, or production units to the Fleet.

b. <u>WSESRB Authority</u>

(1) The WSESRB, in general, makes safety recommendations to PMs and MDAs. In light of compelling requirements, the PM or MDA may decide not to comply with the WSESRB's safety recommendations and to accept an increased level of risk associated with an identified hazard. In accordance with reference (e), the program's decision to accept a risk associated with an identified hazard must be formally documented and approved for acceptance at the appropriate level. (Reference (g) should be used as a guide to establish criteria defining and categorizing the risk.) A copy of the decision to accept the risk is to be provided to the WSESRB.

(2) WSESRB Test Firing Authority. The WSESRB decisions are recommendations to the program for all cases, except those involving test operations aboard ship. Because of the potential

for explosive mishaps to occur during shipboard tests, the WSESRB charter was expanded by Commander, Naval Sea Systems Command (COMNAVSEASYSCOM) to include safety approval authority for test firing aboard ship. For test firings from land based aircraft, safety approval authority may be delegated by Commander, Naval Air Systems Command (COMNAVAIRSYSCOM).

(3) Ordnance Related Software. Throughout the system development, systems employing software in safety critical or potential safety critical roles shall include software system safety tasking within the system safety program. Appropriate analyses and testing of the safety critical software shall be conducted to ensure that the associated risk is minimized. Enclosure (7) provides review criteria for Software System Safety Technical Review Panels, a subordinate function of the WSESRB.

c. Review Types

(1) WSESRB Formal Review. The operation and procedures of the WSESRB sitting in formal review is described in enclosure (1).

(2) WSESRB Limited Review. For those systems that will only be stored and transported, and will not be employed upon Navy ships (e.g., tanks, amphibious vehicles, etc.), a limited WSESRB review will suffice. The WSESRB Chairperson would determine the minimum information required to be provided. In general, this would include providing a description of the system, addressing any hazards of electromagnetic radiation to ordnance (HERO) and/or insensitive munitions (IM) issues, and meeting the intent of shipboard shock/vibration, as well as storage and transportation requirements.

(3) Accident Investigation Reviews. The WSESRB may, at the discretion of the Chairperson, review the results of Navy accident investigations and the plans for the control and mitigation of the identified hazards. For access to Marine Corps accident investigation results, the WSESRB may request final investigation results through the Commander, Marine Corps System Command (COMMARCORSYSCOM), Program Manager for Ammunition Management (AM).

(4) Secretariat Reviews. In matters in which the Board has established specific criteria, members of the Secretariat may review limited-scope program safety issues, responses to prior WSESRB recommendations, time-sensitive matters and provide WSESRB assessments. The Chairperson or a designated representative may issue documentation of the findings resulting from such Secretariat reviews to appropriate offices and activities responsible for the program or system with the full authority of the WSESRB. The Secretariat will subsequently inform the full Board of all actions taken on behalf of the Board.

(5) Joint Service Reviews. For joint service programs, the WSESRB will review the program, as appropriate, for the Navy. The Program Manager is responsible for contacting both the Army Fuze Safety Review Board and the Air Force Non-Nuclear Munitions Safety Board for similar reviews or joint service safety reviews. If a joint service safety review is required, the PM is responsible for contacting the WSESRB Secretariat as well as the secretariats from the other services to arrange for a meeting at a mutually agreeable time and place. The WSESRB Secretariat will provide assistance in determining and contacting appropriate agencies, if the program so desires.

11. Actions

a. DON Systems Commands. Each DON Systems Command shall, when requested by the Chairperson, provide a primary and alternate to serve as members of the WSESRB according to reference (a). The member and alternate shall be familiar with the responsibilities of his or her command and his or her respective program requirements. Each member or alternate will be experienced in weapon safety and should have no programmatic responsibility for the development or effectiveness of the item under review.

b. PMs, Naval Systems Commands, and Research and Development Activities. PMs are responsible for implementing the Naval Weapon System Safety Program within their areas. Following the guidance in references (a), (e), (h), (i), (j) and (k) they will:

(1) ensure that explosives and weapon system safety criteria are met in the design of weapon systems, explosive systems, aircraft, ships, facilities, and fire control software developed or purchased by them;

(2) for the Navy, ensure that a Principal for Safety is designated in their systems engineering organization and is identified in the System Safety Program Plan. For the Marine Corps, ensure that a Technical Director for munitions/systems review is designated within COMMARCORSYSCOM AM. The Principal for Safety or Marine Corps Technical Director should be a government representative although contractors may serve as members of a system safety working group or actually conduct the safety program; and

(3) submit documentation, as described in enclosure (5), to the WSESRB to support system safety reviews according to paragraph 10.c, above.

c. COMNAVORDCEN. As the appointed technical authority for weapon system and explosives safety in accordance with references (a) and (b), COMNAVORDCEN will designate a chairperson and provide documentation support for the WSESRB. The WSESRB

Chairperson will provide technical guidance and act authoritatively for COMNAVORDCEN, COMNAVSEASYSCOM and CNO in matters of the technical aspects of explosives and explosive materials or systems and serve as point of contact for weapon system and explosives safety within the DON.

d. The Program's Principal for Safety. As the designated point of contact for safety matters for the program, the Program's Principal for Safety shall:

(1) act as the Program's point of contact for the WSESRB;

(2) schedule WSESRB reviews and related meetings appropriate to the weapon system life cycle;

(3) represent the Program if a PM or Deputy PM is not in attendance at WSESRB meetings;

(4) respond to the Board's written recommendations and requests in writing; and

(5) coordinate preparation and review of the data package and presentation materials to ensure that they conform with the WSESRB guidelines.

e. Weapon System Explosives Safety Review Board. Following information contained in reference (a), the WSESRB will:

(1) review the overall safety of weapon systems, related systems and explosive systems;

(2) provide written recommendations to Naval Systems Commander, PM, or MDA responsible for the system;

(3) provide safety approval recommendations to the MDA for systems for LRIP, production approval or initial operational capability (IOC); and

(4) schedule special meetings to perform WSESRB related tasks including, but not limited to, the following:

(a) Executive Sessions. The WSESRB is authorized to meet in Executive Session to discuss technical issues concerning programs, receive briefings on information of interest to the Board, review Board policy, and for other purposes determined to be appropriate by the Chairperson. The agenda for an executive session is determined by the Secretariat.

(b) Technical Review Panels. At the discretion of the WSESRB Chairperson, special WSESRB Technical Review Panels (TRPs) may be established to review specific safety aspects requiring special expertise (e.g., ordnance related software

safety) of weapon systems. These TRPs are scheduled and led by an appointed TRP Chairperson and have at least two other designated members. Naval Systems Commanders shall, when requested by the WSESRB Chairperson, identify a member to serve on TRPs. These members shall be familiar with the responsibilities of their Systems Commands and respective program requirements and have expertise in the applicable area of the TRP. Other members and technical advisors, chosen for their expertise, are appointed at the discretion of the TRP Chairperson. TRPs are generally less formal than full WSESRB reviews. Recommendations made by TRPs will be presented to the Program Office and the WSESRB at the conclusion of the TRP meeting; however, they do not become official until reviewed and endorsed by the WSESRB. The WSESRB may accept, modify, or reject the recommendations of the TRP. The results of the WSESRB action on the TRP recommendations will be provided to the Program Office.

G. R. STERNER

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MEMBERSHIP, RESPONSIBILITIES AND PROCEDURES OF THE NAVY'S WEAPON SYSTEM EXPLOSIVES SAFETY REVIEW BOARD

1. Weapon System Explosives Safety Review Board Membership (WSESRB). It should be noted that not all board members will be in attendance at all WSESRB meetings. The actual board composition for each meeting is determined by the program being reviewed and the potential safety issues that need to be addressed.

a. The WSESRB permanent board members include representatives from the following commands:

(1) Chairperson
(2) Vice-Chairperson
(3) Naval Ordnance Center (NAVORDCEN)
(4) Naval Sea Systems Command (NAVSEASYSCOM)
(5) Naval Air Systems Command (NAVAIRSYSCOM)
(6) Space and Naval Warfare Systems Command (SPAWAR)
(7) Marine Corps System Command (MARCORSYSCOM)
(8) Navy Safety Center (NAVSAFCEN)
(9) Naval Surface Warfare Center (NAVSURFWARCEN)
(10) Naval Air Warfare Center (NAVAIRWARCEN)

b. Replacement board members include representatives from:

(1) Chief of Naval Operations (CNO) N411
(2) Commandant Marine Corps (CMC) Safety Division (SD)
(3) Commander in Chief Atlantic Fleet (CINCLANTFLT)
(4) Commander in Chief Pacific Fleet (CINCPACFLT)
(5) Marine Forces Atlantic (MARFORLANT)
(6) Marine Forces Pacific (MARFORPAC)

c. Invited board members with particular expertise include:

(1) NAVORDCEN Representative for Quality Evaluation and Surveillance
(2) NAVORDCEN Representative for Hazards of Electromagnetic Radiation to Ordnance (HERO)
(3) Naval Explosive Ordnance Disposal Technology Division (NAVEODTECHDIV) of NAVORDCEN Representative for Weapon Disposal Safety
(4) Navy Packaging, Handling, Storage and Transportation (PHST) Center, Naval Weapons Station Earle Representative for packaging, handling, storage and transportation of ordnance items
(5) Naval Sea Systems Command (NAVSEASYSCOM) Representative for Ship Safety
(6) NAVSEASYSCOM Representative for Firefighting
(7) NAVSEASYSCOM Representative for Insensitive Munitions
(8) NAVSEASYSCOM Representative for Shipboard Shock
(9) NAVSEASYSCOM Representative for Environmental Concerns
(10) Marine Corps System Command (MARCORSYSCOM) Representative for Weapon System Safety and Marine Corps Shipboard Storage Requirements

(11) Naval Special Warfare Command (NAVSPECWARCOM) Representative for Naval Special Warfare System Safety
(12) Coastal Systems Station, Dahlgren Division, Naval Surface Warfare Center (NAVSURFWARCENDIV Dahlgren) Representative for System Safety
(13) NAVSURFWARCENDIV Dahlgren Representative for Ordnance Related Software Safety and System Safety
(14) Crane Division, NAVSURFWARCEN Representative for Demilitarization and Disposal
(15) Naval Air Systems Command (NAVAIRSYSCOM) Representative for Aircraft Safety
(16) Naval Environmental Health Center (NAVENVIRHLTHCEN) Representative for Environmental Health
(17) Naval Safety Center (NAVSAFCEN) Representative for Operations Safety
(18) NAVSURFWARCENDIV Indian Head Representative for the Technical Center for Explosives Safety
(19) Naval Undersea Warfare Center Division, Newport Representative for Undersea Combat Systems
(20) Commander, Operational Test Evaluation Force (COMOPTEVFOR) Representative
(21) Army Fuze Safety Review Board Representative
(22) Air Force Nonnuclear Munitions Safety Board Representative
(23) Others with special expertise may augment the Board at the invitation of the Chairperson

d. It is the responsibility of the participating organizations to ensure that adequate funding is provided to support their member's participation in the WSESRB.

2. Responsibilities Of The WSESRB. The WSESRB shall review the overall safety aspects of each weapon system, explosive system, and related system to ensure that weapon system safety requirements are satisfied. Having assessed the degree of compliance with existing criteria, the WSESRB provides a recommendation of the adequacy of the safety program and on the advancement of the item to the next stage in the acquisition cycle to the program manager, program sponsor, Chief of Naval Operations (CNO), and the Milestone Decision Authority (MDA). Specific Responsibilities are:

a. Chairperson

(1) Annually, requests nominations from the member organizations for the representative and alternates to serve as WSESRB members for that year. Reports the list of official WSESRB members to CNO (N411). In the absence of the chairperson, the vice-chairperson executes the chairperson's duties.

(2) Convenes the WSESRB as requested by program management or as dictated by safety program needs. Based on the system safety program, determines whether a meeting of the full WSESRB, a Technical Review Panel (TRP), secretariat review or a

group of specialists is required. Provides for maintaining documentation concerning these decisions.

(3) Notifies members when their attendance is required at the meeting.

(4) Presides at WSESRB meetings or designates a chairperson for alternate meetings.

(5) Establishes TRPs, as may be required, in support of WSESRB functions.

(6) Issues, when required, appropriate weapon safety documents, manuals and pamphlets to provide guidance.

(7) Prepares findings of the board's recommendations to the program manager, ensuring that a consensus is reached. If a consensus of board members is not reached, the draft findings may include a paragraph prepared by the dissenting member or members, if they so desire, stating their position for the record. The program office will be informed of the dissenting opinion at the time of the outbrief. The dissenting opinion will be provided, in writing, to the board and will be included as a separate enclosure to the board's report. The program office is not required to take any action on a dissenting opinion.

b. Secretariat

(1) Schedules WSESRB meetings as required by the chairperson.

(2) Provides administrative support to the WSESRB.

(3) Prepares and issues reports generated by the WSESRB.

(4) Maintains the official files of the WSESRB.

(5) Prepares responses to programs' correspondence to the WSESRB within 60 days of receipt.

c. Board Members

(1) Review the technical and executive summary documentation package before WSESRB meeting attendance.

(2) Attend meetings, as required by the chairperson, or provide a suitable alternate representation.

(3) Give an independent evaluation of the weapon system safety aspects along with a recommendation concerning approval of the item for review. Consider all phases of the life cycle, with emphasis given to the phases of specific concern to the organization represented.

(4) Identify technical experts within their organizations to participate in TRPs when requested by the WSESRB chairperson.

d. Technical Assistants to the WSESRB

(1) Dahlgren Division, Naval Surface Warfare Center, (NAVSURFWARCENDIV Dahlgren) Dahlgren, Virginia (VA) acts as a principal activity for system safety support to the WSESRB, by performing the following actions:

(a) Coordinating required support programs and efforts;

(b) Assisting PMs, upon request, in the determination of safety program requirements, and providing guidance in the preparation of technical documentation and presentations; and

(c) Maintaining records as specified by the WSESRB. These include: (1) keeping the status reporting system (cataloged by weapon system which tracks the WSESRB recommendations and actions taken or pending); and (2) entering hard copy documents into the Safety of Ordnance (SAFEORD) record keeping system maintained by the WSESRB.

(d) Chairing the ordnance related Software Systems Safety Technical Review Panel (SSSTRP) and other TRPs as assigned. These include: (1) developing and recommending, with WSESRB approval, TRP review criteria, and related data; (2) coordinating meetings of the SSSTRP with members and program offices; (3) assisting the program office in tailoring TRP review criteria for the type of program and the current program phase; (4) identifying qualified technical advisors to participate in the TRP, and with the WSESRB chairperson's concurrence, arranging for their participation; (5) scheduling meetings of the TRP at the request of the WSESRB chairperson; and (6) providing a summary report of the findings and recommendations of the TRP to the full WSESRB not later than the Executive Session of the month following the TRP meeting.

(2) Coastal Systems Station, Dahlgren Division, Naval Surface Warfare Center provides system safety support to the WSESRB by performing the following:

(a) Assisting program offices in assembling their data packages when requested; and

(b) Providing a dry run review of the program's presentation via video conferencing.

3. Procedures

a. The WSESRB meets monthly, Tuesday through Thursday of the last full week of the month. Exceptions occur during the months of May, November and December because of holidays. The board members sit in the executive session Tuesday afternoon, and the balance of the three days is generally spent in review sessions.

0830 or 1230, depending on whether it is a morning or an afternoon session. Introductions and administrative remarks are made, and then the program representatives have two hours to present their information. The program representatives should anticipate frequent questions from board members and other participants. This is encouraged to get all of the explosives safety issues out on the table for discussion.

c. A court reporter is generally present to officially record and transcribe the proceedings. The official transcript is kept in the NAVORDCEN Safety, Security and Environmental Directorate (N7) files if ever there is a need for someone to view the document.

d. After the program representatives have completed their presentations, the board members and chairperson meet in caucus. When the board has arrived at its recommendations for the program the board members reconvene with the program representatives. The findings and recommendations are discussed with the program representatives and then the meeting is adjourned.

SAMPLE AGENDA FORMAT FOR A WEAPON SYSTEM EXPLOSIVES SAFETY REVIEW BOARD MEETING

EVENT	TIME ALLOTTED
Call to order, statement of purpose, and introduction of Weapon System Explosives Safety Review Board (WSESRB) members and consulting experts by the chairperson	5 minutes
Administrative remarks and verification of security classification of presentation by secretariat member	5 minutes
Technical presentation/discussion by the program office representatives	120 minutes
WSESRB caucus by the board members and the chairperson	30 minutes
Presentation of WSESRB recommendations and discussion with program office representatives by the chairperson	20 minutes
Total time per review session, morning or afternoon, is	180 minutes (3 hours)

DEFINITION OF TERMS

1. The following are the definitions of specific terms used in this instruction:

a. Computer Software (or software). A combination of associated computer instructions and computer data definitions, required to enable the computer hardware to perform computational or control functions.

b. Explosive System. For purposes of this instruction, an explosive system is a type of ordnance installed on Navy ships or aircraft which has non-weapon functions. It includes all the hardware and software required for its operation and support through its life cycle. A countermeasure system, an ejection seat, and a cable cutter are examples of explosive systems.

c. Explosives. The term "explosive" or "explosives" includes any chemical, compound or mechanical mixture which, when subjected to heat, impact, friction, detonation or other suitable initiation, undergoes a very rapid chemical change with the evolution of large volumes of highly heated gases which exert pressures in the surrounding medium. The term applies to high explosives, propellants and pyrotechnics that either detonate, deflagrate, burn vigorously, generate heat, light, smoke, or sound.

d. Explosives Safety. Explosives safety is the process used to prevent premature, unintentional, or unauthorized initiation of explosives and devices containing explosives; and with minimizing the effects of explosions, combustion, toxicity, and any other deleterious effects. Explosives safety includes all mechanical, chemical, biological, electrical and environmental hazards associated with explosives; hazards of electromagnetic radiation to ordnance; and combinations of the foregoing. Equipment, systems, or procedures and processes whose malfunction would hazard the safe manufacturing, handling, maintenance, storage, transfer, release, testing, delivery, firing or disposal of explosives are also included.

e. Firmware. The combination of a hardware device and computer instructions or computer data that reside as read-only software on the hardware device. The software cannot be readily modified under program control. For purposes of this instruction, firmware and software are considered synonymous.

f. Non-Developmental Item (NDI). NDI covers material available with little or no government development effort required and includes items from domestic or foreign commercial sources (off-the-shelf), items already developed by other Services, Defense activities and government agencies and items developed by foreign governments. NDIs may be a system, subsystem or component, including software.

g. Ordnance. Military materiel such as combat weapons of all kinds with ammunition and equipment required for their use. Ordnance includes all the things that make up a ship's or aircraft's armament including guns, ammunition, and all equipment and ordnance related software needed to control, operate, and support the weapons.

h. Principal for Safety. The Principal for Safety is the Program office's point of contact for safety related matters. The Principal for Safety shall have the authority to speak for the Program Office on safety related matters and shall be the principal liaison with the WSESRB.

i. Program Managers. Program Managers are those acquisition/life cycle managers assigned the responsibility and delegated the authority for the acquisition and life cycle management of a particular system. In this instruction, the term "Program Manager (PM)" includes DON acquisition managers and all others covered by the Navy Explosives Safety Program of reference (a). PM is used in this instruction for Program, Product or Project Manager, Direct Reporting Program Manager (DRPM), or Program Executive Officer (PEO), as well as for other weapons acquisition officials.

j. Weapon System. A weapon system is a type of ordnance intended for use in defeating enemy targets. Weapon systems include hardware and software subsystems and components required for its operation and support throughout its life cycle including that necessary for the selection, arming, release or firing, and jettison of an ordnance item. The weapon system as defined herein, includes its interface with the delivery platform. For the purpose of this instruction, an "approved weapon system" is one whose configuration has previously been before the WSESRB and all safety recommendations/issues made by the Board have either been incorporated in the system or resolved.

k. Weapon System Safety. Weapon system safety is the aggregate of analytical and testing processes, procedures, training and management policy used to ensure that the risks

associated with weapons and related systems are reduced to the lowest extent practical throughout the systems' life cycle.

1. Weapon System Explosives Safety Review Board. The WSESRB is designated by the Chief of Naval Operations (CNO) as the DON's authority for the review and independent assessment of the safety aspects of weapon systems, explosive systems and related systems, and is empowered to make safety recommendations to the responsible Naval Command, PM, and Milestone Decision Authority (MDA). With regard to the conduct of test firings aboard Navy ships, the WSESRB is the safety approval authority.

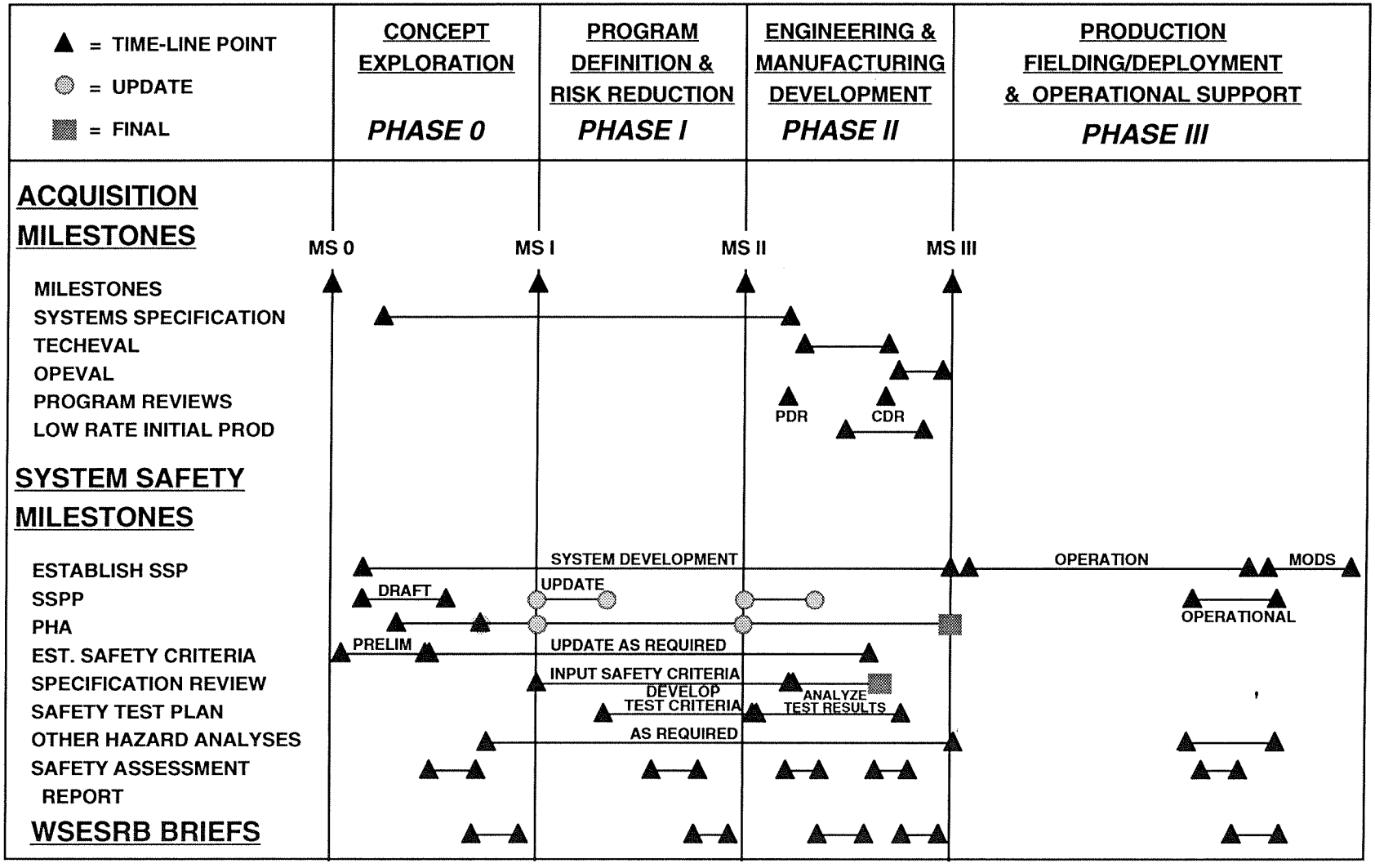
LIST OF ACRONYMS

ACAT	Acquisition Category
CE/D	Concept Exploration and Definition
CINCLANTFLT	Commander in Chief Atlantic Fleet
CINCPACFLT	Commander in Chief Pacific Fleet
CMC	Commandant Marine Corps
CNO	Chief of Naval Operations
COMNAVAIRSYSCOM	Commander, Naval Air Systems Command
COMNAVORDCEN	Commander, Naval Ordnance Center
COMMARCORSYSCOM	Commander, Marine Corps Systems Command
COMOPTEVFOR	Commander, Operational Test Evaluation Force
DON	Department of Navy
DRPM	Direct Reporting Program Manager
ECP	Engineering Change Proposal
ESD	Electrostatic Discharge
EMD	Engineering and Manufacturing Development
EOD	Explosive Ordnance Disposal
FOC	Full Operational Capability
FMECA	Failure Modes, Effects and Criticality Analysis
FTA	Fault Tree Analysis
HAR	Hazard Action Report
HERO	Hazards of Electromagnetic Radiation to Ordnance

IOC	Initial Operational Capability
IPS	Integrated Program Summary
LRIP	Low Rate Initial Production
MARFORLANT	Marine Forces Atlantic
MARFORPAC	Marine Forces Pacific
MDA	Milestone Decision Authority
MPS	Maritime Prepositioning Ship
NAVSURFWARCENDIV	Naval Surface Warfare Center Division
NDI	Non-Developmental Item
OPEVAL	Operational Evaluation
ORDALTS	Ordnance Alterations
O&SHA	Operating and Support Hazard Analysis
PEO	Program Executive Officer
PHA	Preliminary Hazard Analysis
PHST	Packaging, Handling, Storage and Transportation
PIP	Product Improvement Program
PM	Program Manager
POP	Performance Oriented Packaging
SAR	Safety Assessment Report
SHA & SSHA	System and Sub-System Hazard Analyses
SHIPALTS	Ship Alterations
SOF	Special Operations Forces
SSSTRP	Software System Safety Technical Review Panel
SSWG	System Safety Working Group

TECHEVAL	Technical Evaluation
TEMP	Test and Evaluation Master Plan
TRP	Technical Review Panel
USSOCOM	United States Special Operations Command
VERTREP	Vertical Replenishment
WSESRB	Weapon System Explosives Safety Review Board

Sample Weapon System Safety Program During The Acquisition Process



GUIDELINES FOR THE SUBMISSION OF DATA PACKAGES AND PRESENTATIONS TO THE WEAPONS SYSTEM EXPLOSIVES SAFETY REVIEW BOARD

1. Program Managers

a. Submit all weapon systems and ordnance which are the program manager's responsibility to the WSESRB for review at appropriate times throughout the program's life cycle. Enclosure (4) depicts a sample program life cycle with WSESRB meetings and other safety milestones marked.

b. The program manager, or the program manager's designated representative, contacts a WSESRB secretariat member at the Naval Ordnance Center (NAVORDCEN) when a WSESRB review is desired. When scheduling a WSESRB review, the principal for safety will be asked to provide a list of government organizations and personnel who should receive a copy of the WSESRB meeting announcement letter which normally is mailed 30 days prior to the scheduled meeting.

c. A scheduling confirmation letter will be faxed to the program manager or to the designated representative, by the secretariat. It will provide an address list for the technical data packages. The program office must provide the data packages to each individual address, in time to ensure that board members receive them at least a full 30 days before the scheduled meeting.

d. A cover letter from the requesting program office must accompany the data packages. The program representative should include the name and phone number of the principal for safety in the Weapons System Explosives Safety Review Board data package as a point of contact for data package information, should the board need additional information prior to the formal session. The purpose of the proposed meeting should be clearly stated, (e.g., seeking the WSESRB's safety approval recommendations regarding the program's safety plan, readiness to proceed to Engineering and Manufacturing Development (EMD) or Production Approval, approval for Fleet test firings, etc.).

e. If specific details of a weapon's designed performance have a security classification, these details should be omitted, if possible, to keep the mailed data package at the lowest possible security level unless these details are required for an accurate assessment of the safety characteristics of the system. Classified reviews may be handled at the WSESRB session with the presenter verbally providing the classified information and/or

with classified transparency films and hard copy supplements at the meeting session. This security classification of the data package does not obviate the requirement to mail out the data package in advance to insure board members have the package 30 days in advance. If the program manager does not provide a data package within the prescribed 30 days, the scheduled meeting may be canceled by the WSESRB chairperson. If the program manager chooses to cancel a scheduled session after committing to the meeting date, and after publication of the official monthly WSESRB agenda letter, the PM will notify the WSESRB chairperson, in writing, stating the reason for the cancellation, with a copy to the program's Milestone Decision Authority.

f. The WSESRB secretariat provides the program manager the Acquisition Information Sheet as shown on page 8 of this enclosure with the final confirmation letter which is provided to the program 45 days prior to its scheduled meeting. The program representative should complete the form and provide it to the board either prior to or at the meeting.

g. The meeting will follow the agenda format of enclosure (1), page 6. The presenters should provide a summary of the information in the technical data package. Information in the technical data package, visual aids, models, and notes may be used as deemed necessary to provide clarity. The presentation should be structured so that the major theme is the system safety program and its results. The system design and operation should be covered only to the extent necessary to provide WSESRB members sufficient data to support the safety conclusions. The program manager should assure that appropriate technical personnel are present to provide answers to the board's questions, but that the number in attendance should be kept to a minimum.

h. A copy of all transparency films presented at the meeting should be provided to the chairperson for the record. Also provide a copy of the transparency film presentation to each board member and the official court reporter at the start of the meeting.

i. The program manager should make every effort to dry run his formal presentation before objective critics at the program manager's command prior to coming to the WSESRB.

j. Events often result in presentation details (schedules, test series, data, etc.) differing from that contained in the technical data package. Copies of the changes may be distributed to the WSESRB at the beginning of the presentation.

k. During the proceedings the board members will frequently interrupt with questions. The program manager is allotted two hours total, including questions and answers, and should plan accordingly to not exceed the two hour limit.

l. As a part of the scheduled review, the WSESRB will generally provide findings to the program manager. The program manager must respond with the actions taken or planned, to the WSESRB's findings within sixty days from the date of the WSESRB's letter.

2. System Safety Program

a. The PM shall establish a system safety program in accordance with reference (g), as required by references (d) through (f), which ensures overall safety of the weapon system and its installation, use, or transport aboard Navy ships, submarines or aircraft. Developmental or contractual documents shall reflect a formal system safety program for the evaluation of hazards. For Naval Sea Systems Command programs for ships, shipborne systems and equipment, NAVSEAINST 5100.12A provides guidance for tailoring system safety program requirements.

b. An adequately funded system safety program shall remain in effect throughout the entire life cycle, including post production in-service engineering, surveillance of energetic materials, demilitarization, and disposal of the weapon system and its associated explosive components. It is the responsibility of the PM to determine the funding level required to adequately address safety issues throughout the weapon system's life cycle.

c. Hazardous materials should be kept to a minimum in accordance with reference (d). For ACAT programs, the safety program should have significant input into the development of the risk assessment and environmental analysis. For weapons systems using performance specifications, the system safety program shall ensure that follow-on purchases do not sacrifice the safety characteristics on which the initial program safety approval was based. This potential problem can be mitigated by the program manager documenting the system's basic safety design and operational precepts in a document, and then adhering to those precepts throughout the life cycle of the system.

3. WSESRB Periodic Review Schedule. The WSESRB generally reviews every weapon and related system and every item of explosive ordnance to verify compliance with Navy and other

applicable safety requirements documents at various periods in the acquisition cycle. These reviews generally occur before a system advances to the next stage of development and before test, prototype or production units are introduced to the Fleet. Enclosure (4) shows typical points at which WSESRB reviews should occur for a sample weapon system safety program during the acquisition process. Reviews are generally required of a system at the following points:

a. At the start of Design Modifications (initiated at the milestone appropriate to the work to be completed) or for a new program, during Phase 0 of reference (e) and nearing completion of Concept Exploration and Definition, pre-Milestone I. This review ensures the system safety program and scheduling are appropriate; the safety test plan and the Test and Evaluation Master Plan (TEMP) are complete and adequately identify safety critical characteristics and implement the requirements of applicable safety standards and instructions; and that the WSESRB assessments are available to the MDA.

b. After Demonstration and Validation testing, during Phase I of the acquisition cycle, defined as being pre-Milestone II, after some explosives safety and insensitive munitions tests have been conducted, or during the initial stages of Phase II of the Acquisition Cycle, Engineering and Manufacturing Development (EMD). This review is to ensure that the design has followed the appropriate instructions, the system hazards have been identified and appropriate risk resolution techniques implemented, its resulting safety characteristics are acceptable, and the WSESRB assessment is available to the MDA.

c. Before Technical Evaluation and/or Operational Evaluation (TECHEVAL/OPEVAL) during Phase II of the Acquisition Cycle, EMD, of reference (e), pre-Milestone III and Production Approval. This review is to ensure that designs going to TECHEVAL and/or OPEVAL demonstrate that all appropriate safety requirements have been met, that risks are adequately reduced and that test plans include appropriate safety evaluation. For programs with no OPEVAL requirement, the review will be conducted prior to TECHEVAL.

d. Before approval for LRIP or prior to Production Approval or Initial Operational Capability and Full Operational Capability (IOC/FOC). This is defined in terms of reference (e) as pre-Milestone III or prior to a decision to authorize LRIP. This review is to confirm that TECHEVAL and OPEVAL results do not

present disqualifying deficiencies and that overall safety program results are satisfactory.

e. Before Any Shipboard Testing. This event may occur at any point in the acquisition cycle when the necessity arises to do shipboard testing with the developmental or pre-IOC system/equipment. This review is to ensure that modifications to existing weapon systems, related systems or ordnance items demonstrate that adequate safety design requirements have been implemented and that appropriate safety tests have been completed prior to the conduct of tests aboard Navy platforms. The safety of testing performed at Navy facilities, including tests from research vessels and range craft, in the course of development of a weapon or weapon system modifications is the responsibility of the local commanding officer and his safety staff. In cases where the local command desires further guidance, the command may contact the WSESRB chairperson.

4. Hazard Assessment Testing

a. Hazard Analysis. Sufficient hazard analyses as described in Ordnance Data (OD) 44942 and the System Safety Program Plan, shall be conducted to thoroughly identify potential system hazards and methods to adequately control them. Required hazard assessment tests shall also be identified to verify the adequacy of hazard control.

b. Hazard Testing. All weapon systems, related systems and ordnance items must be tested and their hazard characteristics identified. These systems, subsystems, and components must comply with the tests specified in applicable DoD, Navy and other requirements documents. The WSESRB may request additional tests to fully characterize the hazardous aspects of weapon systems. Program managers unable to follow these directives shall present justification, in writing, to the WSESRB.

5. WSESRB Data Package

a. Content. Several considerations affect the content of the Weapon System Explosives Safety Review Board (WSESRB) data package and presentation. These include:

(1) The complexity of the item being presented;

(2) The point in the life cycle at which the review is conducted;

(3) The history of previous WSESRB meetings on the system;

(4) The history of mishaps associated with the system or similar systems; and

(5) The results of hazard assessment tests and hazard analyses conducted on the system or similar systems.

b. Data Package Formulation. Generally, reviews occurring later in the acquisition or life cycle and reviews of complex systems have more data available for presentation. Technical data packages consist of a Safety Assessment Report (SAR) prepared per reference (g), with additional data as specified in enclosure (6). Where items in the SAR or enclosure (6) are not pertinent to a particular program or development phase, the paragraph heading should so state. A program manager may request assistance from the responsible Naval System Command WSESRB member, the secretariat located at the Naval Ordnance Center, and the WSESRB's technical support activity, Dahlgren Division, Naval Surface Warfare Center, Coastal Systems Station.

c. Completeness. The SAR portion of the data package should be complete enough to allow the WSESRB to thoroughly review the system safety program and its results before the presentation. It should completely describe the design, life cycle, safety features and results of the System Safety Program.

(1) The Design of the System. A full set of design drawings is not required for this review. Documents such as assembly drawings, explosive loading drawings, draft Navy Munitions Data as required by NAVSEAINST 8020.11A, (High-Explosives and High-Explosives Loading of Navy Non-Nuclear Munitions) explosive specifications, firing circuits, or sketches which describe the system are required. Emphasize explosive components and other hardware affecting weapon system safety. Describe the interaction of any system software with the safety critical aspects of the system. For new ship designs or modifications to existing ships, drawings for review must detail proposed weapon system installations, magazines, handling spaces as well as adjacent spaces, associated fire protection, and all other equipment related to the weapon system and its stowage and operation.

(2) The Life Cycle of the System. Include a concise but thorough description of the intended use of the system. Address such subjects as storage/stowage areas, usage environment, handling equipment and methods of use, replenishment methods, packaging and transportation methods, launching platform, operational sequence, demilitarization, and disposal methods.

Include special safety procedures required to respond to potential malfunctions.

(3) Safety Features of the System. Report the system's compliance with relevant design safety requirements, standards and specifications and special safety features implemented in the system design. Note that for those systems/munitions items which have non-interrupted explosive trains, the WSESRB chairperson can provide a copy of the WSESRB's Technical Manual For Electronic Safety And Arming Devices With Non-Interrupted Explosive Trains. This document extends specific design safety criteria for fuzes and other initiating systems beyond that covered by MIL-STD-1316.

(4) Results of the System Safety Program

(a) Include a listing of all hazard tests and analyses conducted. Show test parameters and results, as well as type and scope of analyses. As required by reference (e), address the rationale for test and test parameter selection. Report experiences in the development, test and evaluation process which bear on safety aspects, especially anomalies noted during explosives qualification or final type qualification testing. Describe all safety devices incorporated in the system as well as precautionary measures to be invoked. Review the analyses conducted and their results, noting any unresolved or open hazards.

(b) The WSESRB Chairperson can make available at the Program Manager's request a WSESRB Guidelist on Hazards Associated with Weapon Systems as a tool for performing hazard analyses. This document also includes the Naval Air Systems Command's Aircraft-Weapon Integration Hazard List. These lists provide program assistance in visualizing just how many things can go wrong in what appears to be a well engineered system. They provide observed experience in failures, and may serve as a memory jogger and brainstorming key while performing preliminary hazard analyses on weapons systems and while integrating systems to their platforms.

WEAPON SYSTEM EXPLOSIVES SAFETY REVIEW BOARD PROGRAM
ACQUISITION INFORMATION SHEET

PROGRAM NAME

_____

ACQUISITION CATEGORY (ACAT) LEVEL I II III IV non-ACAT

_____

MILESTONE DECISION AUTHORITY
(Please include address)

_____

_____

_____

PROGRAM EXECUTIVE OFFICER OR SPONSOR

_____

PROGRAM MANAGER

_____

PRINCIPAL FOR SAFETY

_____

PRINCIPAL SAFETY ACTIVITY

_____

NEXT ACQUISITION MILESTONE AND ANTICIPATED DATE OR ANTICIPATED DATE FOR INTRODUCTION OF PRODUCT IMPROVEMENT INTO THE FLEET

_____

ADDITIONAL DATA REQUIREMENTS AND TECHNICAL APPENDICES RECOMMENDED FOR WEAPON SYSTEM EXPLOSIVES SAFETY REVIEW BOARD DATA PACKAGE

1. Assessing System Safety. Sufficient data should be provided to allow WSESRB members to assess the overall safety of the system. The following information is typical data which the program manager should consider for presentation:

a. Provide system safety data with respect to Navy use and transport issues.

b. Address documentation support for the system. Verify that the required publications have been reviewed, updated and/or issued to ensure the safe operation, maintenance, training, packaging, handling, storage/stowage and transportation of the weapon.

c. Assess the effect, if any, of the system on Naval Facilities. Provide an analysis of changes to existing quantity-distance siting requirements at Naval activities which will be necessary for production, maintenance, or storage of the system. Specify necessary changes to existing design, construction, or maintenance criteria for production, maintenance, magazine, and environmental requirements. Document any system requirements which will require the Navy to obtain additional real property or to significantly alter the use of existing real property. Describe any potential environmental hazards resulting from manufacture, storage or maintenance on the system (e.g., hazardous materials used or hazardous waste produced). Provide a hazard analysis for new support facilities or extensive renovations to existing facilities. Identify system support facilities using new high technology equipment or processes requiring specialized design and/or utilities capability. Submit site approval questions to NAVORDCEN Safety, Security, and Environmental Directorate (N71).

d. Advisory statements on processability and safe handling characteristics of the explosive as required by references (j) and (l).

2. Additional Data Requirements. In addition to the content of the Safety Assessment Report (SAR), the following information should be provided, if applicable. These items may be integrated into the SAR, if desired.

a. Program Background and Overview

(1) Purpose of WSESRB Meeting
(2) Background
(3) Program Schedule and Milestone Chart
(4) Technical Support Agency
(5) Who's Who Programmatically
(6) Acquisition Category (ACAT) Level
(7) Safety Program Management Organization
(8) Past WSESRB Meetings: Comments, Action Items, and Recommendations Assigned, Resolution of Action Items

b. System Description (In addition to the data in the SAR)

(1) Production to Target Sequence (include environmental profile)
(2) Explosive Components
(3) Special Facility Requirements
(4) Demilitarization and Disposal Plan (Document a Demilitarization and Disposal Plan in accordance with NAVSEAINST 8027.2 which describes the process for safely demilitarizing and disposing of the system in an environmentally acceptable manner at the end of its service life. Document how the Plan will be developed and validated prior to Fleet introduction, and ensure coordination with Crane Division, Naval Surface Warfare Center (Code 4022).)
(5) Surveillance Program (Ensure that dormant reliability analyses will be done and an aging and surveillance program will be established for pyrotechnics, explosives, rocket motors, and other items that have shelf-life requirements.)
(6) Explosive Ordnance Disposal Procedures and Validation Plan (Describe the Plan by which the procedures will be developed, validated and verified 30 days prior to the introduction of the weapon into service use.) Ensure the Plan is coordinated with the Naval Explosive Ordnance Disposal Technology Division of the Naval Ordnance Center (NAVORDCEN).
(7) Hazardous Materials Use and Minimization Efforts for Environmental Concerns

c. System Safety Program

(1) Introduction/Objectives
(2) Program and Safety Milestones
(3) Review of Safety Concerns

d. Hazard Test Program, Plans, and Results

(1) Hazard Test Plans and Results
(2) Comparison of test limits to environmental profile and safety analyses

e. Technical Evaluation (TECHEVAL)

f. Operational Evaluation (OPEVAL)

g. Explosive Hazard Classification (Final for Production Approval)

h. Explosive Qualification Tests (Submit results of Explosive Qualification and Final (Type) Qualification Tests (reference (j) and/or MIL-STD-1751 series tests) conducted on the explosives and the weapon system to Commander, Naval Sea Systems Command (COMNAVSEASYSCOM) Insensitive Munitions Office.) Document the acceptance of the qualification and/or final qualification test results by COMNAVSEASYSCOM.

i. Insensitive Munitions Tests (Submit results of Insensitive Munitions Tests (MIL-STD 2105 series tests) conducted on the weapon system to COMNAVSEASYSCOM Insensitive Munitions Office.) Document the acceptance of the weapon system test results by the Insensitive Munitions Council.

j. Special Hazard Tests

k. Safety Engineer's Interpretation of Test Results

l. MIL-S-901D Shipboard Shock, Test Plan and Results

m. Hazards of Electromagnetic Radiation to Ordnance (HERO), Electrostatic Discharge (ESD) and Lightning Test Results

3. Technical Appendices. Dependent upon the nature of the Program and its acquisition phase, the following technical appendices may be required to be submitted as part of the data package. Each WSESRB package mailed to the WSESRB distribution list is required to include copies of all of the program's supplemental appendices.

a. Appendix A - System Safety Program Plan [1]
Applicable to new starts, first introduction of a system to the WSESRB, or major program milestones[2]

b. Appendix B - Hazard Analyses

(1) Preliminary Hazard Analysis (PHA) (always include updated analysis)
(2) Facilities PHA (if applicable)
(3) Failure Modes, Effects and Criticality Analysis (FMECA) (if performed)
(4) System and Sub-System Hazard Analyses (SHA & SSHA)
(5) Fault Tree Analysis (FTA) (if performed)
(6) Operating and Support Hazard Analysis (O&SHA) (if applicable)
(7) Software Hazards Analyses (if applicable)
(8) Analysis of the Integration of the Weapon System with the Platform (e.g., Interface/Aircraft Integration Safety Analysis) (if applicable)
(9) Other Safety Analyses/Assessments (if applicable)
(10) Hazardous Materials/Toxic Substances Material Data Sheets
(11) Hazard Action Report (HAR) Forms for Category I & II Hazards

c. Appendix C - Other Reference Material

(1) Safety Related Test Results
(2) Explosive Qualification Test Results[3]
(3) Final Type Qualification Test Results
(4) Final Hazard Classification Test Results
(5) Insensitive Munitions Test Results
(6) Hardware Safety Test Results
(7) Software Safety Test Results
(8) Performance Oriented Packaging (POP) Test Results
(9) Vertical Replenishment (VERTREP) Test Result or Comparison Data
(10) Handling Equipment Design Overload Test Results
(11) Container Qualification Test Results

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[1] Updated SSPPs should be provided at various Program milestones in accordance with reference (c).

[2] Provide only the pertinent analysis material. System Description and other "boilerplate" may be eliminated from these attachments.

[3] For applications of new explosives or changes of existing explosives.

(12) Manuals (pertinent to the assessment of the system's safety including technical training manuals or videos)
(13) Non-standard Reference Data
(14) Letters/Memos (pertinent to the assessment of the system's safety)
(15) Accident/Incident Reports

REVIEW CRITERIA FOR THE ORDNANCE RELATED SOFTWARE SYSTEMS SAFETY TECHNICAL REVIEW PANEL

1. Purpose

a. The purpose of the ordnance related Software Systems Safety Technical Review Panel (SSSTRP) in support of the Weapon System Explosives Safety Review Board (WSESRB) is to provide expert technical review of safety programs for software intensive systems or systems in which the only modification is to the software. The SSSTRP will normally occur 15 to 30 days in advance of a regularly scheduled WSESRB and will provide summary recommendations to the program manager and a summary report to the WSESRB during the monthly WSESRB executive session. The summary report will also include justifications for the recommendations being made. The recommendations of the SSSTRP are not considered official findings of the WSESRB until officially endorsed by the WSESRB. The WSESRB releases the SSSTRP findings in letter form to the program manager.

b. The WSESRB's goal in establishing the SSSTRP is to provide a more thorough review of the complex safety issues related to software control of weapon systems, and to reduce the burden on the program manager and the WSESRB in reviewing systems that are software intensive or where software is the only issue being addressed. The WSESRB benefits from a reduction in the complexity of the programs reviewed during their regular sessions, and the program manager benefits by having a more thorough review of the software safety issues. In addition, in the area of software changes, the SSSTRP may be used in lieu of interim WSESRB reviews not associated with major milestones. Decisions regarding substitution of the SSSTRP review for a WSESRB review will be decided on a case-by-case basis by the WSESRB chairperson.

2. Panel Meetings. Technical Review Panel (TRP) meetings may be held as part of the normal System Safety Working Group (SSWG) meeting or they may be independently scheduled. The meeting schedule will be coordinated by the chairperson of the SSSTRP. He/she will be responsible for contacting the other members and making arrangements for their attendance. The program manager will be responsible for hosting the meeting. If the meeting is classified, a secure facility must be provided, and each attendee must have the appropriate clearances on file at the facility for admittance. The program manager must also provide funding for SSSTRP members for travel away from the Washington, D.C. area. The length of the meetings will vary according to the complexity of the system and the number of software safety related issues.

However, it is the intent that the TRP provide a more in-depth review than is possible within the normal WSESRB allotted review time. Program managers should expect to spend at least one day in the SSSTRP review. A typical one day TRP review will consist of no more than 6 hours of review/discussions with the program office representatives and up to 2 hours for panel members to caucus. SSSTRP panel meetings may be recorded, however, these recordings will not be transcribed as a matter of course.

3. Technical Data Package. Six copies of the program's technical data package shall be provided to the SSSTRP chairperson a minimum of 21 days prior to the scheduled SSSTRP meeting. The technical data package will be forwarded by the chairperson to the other SSSTRP members. (The packages should be mailed or shipped at least 24 days prior to the meeting in order to ensure that the Panel members receive the packages in time for a minimum of 21 days for review.) The meeting will not be confirmed until the technical data package is received. As a minimum, the technical data package should include the following:

a. Description of the system;
b. Description of the software system;
c. Discussion of the interaction of the software with the safety critical aspects of the system;
d. Discussion of the Software Trouble Report and Interface;
e. Discussion of the analyses and tests performed and their results; and
f. Plan of the test and analyses to be conducted.

(A detailed breakdown of the items to be covered under each of these sections can be found in the WSESRB checklist obtainable from the WSESRB Chairperson.)

4. Technical Review Panel Meetings

a. Agenda. The agenda for the SSSTRP meetings will be left to the discretion of the program office, however, it should address the items listed below which are not listed in order of importance or presentation:

(1) System Description;
(2) System Safety Program;
(3) System Safety Working Group;
(4) Analyses planned/completed;
(5) Safety Test Program;

(6) Integration of software and hardware safety efforts;
(7) Safety Milestones;
(8) Documentation;
(9) Software/Computer Program Development;
(10) Isolation of safety critical functions;
(11) Configuration Management;
(12) System and Software Safety Analyses; and
(13) Test Program

b. Procedures. At the beginning of the meeting, the SSSTRP chairperson, or designated alternate, will give a brief introduction. This will include a description of the purpose of the SSSTRP and an introduction of the members. SSSTRP meetings will be informal with questions asked during the presentation. The program office may wish to allot more time for the meeting to accommodate these questions. At the conclusion of the meeting, the SSSTRP members will hold a closed caucus to discuss their findings. The program office should provide a meeting room for the caucus and allow one hour for the caucus to convene. The SSSTRP members will return and provide their findings to the Program Office and other SSSTRP attendees. A preliminary written version of the findings will be provided a few days after the meeting and a copy will be sent to the chairperson and the secretariat of the WSESRB. The WSESRB will have final action as to acceptance, modification or rejection of the SSSTRP recommendations.

c. Presentations. SSSTRP presentations should be in the form of transparency films covering the topics on the agenda. Additional written material as well as back-up presentation material may be used during the meeting.

d. Panel Membership. The WSESRB chairperson shall designate the chairperson and members for the SSSTRP and shall approve the membership of the TRP prior to the software safety review. The SSSTRP will be composed of technical experts drawn from a variety of areas. Other members may be selected on an ad hoc basis to participate in individual SSSTRP reviews. These members will be selected for their expertise in software systems safety, system safety, software development, or individual weapon systems or combat systems development. Members will be selected to ensure that they do not have conflicting interests in the program being reviewed. Technical advisors will be selected from a variety of fields related to system safety, software safety, system design, software development, etc. The advisors will be selected for their expertise in these areas and the relationship of that expertise to the system under review. In the selection of advisors for individual program reviews, an attempt will be made

to ensure that a variety of fields of expertise are brought to bear during each review.