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MARINE CORPS ORDER 8020.10

From: Commandant of the Marine Corps
To: Distribution List

Subj: MARINE CORPS EXPLOSIVES SAFETY MANAGEMENT PROGRAM

Ref: (a) DoD 6055.09-M, "DoD Ammunition and Explosives Safety Standards," February 29, 2008
(b) OPNAVINST 8020.14A
(c) NAVSEA OP 5 Vol.1
(d) NOSSAINST 8020.22
(e) MCO 8023.3B
(f) OPNAVINST 5102.1D/MCO P5102.1B
(g) SECNAV M-5210.1
(h) NAVMC Directive 5210.11E
(i) MCO 3571.2G
(j) MCO 8010.13
(k) MCO 5530.14A
(l) MCO 8025.1E
(m) CJCSI 4360.01A, "Explosives Safety and Munitions Risk Management for Joint Operations Planning, Training, and Execution," February 29, 2012
(n) MCO 3500.27C
(o) DoD Instruction 6055.16, "Explosives Safety Management Program," July 29, 2008
(p) MCO 8020.14
(q) DoD Instruction 4145.26, "DoD Contractor's Safety Requirements for Ammunition and Explosives," April 9, 2005
(r) DoD Instruction 4140.62, "Material Potentially Presenting an Explosives Hazard," November 25, 2008
(s) DoD 4160.21-M, "Defense Material Disposition Manual," August 18, 1997
(t) DoD 4160.28-M volumes 1-3, "Defense Demilitarization Manual," June 7, 2011
(u) DDESB Technical Paper 27, "Explosives Safety Training Program," April 1, 2013
(v) OPNAVINST 8023.24B
(w) Joint Publications 3-16, "Multinational Operations," July 16, 2013

DISTRIBUTION STATEMENT A: Approved for public release;
distribution is unlimited.

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- (x) AASTP-1, "Allied Ammunition Storage and Transportation Publication," May 2010
- (y) AASTP-5 Allied, "Ammunition Storage and Transportation Publication," July 3, 2013
- (z) "United Nations (UN) International Ammunition Technical Guidelines (IATG)," October 1, 2011
- (aa) DDESB Technical Paper 18, "Minimum Qualifications for Unexploded Ordnance Technicians and Personnel," December 20, 2004
- (ab) DDESB Technical Paper 15, "Approved Protective Construction," May 2010
- (ac) DDESB Technical Paper 23, "Assessing Explosives Safety Risks, Deviations, and Consequences," July 31, 2009
- (ad) DDESB Technical Paper 14, "Approved Methods and Algorithms for DoD Risk-Based Explosives Siting," July 21, 2009
- (ae) SECNAVINST 5211.5E

Encl: (1) Explosives Safety Management Program (ESMP) Guidance

1. Situation. This Order provides policy for the implementation, guidance, and oversight of the Marine Corps Explosives Safety Management Program (ESMP), and identifies specific command responsibilities as they apply to the ESMP.

2. Cancellation. MCO P8020.10B and participation in Naval Ordnance Safety and Security Activity (NOSSA) Instructions 8020.14, 8020.15, and 8023.11.

3. Mission. To establish and implement the Marine Corps ESMP. Policy and procedural or "how to" guidance is contained in the enclosure.

4. Execution

a. Commander's Intent and Concept of Operations

(1) Commander's Intent. To provide policy guidance on the:

(a) Marine Corps ESMP.

(b) Interaction of the Marine Corps ESMP and affected organizations.

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(2) Concept of Operations

(a) The Secretary of Defense (SECDEF) has established basic explosives safety policies to be observed by Department of Defense (DoD) components in the performance of operations involving munitions in accordance with reference (a).

(b) The Department of the Navy (DON) will follow the instructions of the SECDEF in these matters to the maximum extent practicable in accordance with reference (b).

(c) The Commandant of the Marine Corps (CMC) has established that the Marine Corps will follow the instructions of reference (b) and enclosure (1) of this Order.

(d) The provisions of this Order shall apply when DoD munitions are located in overseas areas, except when compliance with more restrictive standards is mandated by international agreement.

(e) Operations conducted at installations under the command of another Service shall be in accordance with the policy and regulations of the host Service, with the exception of requesting munitions disposition instructions and malfunction and mishap reporting.

b. In case of conflicting policies or regulations, the most stringent policy/regulation shall apply. All conflicting guidance will be reported to the Commander, Marine Corps Systems Command (COMMARCORSYSCOM).

5. Administration and Logistics

a. Recommendations concerning the contents of this Order should be forwarded to COMMARCORSYSCOM PM Ammunition (PMM-116) via the appropriate chain of command.

b. The generation, collection, or distribution of Personally Identifiable Information (PII), and management of privacy sensitive information shall be in accordance with the Privacy Act of 1974, as amended, per reference (ae). Any unauthorized review, use, disclosure, or distribution is prohibited.

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6. Command and Signal

a. Command. This Order is applicable to the Marine Corps Total Force.

b. Signal. This Order is effective the date signed.


J. F. SHRADER
By direction

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RECORD OF CHANGES

Log completed changes as indicated.

Change Number	Date of Change	Date Entered	Signature of Person Incorporated Changes

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Chapter 1

Roles and Responsibilities

1. Background. The Marine Corps continuously trains and deploys with military munitions. The storage, handling, transportation, and employment of these items are inherently hazardous. Therefore, it is imperative that a safety program designed to minimize the potential hazards be aggressively pursued at all levels.

2. Responsibilities. An effective ESMP is dependent upon command support at all levels. The responsibilities listed outline the major aspects of an effective ESMP, but may not be all inclusive.

a. Commandant of the Marine Corps Safety Division (CMC (SD)). Provide overall administration of the Marine Corps Safety Program.

b. Deputy Commandant for Combat Development and Integration

(1) Provide/publish policy and procedures for Marine Corps range safety.

(2) Serve as the Marine Corps single point of contact for range operations involving the use of Class V material.

(3) Provide range certification/recertification oversight and range Technical Assistance Visits (TAVs).

(4) Provide guidance on non-standard training.

c. Deputy Commandant for Aviation (DC, A) (ASL-30)

(1) Serve as the single point of contact for aviation operations explosives safety as delegated by CMC SD to include Class V(A) ordnance safety, and operational use of Class V(A) ordnance in aircraft operating areas (AOA).

(2) Provide amplifying instructions to policies involving the safe use of Class V(A) ordnance in the AOA.

(3) Coordinate with COMMARCORSYSCOM in providing aviation ordnance personnel to assist in executing the Marine Corps ESMP.

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d. Deputy Commandant for Installations and Logistics (DC, I&L). Coordinate operational and policy matters relating to Class V(W) materiel with COMMARCORSYSCOM to ensure that specific functional area considerations and requirements are addressed.

e. COMMARCORSYSCOM

(1) Nominate two qualified individuals to serve as the Marine Corps voting members (one primary and one alternate) to the Department of Defense Explosives Safety Board (DDESB) and assign a military representative to serve as our liaison with the DDESB on all matters affecting the Marine Corps per reference (b).

(2) Provide executive agency management and oversight functions to the Marine Corps ESMP as directed by reference (b).

(3) Provide Marine Corps representation to the DDESB.

(4) Provide Marine Corps representation to the DON ESMP.

(5) Provide Marine Corps representation to the Weapons Systems Safety Explosives Review Board (WSSERB), and other joint service weapons safety working groups, for matters pertinent to ground ammunition and explosives (A&E) safety.

(6) Provide Marine Corps representation to joint service and multi-national working groups or teams.

(7) Provide Marine Corps point of contact for technical explosives safety matters involving the Military Services, Defense Logistics Agency (DLA), U.S. Coast Guard, foreign services, and other appropriate public and private agencies.

(8) Manage, in coordination with the Headquarters U.S. Marine Corps (HQMC), all Marine Corps explosives safety and ordnance environmental programs.

(9) Establish additional explosives safety requirements that are unique for Marine Corps commands.

(10) Execute the Marine Corps Explosives Safety Compliance Evaluation Program.

(11) Approve/endorse Marine Corps requests for explosive safety deviations, non-DoD munitions storage, and Marine Corps explosives safety site plans.

(12) Provide explosives safety technical assistance as requested.

(13) Provide guidance and oversight on Marine Corps munitions response actions and Material Potentially Presenting an Explosive Hazard (MPPEH) Program.

(14) Provide Marine Corps point of contact and oversight for A&E personnel qualification and certification requirements.

(15) Participate in changes to applicable explosives safety publications and directives affecting the Marine Corps ESMP.

(16) Communicate with the DDESB regarding explosives safety technical issues.

(17) Implement and manage the Radiological Affairs Support Program (RASP) for the management of Marine Corps Depleted Uranium (DU) ammunition. Maintain the DU Naval Radioactive Material Permit (NRMP), ensuring compliance with Nuclear Regulatory Commission, Naval Radiation Safety Committee, and NAVSEA Radiological Affairs Support Office directives.

(18) Participate in explosives mishap investigations.

(19) Provide tactical explosives safety expertise in support of contingencies, combat operations, military operations, and associated training.

f. Marine Corps Explosives Safety Council. The council shall consist of, but not be limited to, the following activities: Program Manager, Ammunition, Marine Corps Systems Command (Chair); Director, Marine Corps Safety Division (SD); HQMC (ASL-30); Marine Forces Command (MARFORCOM); Marine Forces Pacific (MARFORPAC); Marine Forces Reserve (MARFORRES); Marine Corps Installations Command (MCICOM) Marine Corps Installations East (MCIEast); Marine Corps Installations West (MCIWest); Marine Corps Installations Pacific (MCIPAC); and Marine Corps Installations National Capital Region (MCINCR).

(1) Review and evaluate issues identified during the Executive Safety Board (ESB), chaired by the Assistant

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Commandant of the Marine Corps (ACMC), which may affect the Marine Corps Explosives Safety Program.

(2) Review explosives mishaps and incidents, explosives safety inspections and ongoing explosives safety initiatives, and make recommendations to COMMARCORSYSCOM for explosives safety improvements to policies, programs, and investments.

(3) Review and revise Marine Corps-wide guidance, policy, and procedures governing the Marine Corps ESMP.

(4) Provide guidance on Marine Corps explosives safety technical policy.

(5) Review proposed or enacted updates to the DoD and/or joint service explosives safety policy and provide requisite feedback to the initiating agency.

(6) Review and provide recommendations on annual DDESB meeting voting topics to the Marine Corps DDESB voting member.

g. Commander, Marine Forces Command (COMMARFORCOM), Commander, Marine Forces Pacific (COMMARFORPAC), and Commander, Marine Forces Reserve (COMMARFORRES)

(1) Provide management and oversight for all explosives safety matters within your respective areas of responsibility.

(2) Participate as a team member during the Explosives Safety and Munitions Risk Management (ESMRM) and Consequence and Risk Identification (C&RI) assessments for locations within the command's area of responsibility (AOR).

(3) Provide explosives safety expertise in support of contingencies, combat operations, military operations, and associated training.

(4) Provide technical review, recommendations and endorsements on explosives safety site plan requests and explosives safety deviations for major subordinate commands (MSC).

(5) Coordinate with COMMARCORSYSCOM on explosives safety issues.

(6) Serve as the command's single point of contact for all explosives safety issues.

h. (MCICOM)

(1) Provide management and oversight for all explosives safety matters via your respective regional commanders.

(a) Marine Corps Installations East (MCIEAST) is responsible for the implementation of an effective ESMP at the following installations:

1. Marine Corps Base Camp Lejeune, NC
2. Marine Corps Air Station Cherry Point, NC
3. Marine Corps Air Station Beaufort, SC
4. Marine Corps Air Station New River, NC
5. Blount Island Command, FL
6. Marine Corps Logistics Base Albany, GA
7. Marine Corps Recruit Depot Parris Island, SC

(b) Marine Corps Installations West (MCIWEST) is responsible for the implementation of an effective ESMP at the following installations:

1. Marine Corps Base Camp Pendleton, CA
2. Marine Corps Air Station Camp Pendleton, CA
3. Marine Corps Air Station Yuma, AZ
4. Marine Corps Air Ground Combat Center 29
Palms, CA
5. Marine Corps Mountain Warfare Training
Center Bridgeport, CA
6. Marine Corps Recruit Training Depot San
Diego, CA
7. Marine Corps Air Station Miramar, CA
8. Marine Corps Logistics Base Barstow, CA

(c) MCIPAC is responsible for the implementation of an effective ESMP at the following installations:

1. Marine Corps Bases Camp Smedley D. Butler, Japan
2. Marine Corps Combined Arms Training Center (CATC) Camp Fuji, Japan
3. Marine Corps Air Station Iwakuni, Japan
4. Marine Corps Air Station Futenma, Japan
5. Marine Corps Base Hawaii
6. Marine Corps Forces Korea (Pohang/Yechon)

(d) MCINCR is responsible for the implementation of an effective ESMP at the following installations:

1. Marine Corps Base Quantico, VA
2. Marine Corps Air Facility Quantico, VA
3. Marine Barracks 8th and I, Washington DC

(2) Provide management and administration functions for all explosives safety matters involving the use of A&E per reference (c) and this Order.

(3) Provide technical review and recommendations of exemptions to transportation regulations involving the movement of Class V materiel on Marine Corps installations.

(4) Provide technical review, recommendations and endorsement on explosives safety site plan requests for Marine Corps installations.

(5) Provide technical review, operational necessity, recommendations and endorsement on requests for deviations from explosives safety criteria on Marine Corps installations.

(6) Establish a Technical Assist Visit (TAV) Program to assist Marine Corps installations in their region with explosives safety issues.

(7) Coordinate operational and policy matters relating to Class V materiel with COMMARCORSYSCOM.

i. Installation Commander Responsibilities

(1) Ensure compliance with the instructions contained in this Order.

(2) Publish Standard Operating Procedures (SOPs) that govern explosives operations aboard the installation.

(3) Establish an ESMP that ensures compliance with reference (c) and this Order.

(4) Establish a Site Approval Development Team (SADT) per reference (d).

(5) Require that all personnel who conduct reviews of explosives safety site plans complete the initial instructor led AMMO-36 course and the mandatory distance learning refresher requirement.

(6) Designate an individual, in writing, government civilian or military, as the Explosives Safety Officer (ESO) for the installation. The following guidance is provided regarding the ESO.

(a) The ESO should be organizationally placed in the installation safety office.

(b) The ESO, if not organizationally placed in the installation safety office, must have direct access to the installation commander on all matters pertaining to explosives safety.

(c) Explosives safety should be the ESO's primary duty.

j. ESO Responsibilities

(1) Serve as the single point of contact for all A&E explosives safety matters at the installation assigned.

(2) Develop, implement, and manage a robust explosives safety program that complies with the provisions of this Order.

(3) Develop and implement a records management process that documents and supports the installations ESMP. Separate processes are not required for those programs currently supported by an approved electronic submission process.

(4) Ensure explosives safety site approvals are submitted for all facilities or facility changes impacting explosives safety. Explosives site plan packages shall be maintained for all locations where Class V materiel is stored and/or handled.

(5) Maintain facility databases (e.g. Environmental and Explosives Safety Web Portal) with all potential explosives sites (PES) and exposed sites encumbered by a PES on the installation.

(6) Ensure activity's explosives safety quantity distance (ESQD) maps are reviewed and validated, all PESs and ESs within ESQD arcs are shown and the ESQD arcs are accurate. This includes version control procedures for updating maps, quality control for QD information, and rules to ensure current and proposed QD arcs are captured within planning layers in the mapping system.

(7) Ensure that overall installation operations involving the transportation, storage, and handling of Class V materiel are conducted in compliance with applicable directives, and executed in a safe manner.

(8) Participate in the installation's master planning process to ensure explosives safety requirements are met.

(9) Provide the installation commander with reasoned, informed advice regarding explosives safety and acceptable levels of risk.

(10) Monitor the training of personnel involved with explosives operations to verify they have received the required training.

(11) Inspect active explosives operating buildings or workplaces as often as necessary, depending on the hazard associated with the operation, but at least annually.

(12) Conduct pre-operational checks of explosives operating lines, in conjunction with safety personnel trained to

perform safety analyses, as new systems or processes are implemented.

(13) Inspect all explosives storage areas and magazines at least annually to ensure that they comply with explosives safety standards.

(14) Assure all A&E SOPs meet the requirements of this Order.

(15) Monitor the installation's tenant organization's qualification and certification programs for compliance with reference (e).

(16) Review all requests for deviations from established explosives safety standards to ensure compliance with existing safety directives. Ensure deviations involving compensatory measures are communicated to affected commands and implemented into appropriate issuances.

(17) Inspect maintenance/repair operations involving hot work, and issue permits as necessary.

(18) Review, in conjunction with the Safety Officer, Fire Department and Facilities representatives, all facility modification drawings and equipment or tooling drawings used for explosive operations to ensure compliance with safety documents.

(19) Approve, in conjunction with the Safety Officer and Fire Department, the electrical hazard classification for each operating building and maintain the list in the Safety Office.

(20) Monitor ordnance display items to ensure that they are inert and do not contain hazardous materials.

(21) Conduct/support mishap investigations in accordance with reference (f), and report findings to higher authority as required. Maintain records per references (g) and (h).

(22) Maintain the activity's explosives safety publications and directives.

(23) Assign safety observers to pier or wharf areas in accordance with reference (c) and this Order.

(24) Monitor the facility grounding/lightning protection program.

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(25) Conduct Explosives Safety Self-Assessments (ESSAs).

(26) Provide oversight on the explosives safety aspects of munitions responses.

(27) Establish and publish installation explosives laden vehicle routes.

(28) Conduct a review of all electronic transmitting equipment to ensure compliance with respect to Hazards from Electromagnetic Radiation to Ordnance (HERO) and ensure installation obtains necessary reviews from SPAWARSSYSCOM and NOSSA.

Chapter 2

General Miscellaneous Requirements

1. Background. This chapter provides guidance on general explosives safety issues to aid in the implementation of an effective ESMP.
2. Definitions of Terms. As used in this Order:
 - a. "Government" means U.S. Federal Government.
 - b. "Naval" means both Navy and Marine Corps.
 - c. "Shall," "will" and "must" are directive in nature and require mandatory compliance.
 - d. "Should" is advisory in nature. Advisory requirements shall be followed unless exempted by the installation Commanding Officer (CO).
 - e. "May" and "can" are optional in nature and do not require compliance.
3. Marine Corps Tenant Relationships. The installation ESO has explosives safety oversight and responsibility for all explosives activities aboard their installation. Marine Corps tenant commands and organizations aboard the installation will follow the installations explosives safety regulations unless a Memorandum of Understanding (MOU), Memorandum of Agreement (MOA), or Inter-Service Support Agreement (ISSA) is in place that outlines explosives safety roles and responsibilities.
4. Other Organizational Relationships
 - a. All non-Marine Corps organizations or activities located aboard a Marine Corps installation should have an MOU/MOA/ISSA, with the host installation, that at a minimum outlines the following:
 - (1) Identification of explosives safety roles and responsibilities.
 - (2) Service guidance to be followed.
 - (3) Funding or other support required.

b. MOU/MOA/ISSA, addressing explosives safety oversight, are not required if the installation's safety orders require all tenant organizations to comply with host installation requirements.

c. MOU/MOAs, when not specifically mandated, can be developed between commands and organizations.

5. Munitions Inerting and Display

a. Only Explosive Ordnance Disposal (EOD) personnel are authorized to conduct inerting and stripping operations in accordance with references (c) and (i).

b. Inspection and marking of inert-filled and empty ordnance items shall be in accordance with this Order.

c. Inert munitions do not contain explosive or energetic material or other hazards. Only inert munitions shall be used for classroom training, training aids, or displays unless specifically approved by COMMARCORSYSCOM. Requests for approval shall be submitted using the event waiver process outlined in chapter 3 of this Order.

d. Ammunition that is manufactured specifically for display purposes empty or with inert material installed does not require certification.

e. Ammunition that has had explosives material removed and left empty or replaced with inert material shall be certified inert. These items will be included on the master inert inventory.

f. An Inert Certification is a determination that no hazards remain in the ammunition or component. The examination may be visual or by nondestructive testing method such as an X-ray. The certification shall be performed by qualified personnel who the commander or responsible authority certifies, in writing, is technically qualified to make such a determination. Activities shall maintain a record of all inerted ammunition. The following data, at a minimum, shall be recorded:

- (1) Item description
- (2) Assigned serial number

- (3) Certifying official's name
- (4) Certifying official's signature
- (5) Date certified
- (6) Method by which the item was certified inert
- (7) Item location
- (8) Final disposition (maintain applicable documentation)

g. Data may be maintained electronically provided all requirements identified above are met. Electronic signatures are authorized.

h. Items transferred from the certifying organization will be accompanied by a copy of the inert certification. The certification must be maintained with the item until the item is destroyed or returned to the unit conducting the original certification.

i. Markings and Identification

(1) The original color code, nomenclature, and other identification shall not be removed. Items that have had their color changed in accordance with earlier guidance do not have to have their original color restored.

(2) Items shall be identified by serial number. The serial number shall consist of the Unit Identification Number (UIC) or Routing Unit Identification (RUC) of the activity where the item was certified inert, and a unique number.

(3) The serial number will be affixed to each item by metal engraving tool, steel stamping, indelible ink, or a locally produced label.

(4) Four holes, 90 degrees apart, will be drilled in each item as a ready identifier that the item has been inerted. Exceptions to this requirement include

- (a) Items physically too small to drill.

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(b) Items whose historical importance could be diminished by the drilling of holes (or metal stamping or engraving).

(c) Items whose physical characteristics would be altered by the drilling of the holes.

j. ESOs will conduct and document annual audits of all inert ordnance items.

6. Clearing Barrels

a. Clearing Barrel Locations. Clearing barrels will be provided at designated weapons clearing locations, which are generally located outside arms rooms and ranges. Commands must post positive control and procedural guidelines for all weapons at clearing barrels and ensure personnel use them during weapons clearing.

b. Authorized Clearing Barrels

(1) Local construction

(a) A 30 to 50 gallon container, filled with pea gravel or sand. (Pea gravel has the greatest projectile stopping ability.)

(b) If sand is used, it must be dry and free of rocks and other debris. Properties of wet sand can cause ricochets. Place dry sand in a plastic bag and tie the bag closed prior to placing into clearing barrel. The owning unit must inspect clearing barrels annually and document the inspection results.

(c) Locally constructed clearing barrels will have $\frac{3}{4}$ inch plywood or thick rubber matting covering the interior surface diameter of the container fitted directly behind the lid to reinforce the lid against muzzle blast [not applicable to Commercial Off The Shelf (COTS)].

(d) Locally constructed barrels will be at least 14 inches wide, 24 inches deep, and be mounted at a height and angle to permit safe and smooth firearms clearing.

(e) Locally constructed barrels will have an aiming point in the center of the lid at least 4 inches in diameter.

(f) Locally constructed barrels will be painted red in color with yellow 1-inch stenciling "Weapon Clearing Barrel" on two opposing sides and lid.

(2) General Services Administration (GSA) approved COTS clearing barrels may be used. If COTS clearing barrels are used, the unit using/maintaining the clearing barrel will obtain and maintain product test and specification data from the manufacturer for as long as the clearing barrel is in use/service. COTS barrels will be inspected and documented for serviceability and maintained in accordance with the manufacturers' specifications. This documentation will be made available to the ESO upon request. In no case shall COTS barrels be inspected less than annually.

7. Amnesty Program

a. The amnesty program is not intended to circumvent standard ammunition accountability procedures. Implementation of an amnesty program is not mandatory, but subject to the discretion of the installation commander.

b. For an amnesty program to be effective, turn-ins must be made without fear of disciplinary action. Therefore, individuals making amnesty turn-ins will not be the subject of an investigation.

c. Units discovering munitions after having completed their turn-ins and having their accounts reconciled are not authorized to use the amnesty procedures outlined herein. These units shall make amended turn-ins using the procedures set forth in reference (j).

d. All munitions larger than .50 caliber small arms are considered hazardous and should be moved only by EOD personnel.

e. Small arms ammunition (up to and including .50 caliber), may be delivered directly to the Ammunition Supply Point (ASP), station ordnance, or Provost Marshal Office (PMO). Regardless of the turn-in method, neither documentation nor verification of identity is required.

f. Amnesty days may be scheduled as often as deemed necessary for the collection of unauthorized munitions. The installation ESO will establish collection points at locations that afford Inhabited Building Distance (IBD) levels of

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protection. To ensure that proper care is exercised, ammunition personnel must be available and on-hand to supervise amnesty turn-ins.

g. Permanently Sited Amnesty Program Containers

(1) Due to the hazardous nature of munitions, the use of amnesty containers is the least desirable method of supporting an amnesty program. If implemented, extreme care must be exercised as to the physical location, number, and construction of amnesty containers.

(2) Permanent off range locations for Hazard Class and Division (HC/D) 1.1, 1.2, and 1.3 materials shall be sited in accordance with reference (c), as above-ground unbarricaded magazines and provide IBD protection. Containers for HC/D 1.4S small arms ammunition do not require siting but will be provided a 50 foot fire safety separation.

(3) Containers placed on operational ranges approved for the type of ammunition involved do not require a separate explosives safety site approval as long as the associated explosives safety arcs do not extend beyond the established range borders.

h. Construction of Amnesty Program Containers

(1) Amnesty program containers will be constructed of at least 10-gauge steel, permanently mounted, and secured with a lock in accordance with reference (k).

(2) Slots in containers for HC/D 1.4S material will be sized to accept no larger than a .50 caliber cartridge. Containers shall be clearly marked "AMNESTY BOX FOR SMALL ARMS AMMUNITION ONLY-NO SMOKING WITHIN 50 FT."

i. Amnesty Program Containers Checks

(1) Permanently sited amnesty program containers will be checked daily and all munitions removed from the containers.

(2) Personnel performing checks on amnesty program containers authorized for HC/D 1.1, 1.2, or 1.3 must be qualified and certified in accordance with reference (e).

(3) Personnel not qualified and certified in accordance with reference (e) may perform checks of small arms ammunition (HC/D 1.4S) amnesty program containers only.

(4) Non-qualified/certified checkers will contact EOD or qualified ASP personnel to remove unauthorized munitions contents in accordance with base procedures. All munitions recovered, deemed safe to move, shall be returned to the installation's ASP or station ordnance. Items that appear to be damaged or unsafe to move shall be left in place until examined by EOD.

j. Responsibilities

(1) Commanders responsibilities

(a) Periodically brief personnel on the existence and guidelines for use of the amnesty program.

(b) Monitor execution of the amnesty program to ensure guidelines are being properly followed.

(c) Establish A&E SOPs addressing the amnesty program.

(d) Approve, in writing, all physical locations of amnesty program containers. Documentation will be resubmitted if physical locations of containers change or changes occur to the area within the explosives safety arc. One letter, listing all approved locations, is acceptable. Copies of this letter will be furnished to the ESO, Range Control Officer (RCO), EOD Officer-In-Charge (OIC), duty officer, and the ASP/station ordnance OIC.

(e) Establish key control procedures for amnesty program containers in accordance with requirements for access to secure areas, and installation orders.

(f) Permanent amnesty box locations will be identified on the installation's fire maps.

(2) Personnel, identified in paragraph 7i, responsible for inspecting amnesty program containers are responsible for the following:

(a) Monitor amnesty program containers daily and remove any A&E material. Respond to requests from monitoring

personnel not qualified/certified to handle or transport munitions and remove any A&E material. Ensure material is safe for transportation and storage. If the condition of the A&E material is in doubt, notify EOD for assistance.

(b) Mark and package material for storage and transportation as required.

(c) Ensure disposition instructions are requested from the Designated Disposition Authority (DDA).

(3) The ESO will assist in properly siting amnesty containers and monitoring the execution of the amnesty program. All reviews and inspections will be documented via a locally developed checklist. Reviews/inspections may be conducted in conjunction with other inspections. If a review/inspection is conducted independently from other inspections, document the review/inspection separately and maintain documentation for two years. If a review/inspection is conducted in conjunction with another inspection, ensure that the amnesty program inspection points are included on the appropriate inspection checklist.

8. Communications with External Organizations

(a) Unsolicited direct liaison from Marine Corps activities with DDESB and NOSSA is not authorized, unless coordinated through COMMARCORSYSCOM.

(b) All policy guidance or interpretation questions will be addressed to COMMARCORSYSCOM.

(c) COMMARCORSYSCOM must be copied on all explosives safety correspondence from Marine Corps activities to external organizations.

9. Malfunction and Defect Reporting. All commands shall submit malfunctions and defects reports involving munitions per the direction contained in reference (1).

10. Accident Reporting. All commands shall investigate, report, and maintain records of all mishaps, near misses and hazardous conditions as required by reference (f).

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Chapter 3

Explosives Safety Deviations

1. Explosives Safety Deviations. When explosives safety requirements cannot be met, an explosives safety deviation must be approved prior to the commencement of the explosives operation. Information regarding deviations from explosives safety requirements (e.g., Secretarial Certifications, Waivers, Exemptions, and Event Waivers) is contained in references (a), (b), (c), and this Order.
2. Explosives Safety Deviations Approval Authorities. When strategic or other compelling reasons dictate the need for a deviation, the CO/Geographic Combatant Commander (GCC) is responsible for requesting the appropriate deviation from the appropriate approval authority as soon as the need is identified. Deviation approval authorities are contained in references (b) and (c) for Marine Corps activities and reference (m) for contingency areas located on non-enduring locations.
3. Explosives Safety Deviations Submission Procedures. All explosives safety deviations for Marine Corps installations will be prepared and submitted through the chain of command to the appropriate approval authority per the guidance contained in reference (c). Submission package requirements are contained in paragraph 8 of this chapter.
4. Joint Basing/Inter-Service Deviation Submission Procedures. The lead Service is responsible for establishing explosives safety policy on DoD installations. Tenant activities must comply with the explosives safety standards that are mandated by the commanding officer of the host activity unless an MOU/MOA has been developed that contains explosives safety implementation responsibilities for each Service. Copies of all deviations relating to Marine Corps explosives operations on joint bases and inter-service operations will be submitted to COMMARCORSYSCOM.
5. Joint Operations Deviation Submission Procedures. Locations outside the Continental United States (OCONUS) and not on a Marine Corps enduring installation that cannot meet the requirements of reference (a) must prepare an ESMRM and C&RI assessment per reference (m). This should be performed by an assessment team familiar with explosives safety requirements (i.e., Explosives Safety Specialists, Ammunition, Aviation Ordnance, EOD) if available, or be requested by the lead service

or base operating support-integrator (BOS-I) through their respective Service component. Copies of all ESMRM and C&RI assessments relating to Marine Corps explosives operations occurring during joint operations should be forwarded to COMMARCORSYSCOM.

6. Operational Risk Management. Many situations involving contingency, readiness, and/or operational requirements can only be satisfied by deviating from established explosives safety criteria. Operational Risk Management (ORM) is a required part of planning, preparing, and executing A&E missions and tasks. All explosives safety deviations will include an ORM assessment from the responsible ESO per reference (n). In addition to the ORM assessment, ESQD deviations will include the DDESB approved Automated Safety Assessment Protocol Explosives (ASAP-X) worksheet or other tools approved by COMMARCORSYSCOM.

7. Submission Methods. The following methods will be used in submitting for a deviation.

a. Marine Corps installations will submit all requests for a deviation through the COMMARCORSYSCOM Environmental Explosives Safety (EES) web portal. This includes all deviation modifications and renewals required by the Ammunition and Hazardous Materials Handling (AMHAZ) review. Alternate methods of submission are authorized with approval from COMMARCORSYSCOM.

b. The GCC will identify the method of submission for OCONUS training and contingency areas not located at Marine Corps enduring locations.

8. Explosives Safety Deviations Preparations. Ammunition operations, conducted in military situations to include training, or combat operations, are demanding and complex. All such operations are inherently dangerous and each has the potential to jeopardize Marines, resulting in the needless loss of limited resources. Managing mishap risks related to these operations requires educated judgment, situational knowledge, demonstrated experience, and professional competence. Personnel preparing explosives safety deviations should have a thorough understanding of the operation and be able to communicate them to the Commander. Deviations will be prepared in accordance with the provisions of reference (c) and this Order, to ensure a Commander is able to make an informed and conscious decision accepting risk involving A&E.

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a. Secretarial Certifications. When compelling operational reasons require a construction or Military Construction (MILCON) project that does not meet ESQD criteria; a Secretarial Certification will be requested. Required information and submission process will be dependent upon the project location.

(1) Secretarial Certifications for Marine Corps installations will be prepared and submitted as defined in reference (c).

(2) Secretarial Certifications will be reviewed during each AMHAZ or at a minimum every five years.

b. Exemptions and Waivers. When compelling reasons require operations to deviate from explosives safety requirements, a temporary waiver or exemption will be submitted. Information required and submission chain will be dependent upon the project location.

(1) Waivers and exemptions for Marine Corps installations will be prepared and submitted per reference (c). Waivers/exemptions from ESQD criteria will contain an assessment from ASAP-X or other COMMARCORSYSCOM authorized assessment tool.

(2) Marine Corps tenant activities located on a joint base must submit waivers and exemption in accordance with the host installation explosives safety policy.

(3) Marine Corps installations that have waivers and exemptions will be reviewed during regularly scheduled AMHAZ.

c. Event Waivers. An event waiver is a deviation issued for a limited time, on a non-reoccurring basis, for a particular explosives operation encumbered by ESQD arcs that cannot otherwise be satisfied. Event waivers are submitted for compelling mission requirements not operational convenience. Other non-explosives operations such as maintenance projects encumbered by explosive arcs may be approved under the event waiver process or Construction Worker Authorization (CWA) process as identified in paragraph 9 below.

(1) Event waivers for Marine Corps installations will be prepared and submitted per reference (c). In addition to the requirements of reference (c), event waivers will include an operational risk assessment, per reference (n) and an ASAP-X or other COMMARCORSYSCOM authorized assessment submitted with the

event waiver. The event waiver will be reviewed by the responsible ESO prior to submission.

(2) Marine Corps tenant activities located on a joint base must submit event waivers in accordance with the host installation explosives safety policy.

(3) Marine Corps units participating in operations at non-enduring locations where the Marine Corps is the executive agent or the BOS-I will prepare event waivers per reference (c). Event waivers will be included in the next C&RI assessment per reference (m).

9. Construction Worker Authorization (CWA). When construction personnel must, on a temporary basis, be within K18 intraline distance from a PES, they shall be provided the maximum practical protection from the effects of an explosion at the PES. Approval authority for construction workers within K18 intraline distance of a PES is dependent on the work involved, amount of time the workers will be present and type of facilities affected. CWA submission guidance is provided below.

a. Routine maintenance and repair work conducted inside K18 intraline distance can be approved at the installation ESO level. Local procedures will be developed for requesting and approving routine maintenance and repair work. Examples of routine maintenance are provided in reference (c).

b. Maintenance and repair work conducted inside K18 intraline distance that is not routine and does not alter/modify the facility, Lightning Protection System (LPS) and/or change the currently sited operation will be submitted to COMMARCORSYSCOM as a CWA through the EES portal. Documentation requirements for CWA submitted as event waivers to COMMARCORSYSCOM will use the event waiver format contained in reference (c) and contain the information for a CWA identified in reference (d). The subject line must identify the request as a CWA.

c. Maintenance and repair work that is not routine and affects an explosives facility will be submitted to NOSSA (N5) as a CWA through WebSAR. Documentation requirements for CWA submitted to NOSSA (N5) are contained in reference (d).

10. Storage of Non-DoD Munitions. Non-DoD (including captured enemy ammunition) and foreign munitions shall be properly

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segregated and separated from DoD munitions. The following regulations shall be adhered to:

a. During peacetime, only formally cataloged Class V material may be stored on Marine Corps installations or in a Marine Corps ASP.

b. Storage of non-DoD and foreign munitions, with the exceptions of safe haven and combat operations, requires storage authority from COMMARCORSYSCOM. Requests will be submitted via the EES Web Portal.

c. Required Information. All non-DoD storage requests must include the following:

(1) Complete item description and National Stock Number (NSN) or other identifying information, if known.

(2) Item quantity.

(3) Hazard classification/division (HC/D) and Storage Compatibility Group (SCG) or interim hazard classification documentation.

(4) Net Explosive Weight (NEW).

(5) Justification for and type of storage required.

(6) Expected duration of storage.

(7) Approved munitions retrograde plan for unexpended ammunition.

d. Actual usage of non-DoD munitions aboard Marine Corps installations will require approval from Training and Education Command (TECOM), Range Management Division.

e. Confiscated small arms ammunition items may be stored on Marine Corps installations with approval of the installation commander. Installation commanders may assist external organizations (e.g., Naval Criminal Investigative Service [NCIS], Federal Bureau of Investigation [FBI], local law enforcement) in storage of confiscated or evidentiary small arms ammunition. However, the organization requesting assistance is responsible for providing an accurate inventory of the material and is responsible for proper disposition of the material. These items are not authorized for subsequent issue or use. The

organization requesting assistance is responsible for providing proper disposition of the ammunition within 30 days of its release by the investigative authority, or formally requesting that the installation extend storage assistance for a limited, specified period of time while disposition is arranged. Should the organization fail to take either of these actions, the installation will contact the DDA for guidance. The records created in paragraphs 10b, 10c, and 10d must be retained for three years from the date of the disposition instructions.

f. The temporary storage or disposal of non-DoD and/or foreign explosives is available in order to protect the public or to assist agencies responsible for Federal, State, or local law enforcement in storing or disposing of non-DoD and/or foreign explosives when no alternate solution exists. Such storage or disposal shall be established in accordance with an agreement between the SECDEF and the head of the Federal, State, or local agency concerned. These requests will be forwarded to COMMARCORSYSCOM who will, in turn, coordinate with DC (CD&I) and (I&L), OPNAV (N41) and Assistant Secretary of the Navy (ASN) (EI&E) for approval.

11. Compensatory Measures. All deviations having associated compensatory measures will ensure all issuances (SOP, Base Orders, etc.) accurately reflect these measures and are updated regularly. Additionally, the EES web portal, or other COMMARCORSYSCOM authorized database will be updated with the compensatory measure information.

12. Deviation for Non-Enduring Locations. Information on developing, preparing, and submitting deviations for non-enduring locations are contained in chapter 11 of this Order.

Chapter 4

Explosives Safety Reviews

1. Background. The objective of the Marine Corps ESMP is to mitigate explosives mishaps and resulting losses in terms of injuries, deaths, property damage, and mission effectiveness. Root cause analysis of mishaps involving A&E provides possible methods of interrupting the chain of events which led to the explosive incident. Historical analysis has determined the majority of incidents could have been avoided had the commands or individuals involved been effectively trained, inspected, supervised, or followed prescribed operational procedures. Accordingly, evaluations, technical assistance, inspections, self-assessments, and periodic reviews, will be conducted and documented to assess the effectiveness of the Marine Corps ESMP at all command levels. Compliance evaluations/inspections serve as a means to ensure commands are aware of explosives safety criteria, apply lessons learned, transfer information, communicate problem areas to higher authority, and identify root causes that may lead to an explosives-related incident or mishap.

2. External Review Boards, Surveys and Inspections. Representatives from DDESB, CMC, and CNO will make periodic inspections and assistance visits to munitions storage and operating areas at Marine Corps installations to ascertain compliance with prescribed explosives safety regulations. All explosives safety inspections, surveys, and assistance visits to Marine Corps installations by agencies external to the Marine Corps will be coordinated through COMMARCORSYSCOM. Unsolicited direct liaison from Marine Corps activities with DDESB and NOSSA is not authorized, unless coordinated through COMMARCORSYSCOM. COMMARCORSYSCOM must be copied on all explosives safety correspondence from Marine Corps activities to external organizations.

3. DDESB Explosives Safety Management Evaluation Program. In accordance with reference (o), the DDESB Explosives Safety Management Evaluation Program evaluates the effectiveness of the Marine Corps ESMP program. This is a Service-level evaluation that takes a programmatic approach in assessing explosives safety compliance. The evaluation identifies program strengths and weaknesses, analyzes root causes of explosives safety noncompliance and recommends solutions to possible problem areas. This is accomplished through data point collection during evaluations of the headquarters element

(COMMARCORSYSCOM), intermediate element (Regional Explosives Safety Office Marine Corps Installations (MCI) Command East/West/Pacific/National Capital Region) and installations.

a. DDESB will evaluate specific program elements consistent with the echelon of command being evaluated. Program elements are identified based on the contents of the appropriate DoD or DON issuance. The following programs will be evaluated based on the echelon of command being evaluated:

(1) Headquarters element (COMMARCORSYSCOM)

- (a) Service level Explosives Safety Management
- (b) Implementation of ESMP
- (c) Execution of DoD Ammunition and Explosives Safety Standards
- (d) Combatant Command and Services Explosives Safety Support

(2) Intermediate Element (MCI East/West/Pacific/National Capital Region)

- (a) Management
- (b) Execution
- (c) Specialized areas

(3) Installation

- (a) Management
- (b) Plans/Policies/Procedures
- (c) Execution/Operations
- (d) Execution/Operations Support

b. Service components are evaluated on a rotating fiscal year (FY) cycle. During the Marine Corps cycle, the DDESB will conduct evaluations based on input from COMMARCORSYSCOM. DDESB will identify Commands scheduled for evaluation via official correspondence with COMMARCORSYSCOM. Specific coordination and tasking requirements will be identified and provided as part of

the official notification. Evaluated commands must be prepared to brief applicable topics contained in the evaluation notification.

c. COMMARCORSYSCOM will request a Corrective Action Plan (CAP) from the evaluated Command. CAPs must be submitted to COMMARCORSYSCOM for all areas identified in the Program Evaluation Summary as a DoD violation or potential process weakness. The CAP must contain all required information and be formatted as defined below:

(1) Discussion: Optional supporting information.

(2) Root Causes: Underlying cause or circumstance causing the discrepancy.

(3) Corrective Action: Actions taken to physically correct the discrepancy and reduce the chance of recurrence.

(4) Current Status: Status of corrective action.

d. CAPs must be submitted, within 30 days after receiving the CAP request letter.

e. CAPs will be subjected to quarterly progress reviews until all outstanding deficiencies are corrected.

f. At the conclusion of the evaluation cycle, the DDESB will evaluate all collected data to validate the implementation and effectiveness of the Marine Corps ESMP in meeting DoD requirements. A consolidated Service Report will be provided to COMMARCORSYSCOM for Explosives Safety Council action.

4. AMHAZ Materials Handling Review Board. As required by reference (b), the AMHAZ Handling Review Board provides a DON level review of factors pertinent to proper safety in the handling, storage, and transportation of munitions at each major installation and all nearby activities. Additionally, the Board reviews explosives safety conditions as reflected in, or impacted by, planned construction projects, reviews all explosives safety deviations on the installation, and provides visibility of explosives safety related issues to installation commanders and senior officers.

a. The AMHAZ Handling Review Board is not an investigative or inspection organization. It is an advisory group, dedicated

to working with local commands to achieve proper balance between operational readiness and acceptable levels of safety.

(1) The AMHAZ Handling Review Board reviews, and recommends to the CNO, via COMMARCORSYSCOM, the cancellation, modification, or continuation of any deviation in effect.

(2) The AMHAZ Board re-validates all Safety Assessment for Explosives Risk (SAFER)-issued explosives safety site approvals, on-base road (public traffic route (PTR) exposures and roll-on/roll-off (RORO) operations during the review.

b. The procedures required of each installation visited by the AMHAZ Handling Review Board are set forth in reference (c). These procedures require specific actions be taken to provide adequate command attention and support to the AMHAZ Review. Commanders of Marine Corps activities must direct all correspondence to the AMHAZ Board Chairman via the chain of command.

c. Pre-AMHAZ Handling Review Board Submissions. Within 30 days of receipt of the AMHAZ announcement message, installations will submit to the AMHAZ Board, via COMMARCORSYSCOM, the following;

(1) Required information contained in the announcement message.

(2) Installations with SECNAV or CNO approved deviations, COMMARCORSYSCOM RORO explosives safety site approvals, and DDESB SAFER site plans will prepare and submit a request for renewal, modification, or cancellation.

d. Commands participating in an AMHAZ survey will prepare briefs for the AMHAZ Handling Review Board per reference (c).

e. Post-AMHAZ Handling Review Board Submissions. Deviation renewal request documentation will be submitted using the COMMARCORSYSCOM EES Web Portal. Documents must be submitted in sufficient time to arrive at CNO (N411) a minimum of three months prior to the expiration of the current deviation. To ensure compliance with submission timelines, the activity must respond to the AMHAZ Handling Review Board Letter of Recommendations within 30 days from the date on the Board's serialized and signed letter. The ESO must respond to the requirements specified in the AMHAZ Handling Review Board's

letter. The AMHAZ Handling Review Board recommendations must be inserted in the deviation request form per reference (c).

5. Explosives Safety Inspection Program. As directed by CMC, COMMARCORSYSCOM will conduct Explosives Safety Inspections (ESI) per reference (p).

a. With the exception of DoD guidance, Marine Corps Orders (MCO) and directives take precedence in the event of conflicting regulatory guidance.

b. Commanders of Marine Corps activities under the cognizance of the ESI Program must route all correspondence via the chain of command.

c. ESI CAPs and Quarterly CAP updates will be submitted per reference (p).

6. Explosives Safety Self-Assessment (ESSA). The ESSA is a formal program by which installations conduct on-going appraisals of munitions operations to determine the effectiveness of their explosives safety program. A complete ESSA will be conducted by each installation on an annual basis per reference (p).

7. Environmental Compliance Evaluation (ECE). The environmental aspects of military munitions at Marine Corps installation shall be evaluated as the environmental portion of the ESI. All environmental findings shall be forwarded to MCICOM GF-5 to be incorporated into the HQMC (LF) sponsored ECE program as appropriate.

8. Technical Assistance Visits (TAV). TAVs are performed at the request of a Marine Corps installation. The TAV program is established for the purpose of providing technical expertise and assistance in the management and safe storage of ammunition. TAV's are designed to assist with specific explosives safety issues and are not meant to serve as a pre-inspection review.

a. The purpose of a TAV is to assist the installation with explosives safety programmatic and technical issues.

b. The TAV team will consist of qualified personnel designated by COMMARCORSYSCOM. Dependent upon the scope of the TAV, the team may be augmented by personnel from various field activities, training commands, and ESOs from other installations.

c. TAVs must be formally requested at least 60 days prior to the date of the intended visit. Request will include a preferred and alternate TAV date. Request will indicate the primary areas of program concern. TAVs should not be scheduled within 120 days of a scheduled ESI or other external inspection.

9. COMMARCORSYSCOM Evaluations. COMMARCORSYSCOM may conduct an evaluation of an installation with 14 days written notice to the installation commander.

Chapter 5

Explosives Safety Site Planning

1. Background. Explosives safety standards contained in reference (a) and implemented by reference (c) and this Order, apply to all U.S. titled ammunition munitions unless more restrictive local standards are mandated by international agreement. These standards must be considered the minimum, with greater protection provided when practical.

2. Locations Requiring Site Approval/Plans. An explosive safety site approval request (ESSAR) is required by references (a), (c), and this Order for all locations where A&E is handled, manufactured, modified, or stored. This requirement includes permanent fixed containers located on ranges, containers used in conjunction with an amnesty program, exposed sites encumbered by explosives arcs, and those areas used for the storage and permitted treatment of waste military munitions (WMM).

3. Explosives Safety Site Approval Submissions. Installations must submit an ESSAR for all locations used to store ammunition and explosives and locations where ammunition and explosives are handled unless exempted by reference (c) or this Order. This requirement applies to all permanent storage facilities, used exclusively for the storage of ammunition and explosives, for more than a continuous 24 hour period, regardless of the date of first construction or location. In the event that a record of site approval is not on file or if the re-designation or modification of an existing site is required, commanders must develop and submit site approval requests via WebSAR or other approved system. Site approval must be obtained prior to handling or storing A&E, or prior to the start of new construction.

4. Explosives Safety Site Approval Requests for Locations Storing 300 Pounds NEW. ESSAR for locations storing up to 300 pounds NEW of Hazard Class/Division (HC/D) 1.2.2, 1.3, or 1.4 may be obtained from COMMARCORSYSCOM, per reference (b).

5. Explosives Safety Site Approval Request for Locations Storing More than 300 Pounds NEW. ESSAR for locations storing more than 300 pounds NEW of HC/D 1.2.2, 1.3 or 1.4, with the exception of 1.4S, or for any quantity of HC/D 1.1, 1.2.1, or 1.2.3 must be submitted to DDESB for approval.

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6. New Construction Encumbered by Existing Arcs. New or proposed construction within 110% of explosives safety quantity distance arcs require site evaluation by both the ESO and facility planners and may require reevaluation/re-siting. Careful evaluation by users, facility planners, and ESOs is essential prior to selecting a site for new construction.
7. Explosives Safety Site Approvals Request for Non-Enduring Locations. ESSAR for operations in non-enduring locations shall be obtained using the guidance provided in reference (m). An ESSAR shall be developed for all locations where military munitions are present or forecasted for future military operations. An ESSAR will be submitted in accordance with the deployed unit's chain of command to COMMARCORSYSCOM, and endorsed to the DDESB for final approval. When strategic or compelling operational requirements necessitate deviation from explosives safety criteria and a required explosives safety site plan cannot be done, a deviation per chapter 3 of this Order must be submitted to the appropriate level identified in reference (m) for approval.
8. Storage Authority for Marine Corps Installations
- a. Installation commanders may grant storage authority only for HC/D 1.3 and 1.4 safety and security munitions identified below in non-sited facilities. Storage must comply with fire protection regulations, safety and physical security requirements outlined in references (c), (k), and this Order. Copies of storage approvals must be maintained at the storage location and the data entered in the installation site module of the EES portal.
- b. The following storage authority limitations apply to all Marine Corps commands. These limitations must be strictly adhered to:
- (1) No more than 25 pounds NEW of HC/D 1.4 can be stored.
 - (2) No more than 10 pounds NEW of HC/D 1.3 can be stored.
 - (3) When combining HC/D 1.3, and 1.4, no more than 35 pounds total NEW can be stored, of which no more than 10 pounds NEW can be HC/D 1.3.

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(4) No more than 3000 pounds NEW of HC/D 1.4S, can be stored. The amount of HC/D 1.4S is not included in the limits identified in subparagraph (1).

c. Installation commanders may grant EOD units authorization to store up to 50 pounds NEW of HC/D 1.3 and 1.4 in EOD operating buildings. This authorization may only be granted in situations where the items are part of the unit's immediate response tool kit and the total NEW does not exceed 50 pounds per site. However, all storage must comply with fire protection regulations and safety/physical security requirements outlined in references (c) and (k).

d. Installation commanders must review storage authority approvals annually. Any changes to the approval authority will necessitate a new approval letter.

e. Installation commanders may temporarily grant approval for the storage of cartridge actuated devices (CAD), or propellant actuated devices (PAD) arriving via approved commercial carrier after working hours.

f. Commanders may approve storage of privately owned small arms ammunition in unit armories. Privately owned ammunition will be kept segregated from DoD stocks and be subject to locally written accountability/custody procedures.

9. Quantitative Risk Management. In situations where the siting requirements of reference (a) cannot be met and all available options have been exhausted, the DDESB, in cooperation with all the Services, has approved the use of quantitative risk management computer models (QRMCM); examples include SAFER and ASAP-X. QRMCM provides both acceptable risk criteria, and the statistical methodology necessary to calculate the probability of a fatality through data input. Site plans that meet the criteria of QRMCM will be approved by DDESB without a waiver.

a. Initial Submittal. The initial request for a QRMCM siting will be developed by a user who has completed training in the latest version of the applicable QRMCM software. The following items must be specifically addressed and included in the package:

(1) All elements of a standard site plan submission, to include maps showing the required ESQD arcs and all alternative locations considered.

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(2) A detailed written explanation of the situation which created the need to deviate from standard QD criteria, options considered, reasons for rejection of options, and all locations that are effected by the deviation (e.g., building number, usage, sited NEW).

(3) The applicable datasheets generated by the QRMCM.

(4) Site plans will be submitted to the DDESB for approval.

b. Recertification of QRMCM Site Plans. QRMCM site plans are valid for five years, provided there are no changes to conditions identified in the original submission. Recertification of QRMCM site plans is as follows:

(1) QRMCM Recertification Based on Changes to Original Submission. Change to the original submission, requires the installation to notify COMMARCORSYSCOM of the change and prepare and submit a new QRMCM site plan. This plan will be prepared using the latest version of the QRMCM.

(2) Recertification based on End of Five Years. If, at the end of five years there have been no changes to the original submission or there have been updates to the QRMCM, the installation commander will submit a letter to COMMARCORSYSCOM confirming no changes have occurred.

(3) Recertification Based on Updated Version of QRMCM. If an updated version of the QRMCM has been developed, a new package must be prepared, using the updated version of the QRMCM, five years from the original approval date.

10. Automated Site Planning Tool (ASPT). When implemented at Marine Corps installations, the use of ASPT will be required for development of all explosive safety site plans.

11. Explosives Safety Site Approval Requirements

a. Commanding Officer's Requirements for Explosives Site Planning

(1) Ensure a file copy, or electronic copy of each site map is maintained, showing the locations of all explosives storage and handling locations. The site map must be revised as often as necessary, at a minimum annually, to maintain accuracy

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of the data. All site maps must be generated using an approved Graphic Information System (GIS) mapping system.

(2) Ensure appropriate approval documents are maintained for all current sited A&E locations.

(3) Submit endorsement letters for all explosive safety site approval requests.

b. ESO Requirements

(1) Participate, as an active member, on the Site Approval Development Team (SADT) per reference (d).

(2) Review and provide recommendations for all facility construction, modification, or changes in usage impacting base explosives operations.

(3) Coordinate with facility planners to develop alternative site plans should original plans be found out of compliance with regulatory requirements.

(4) Maintain accurate and up-to-date files of approved site plans.

(5) Develop a written process to implement all new and modified approved site plans.

(6) Update and maintain all required potential explosive site/exposed site (PES/ES) data to include compensatory measures associated with site plans in the EES web portal.

(7) Ensure affected commands are notified, in writing of any required compensatory measures.

(8) Ensure the affected commands implement the compensatory measures in their SOPs.

c. SADT. At a minimum the SADT shall include the ESO, the activity/installation Public Works Department (PWD) facilities planner, and a technical representative from the command conducting the explosives operations being sited. As required, the team may also include representatives from Naval Facilities (NAVFAC) responsible for facility design. In cases where protective construction is required, a representative from the Naval Facilities Engineering Service Center and Expeditionary Warfare Center (EXWC) responsible for developing a basis-of-

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design for protective construction and review of protective construction design drawings may be required.

d. Facilities Planning/Public Works Requirements for Site Planning. Facility planners are responsible for preparing and routing all planned construction projects, of both explosives and non-explosives facilities that may encumber explosives operations or violate existing ESQD arcs, through the installation ESO for review, recommendation, and concurrence. Planners are responsible for preparing and forwarding all documentation required for analysis, review and approval of the site plan. The site approval process can be both complex and labor intensive. It is not uncommon for this process to take more than 12 months to receive approval. Facility planners should submit ESSARs as early as possible to avoid construction delays. No construction will occur prior to the receipt of an approved site plan.

e. Requests for expedited review of an ESSAR must be in the form of a separate activity/command letter to COMMARCORSYSCOM, which includes rationale for an expedited review, and signed by the CO of the requesting activity/command. An expedited review is a request to place the ESSAR in front of other ESSARs for action by COMMARCORSYSCOM, NOSSA and the DDESB. Therefore, expedited reviews should be reserved for urgent requirements and not serve as a substitute for prior planning on the part of the activity. COMMARCORSYSCOM will set the priority for expedited reviews.

12. Documentation Maintenance. All A&E sited locations, to include CO approved storage locations, and all facilities within 110% of an explosives arc, must be loaded into the installation site module of the EES web portal.

13. Encroachment Review. Conduct an annual encroachment review of areas encompassed by ESQD arcs by non-ammunition related activities. Any encroachment will be reported to the installation civil engineers, installation commander, and the encroaching organization. All organizations involved will meet within 10 working days to resolve the encroachment problem. Upon resolution, ESOs will submit any necessary changes to the explosives site plans. Annual encroachment review may be documented via the same MFR prepared for map review. The current review will be maintained on file.

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14. Contractor Site Plans. When the Marine Corps is the Procurement Contracting Officer on an ammunition item being manufactured at a Contractor Owned/Contractor Operated facility, a site plan will be submitted per reference (q).

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Chapter 6

Material Potentially Presenting an Explosives Hazard

1. Background. This chapter establishes criteria for managing and processing Material Potentially Presenting an Explosives Hazard (MPPEH). These criteria are intended to protect personnel and property from unintentional exposure to potential explosive hazards associated with material being transferred within or released from Marine Corps control.

2. Scope. It is the Marine Corps policy to manage and process MPPEH in support of operational readiness and mission requirements in a way that complies with explosives safety standards and prevents unauthorized use, transfer, or release of MPPEH from DoD control.

3. MPPEH

a. Typical types of MPPEH include, but are not limited to:

(1) Used and unused munitions and munitions debris, targets, and non-training-related materials collected and removed during range clearance/munitions response activities.

(2) Used munitions containers and packaging material.

(3) Munitions-related material generated as a by-product of munitions manufacturing, maintenance, and demilitarization.

(4) Soil or other environmental media contaminated with high enough concentrations of explosives such that the materials themselves potentially present an explosive hazard.

b. Non-MPPEH are items that never contained ammunition or explosives.

4. MPPEH Management

a. MPPEH shall not be transferred within or released from Marine Corps control unless its explosives safety status has been assessed and documented.

b. MPPEH must be assumed to present an explosive hazard and procedures covering proper MPPEH management must be developed and maintained.

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c. Contracts or other legal agreements require compliance with the provisions of this Order and references (q) thru (t).

d. MPPEH Processing

(1) Includes any action or operation involving MPPEH.

(2) Processing of unscreened MPPEH is considered an explosives operation, until the material is assessed as safe, and must comply with established criteria.

(3) Locations used for processing MPPEH shall be sited in accordance with the requirements of reference (c).

(4) MPPEH shall be covered or stored in closed containers to prevent exposure to or the collection of precipitation.

e. Small Arms

(1) Expended small arms ammunition cartridge cases may be processed as a non-explosive operation provided they are screened before processing. Screening is intended to ensure only .50-caliber and smaller expended cartridge cases are present, and to remove unused cartridges. It is assumed an occasional live small arms round may not be captured during the screening process.

(2) Expended small arms cartridge cases not screened or certified as safe are subject to storage and siting requirements of reference (c).

(3) Personnel screening small arms cartridge casings do not require participation in the qualification/certification program outlined in reference (e).

f. MPPEH Certification Requirements

(1) Material Documented as Safe (MDAS). MDAS is MPPEH that has been assessed and documented as not presenting an explosive hazard and for which a chain of custody has been established and maintained. This material is no longer considered to be MPPEH.

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(a) MDAS assessment:

1. Visual inspection which requires a 100% inspection by one individual, followed by an independent 100% re-inspection by another, or;

2. Processed by a DDESB-approved technical method followed by a specified post-processing sampling inspection.

3. MDAS may contain residual explosives; however, these residues shall not be in concentrations or configurations sufficient to pose an explosive hazard.

4. Items shall only be classified as MDAS through visual inspection when every surface is visible and capable of being inspected. Visual inspection is only applicable to pieces of metal that have no cavities, holes, blind spaces, rivets, cracks, or other obscured features.

5. Probes shall not be used to inspect any blind cavities. Probes shall not be used to satisfy visual inspection requirements for purposes of documentation as having an explosives safety status of safe.

6. Technical methods to process MPPEH for safe certification purposes must be approved by the DDESB.

7. MDAS must be segregated in a location with secure controlled access.

8. MDAS may be released for further demilitarization (for example, mutilating, crushing, smelting) only if the integrity of the containers and the chain of custody is maintained, and the explosives safety status documentation accompanies the material during transfer within or release from DON control.

(b) MPPEH that can't be documented as MDAS includes material that:

1. Has been examined and no contamination can be visually noted on accessible surfaces, but explosives may be present in concealed housings or other hidden areas such as internal cavities or devices that contain explosives. These items are not safe to be treated with open flame, high temperature heating devices, cutting devices, or hammering

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devices unless the maximum potential explosives safety hazards that the material is known or expected to present are addressed.

2. Is expected to be free of an explosion hazard, but not enough information is available to certify it as safe. This may be because:

a. There are potentially internal cavities or devices that contain explosives;

b. The material has not been 100% inspected, or;

c. The certification process has not been completed to the point of documentation with dual signatures.

3. Is known or suspected to pose an explosive hazard.

(2) Material Documented as an Explosive Hazard (MDEH). MDEH is MPPEH that has been assessed and documented as having an explosive hazard. A chain of custody has been established and maintained. This material is no longer considered to be MPPEH.

g. Documentation of Explosives Safety Status

(1) MDAS Certification

(a) Certification documentation for MDAS will consist of an Issue/Release/Receipt Document DD Form 1348-1A, or a local form as authorized by the commanding officer.

(b) The MDAS certification documentation must identify the material type. For example, expended 9mm brass or expended Mk 76 practice bombs.

(c) Documentation as MDAS requires dual signatures on the certification document by authorized individuals. The first signature may be provided by either a DoD employee or DoD contractor. The second signature must be provided by a U.S. citizen who may be either a DoD employee or a DoD contractor and independent of the first inspector.

(d) Each of the two signatures must be directly above the typed or clearly stamped or legibly printed full name, rank/rate/grade, complete organization name and address, and

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phone numbers (commercial and DSN) of the respective inspector, as follows:

1. For material being visually inspected, the first signatory (i.e., certifier) must have performed a 100% inspection and the second signatory (i.e., verifier) must have performed an independent 100% re-inspection.

2. For material undergoing DDESB-approved technical methods, the first signatory must have performed or witnessed the DDESB approved processing of the material and the second signatory must have conducted an independent quality assurance inspection of processed material using the approved methodology. In addition to the signatory's data outlined above, the technical method and approval letter must be cited in block 27 "ADDITIONAL DATA" of the DD Form 1348-1A, or on the authorized local form.

(e) All MDAS documentation shall include the following statement:

"The material listed on this form has been inspected or processed by DDESB-approved means, as required by DoD policy, and to the best of my knowledge and belief does not pose an explosive hazard".

(2) If the required documentation is incomplete or lost or if chain of custody is compromised, this material is no longer considered MDAS and reverts back to MPPEH.

(3) MDEH Certification

(a) Certification documentation for MDEH will consist of a DD Form 1348-1A, Decontamination Tag (DD Form 2271), or a local form as authorized by the CO.

(b) Documentation as hazardous requires a 100% visual inspection. When an initial inspection by a qualified and authorized person determines that the material is hazardous, a second independent inspection is not required, and the certification shall be prepared by the inspector.

(c) The certification document must provide information about:

1. Type of explosive hazard or contamination.

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2. Presence of un-vented cavities.

3. Estimated NEW.

(d) MDEH certifications shall include the following statement:

"This certifies that the material potentially presenting an explosive hazard listed has been 100 percent properly inspected and to the best of my knowledge and belief presents an explosive hazard".

(e) The MDEH certification statement may be modified or augmented as required.

(f) Each signatory must ensure that the chain of custody was maintained before signing the certification documentation.

(g) If the required documentation is incomplete or lost or if chain of custody is compromised, this material is no longer considered MDEH and reverts back to MPPEH.

(h) Retain legible copies of all documents supporting the explosives safety status of the material as MDAS or MDEH (such as the signed DD Form 1348-1A and any other documents associated with the inspection and/or re-inspection of the material) for a minimum of three years.

(i) Containers of material whose explosives safety status has been documented will have permanent marking and labeling, and container seals which are identified on the supporting documentation or type I/II traceable seals traceable to the individual and unit. The contents must be identified on the outside of the container and traceable seals should follow procedures similar to those for ordnance container traceable seals.

(j) Documentation of the material's explosives safety status must accompany MDAS and MDEH during release from Marine Corps control.

(k) Defense Logistics Agency (DLA) Disposition Service or contracts may impose additional certification requirements.

(1) Chain of Custody

1. In order to maintain the chain of custody, do not commingle MPPEH, MDAS and/or MDEH. Should commingling occur such that chain of custody cannot be verified, MDAS and/or MDEH shall lose its documented explosives safety status and become MPPEH.

2. Maintain a chain of custody for MDAS using documentation including approved written operating procedures, labels, and transfer documents (for example, Disposal Turn-in Document DD Form 1348-1A).

(m) Commingling. Procedures will be developed and documented that prevent commingling.

(n) Authorized Inspection Personnel. Personnel, who are authorized to inspect MPPEH and document its explosives safety status as MDAS or MDEH, will be designated in writing by the CO. The designation letter must list the personnel who are qualified and authorized to assess and document the explosives safety status of MPPEH, identify the type of MPPEH that they are authorized to inspect, and include sample signatures. A copy of this designation letter must be provided to any DLA Disposition Service or Qualified Recycling Program (QRP) receiving MDAS and be updated annually (based on the issue date).

5. Special Considerations

a. Expended shotgun shells should be turned in to the DLA Disposition Service if possible. However, if the DLA Disposition Service will not accept them, expended shotgun shells, that do not exhibit hazardous waste characteristics, may be disposed of as general trash provided they are 100 percent visually screened for the presence of unfired rounds.

b. Small arms lead projectiles or shot that have been fired at ranges used solely for small arms ammunition are not considered MPPEH.

c. Empty containers and packing material not being transferred from Marine Corps control may be managed as follows.

(1) All empty containers and packing material will be inspected at the point of origination to ensure no explosives hazards are present. Personnel screening empty containers and

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packing material do not require participation in the qualification/certification program outlined in reference (e).

(2) Results of this inspection will be documented via DD Form 1348-1A or locally produced form. A copy of the DD Form 1348-1A must be maintained with the inspected material at all times.

(3) Inspected material will be managed so as not to comingle with uninspected material.

(4) All A&E material not inspected and documented at the point of origination will be considered MPPEH. Locations used to certify this material may require explosives siting.

d. Empty containers and packaging material that are to be transferred from Marine Corps control and were previously used for ammunition and explosives are considered MPPEH until certified as MDAS or MDEH and must be managed as such.

(1) All previous markings on empty containers to be released from Marine Corps control to DLA for disposition must be removed or obliterated.

(2) Empty munitions containers to be shipped to other Marine Corps activities for storage, reuse or salvage shall follow the requirements of reference (c).

(3) Empty containers that previously held ammunition and/or explosives may be repurposed to another use supporting operational needs if:

(a) The containers are 100% visually screened for the presence of munitions.

(b) All markings associated with the original contents are obliterated.

(c) The containers are stenciled or labeled on two opposing sides reflecting their current use or repainted in a manner that clearly indicates that they have been repurposed and do not contain ammunition and/or explosives. If all of these conditions are met, documentation of the explosives safety status of the repurposed containers is not required.

(4) Approved cardboard, plastic, and plywood containers and packaging materials for C/D 1.4S materials may be discarded as general trash provided that the following criteria are met:

(a) The items are 100 percent visually screened for the presence of munitions.

(b) All previous markings are removed or obliterated.

(c) The items are broken down or otherwise deformed so that they may not be used for their original purpose.

(d) There are no environmental regulations precluding such disposal.

(5) Approved cardboard, plastic, and plywood containers and packaging material for other than C/D 1.4S items may be discarded as general trash provided that the following criteria are met:

(a) The items are 100% visually screened for the presence of munitions by two different individuals in accordance with approved written operating procedures;

(b) All previous markings are removed or obliterated.

(c) The items are broken down or otherwise deformed so that they may not be used for their original purpose;

(d) There are no environmental regulations precluding such disposal.

(e) The items are certified as MDAS on a DD Form 1348-1A or a local form as authorized by the commanding officer.

(f) A chain of custody is maintained until the MDAS leaves the restricted area (i.e., areas where munitions operations or MPPEH generation is occurring) and enters the facility's solid waste stream.

6. Movement and/or Transportation. Prior to on-site movement, MPPEH must be evaluated and determined to be safe to move as follows:

a. For munitions response operations, as outlined in chapter 7.

b. For other than munitions response operations, based on the potential explosive hazard posed by the item and as authorized by the commanding officer, by:

- (1) Explosive Ordnance Disposal (EOD)
- (2) UXO qualified personnel, or
- (3) Technically qualified and authorized personnel.

c. Transportation

(1) MDAS may be shipped over public traffic routes as inert material. Documentation of its explosives safety status must accompany the shipment. If the shipment contains hazardous materials other than explosives, appropriate hazard classification of the hazardous materials is required and the hazard classification assignments must accompany the shipment.

(2) MDEH shall not be transported over public traffic routes unless determined safe for transport by qualified and authorized personnel. Qualified personnel include:

(a) For MDEH other than MEC, EOD, UXO Technician III or higher or;

(b) Personnel, who the CO certifies as technically qualified, may be authorized, based on the material type, to make such a determination. For example, personnel documenting the explosives safety status of ammunition containers, packaging materials, or expended small arms ammunition cartridge cases shall satisfy minimal qualifications and could be trained to perform the required task through on-the-job training. In contrast, individuals documenting the explosives safety status of range-related debris from range clearance activities require extensive formal training and levels of experience commensurate with UXO Technician III qualifications.

(c) A signed "safe to transport" certification that must accompany the shipment.

(3) MDEH that cannot be shipped in accordance with an existing hazard classification must not be transported over public traffic routes until an interim hazard classification

(IHC) is obtained from NOSSA. Table 6-1 provides guidance on IHC applicability. If required, hazard classification assignments must also accompany the shipment.

(4) Release of MPPEH. No MPPEH shall be sold or transferred, unless it is MDAS or assessed and determined to be MDEH. MDEH may only be transferred or released to a qualified receiver.

Table 6-1.--Interim Hazard Classification

Recovered Item	Certifier	C/D	Vehicle Type	IHC Required
UXO	EOD Only	1.1	Military	No
UXO	EOD only	1.1	Commercial	Yes
UXO	EOD only	Other than 1.1	Commercial	Yes
DMM/MC	EOD or UXO Tech III (or higher)	1.1	Military	No
DMM/MC	EOD or UXO Tech III (or higher)	1.1	Commercial	Yes
DMM/MC	EOD or UXO Tech III (or higher)	Other than 1.1	Military	Yes
DMM/MC	EOD or UXO Tech III (or higher)	Other than 1.1	Commercial	Yes
Other MDEH	EOD or UXO Tech III (or higher) or other designated technically qualified personnel	1.1	Military	No
Other MDEH	EOD or UXO Tech III (or higher) or other designated technically qualified personnel	Other than 1.1	Military	Yes
Other MDEF	EOD or UXO Tech III (or higher) or other designated technically qualified personnel	1.1	Commercial	Yes
Other MDEH	EOD or UXO Tech III (or higher) or other designated technically qualified personnel	Other than 1.1	Commercial	Yes

7. Demilitarization of MDAS and Turn-In to DLA Disposition Service

a. Demilitarization is often a separate requirement from documenting the explosives safety status of the material.

Demilitarization emphasizes removing the capability to reuse munitions for their original purpose, and meeting trade security requirements. In some cases, a demilitarization requirement (such as venting or burning) must be satisfied before the material can become MDAS.

b. DLA Disposition Service issue specific demilitarization requirements in references (s) and (t).

c. When using DLA to provide disposition of MDAS, documentation must be provided according to DLA guidance as contained in references (s) and (t).

d. Refer to reference (t) and related DLA guidance for minimum demilitarization requirements for MPPEH in addition to the requirements for MDAS as described herein.

8. Recycling MDAS in the QRP. Written explosives Mishap Risk Assessment (MRA) or ORM assessment will be performed before any QRP may receive MDAS. The results of the MRA or ORM assessment will be used to develop approved written procedures for processing MDAS prior to transfer to the QRP.

a. The MRA or ORM assessment will identify:

(1) The nomenclature and description of the MDAS.

(2) The potential explosive hazard associated with any MDAS that has been incorrectly certified.

(3) The adequacy of the QRP training, oversight, record keeping, processing methods, equipment, and storage facilities. The MRA or ORM will be reviewed by the ESO for approval at the command level.

b. Only the following material is eligible for the QRP. Expended small arms ammunition cartridge cases and mixed metals gleaned from range clearance operations, and munitions debris processed to the point it no longer possesses ordnance characteristics.

c. Expended small arms ammunition cartridge cases must be crushed shredded, deformed, or otherwise destroyed prior to public sale via a QRP.

d. Any item requiring demilitarization or that is a Munitions List Item or a Strategic List Item, is not QRP eligible, with the exceptions noted above.

e. Only MDAS is acceptable for transfer to the QRP for direct sale, or to DLA Disposition Services for sale to reimburse the QRP.

f. QRP personnel who receive expended small arms ammunition cartridge cases or mixed metals gleaned from range clearance must be trained at a minimum to do the following.

(1) Recognize QRP eligible material.

(2) Verify signatures on all turn-in documents, such as Disposal Turn-in Document DD Form 1348-1A, against the current list of personnel authorized to certify as safe.

(3) Visually inspect certified QRP eligible material, and recognize potential explosives safety hazards.

(4) Respond properly if an unsafe condition is identified.

g. The QRP must develop written operating procedures for MDAS management that ensure chain of custody and MDAS documentation requirements are met. These written procedures are particularly important if the following occur to the MDAS at the QRP prior to release from DON control.

(1) Crushed, shredded, deformed, or otherwise destroyed,
or

(2) Re-containerized or otherwise consolidated.

h. Include the following Dangerous Property Statement on turn-in documentation in addition to the safe certification: "Purchasers are cautioned that articles or substances of a dangerous nature may remain in the property regardless of the care exercised to remove same. The U.S. Government assumes no liability for damages to property of the Purchaser or for personal injury, disability or death of the purchaser, its employees, or to any other person arising from or affiliated with the purchase, use or dispositions of this material. The purchaser shall hold the U.S. Government harmless from any and all such demands, suits, actions, or claims arising from or otherwise relating to the purchase of this material."

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9. Reporting MPPEH Incidents. Explosive incidents involving MPPEH, MDEH or MDAS, or unauthorized transfer or release of uncertified MPPEH or MDEH, or transfer or release of MPPEH that presents an unintentional hazard to a qualified receiver shall be immediately reported to COMMARCORSYSCOM. Contractors will report such incidents in accordance with reference (q). This requirement is in addition to requirements for reporting explosive mishaps and incidents.

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Chapter 7

Munitions Response

1. Background. The Marine Corps executes munitions responses at Munitions Response Sites (MRSs) to address explosives safety, human health, or environmental risks posed by munitions and explosives of concern (MEC) and MPPEH. Munitions response may include preliminary assessments (PAs), site inspections (SIs), remedial investigations (RIs) and feasibility studies (FSs), and remedy or remedial actions (RAs). RAs include, but are not limited to, long-term response actions, implementation of land use controls (LUCs), and construction support activities.

2. Scope

a. Applies to all munitions response actions undertaken by Marine Corps installations on non-operational ranges.

b. Provides details for managing munitions responses, including munitions response actions on privately owned land.

c. Does not apply to operational ranges, except to pre-existing military munitions burial sites.

d. Does not specifically address munitions responses involving chemical agents (CA) or military munitions containing CA, although such response actions are included within the Munitions Response Program.

(1) Project managers who encounter CA or military munitions containing CA should first contact the installation's EOD unit and request an immediate response.

(2) Project managers who plan to conduct munitions response actions on a site known or suspected to contain CA should contact COMMARCORSYSCOM who will assist the project manager in coordinating with the U.S. Army Technical Center for Explosives Safety to develop the CSS. COMMARCORSYSCOM will endorse the final CSS to the DDESB.

3. Explosives Safety Submission (ESS) Requirements

a. An ESS is required for:

(1) Placement of explosives on a site.

(2) Intentional physical contact with MEC and/or MPPEH.

(3) Conduct of ground-disturbing or other intrusive activities in areas known or suspected to contain MEC and/or MPPEH when anomaly avoidance techniques are not employed.

(4) Change of land use to one incompatible with the presence of MPPEH.

(5) Transfer of land, known or suspected to contain MPPEH, from DoD control.

(6) Finding that no further action (NFA) is required for munitions response activities.

b. An ESS Is Not Required For:

(1) Explosives or munitions emergency responses.

(2) Maintenance and clearance activities on operational ranges that do not address identified burial pits.

(3) Construction or non-munitions response activities in an area not known or suspected to contain MEC and/or MPPEH.

(4) Demolition of magazines where there is no evidence of residual MEC contamination or historical record of explosives spills.

(5) Operation, maintenance, or cleanup of ammunition and explosives operating buildings in an active, standby, or layaway status.

c. An ESS may not be required for operations taking place in an area known or suspected to contain MEC and/or MPPEH when the likelihood of encountering them is low. Operations in these areas may only proceed with COMMARCORSYSCOM approval of an ESS Determination Request (ESSDR). Examples of such operations include:

(1) On-call construction support or on-site construction support when included as a conservative measure.

(2) Ground disturbing activities on former ranges used exclusively for testing or training with small arms ammunition.

(3) Anomaly avoidance techniques employed during vegetation reduction, cultural/natural resources survey, PA site reconnaissance, the SI, sign or fence installation, or similar activities not involving intentional physical contact with MEC and/or MPPEH.

(4) Demolition of magazines where there is evidence or an historical record of a spill or other residual MEC, but where the spill or contamination was removed.

d. Explosives Safety Submission Determination Request

(1) Project managers will submit an ESSDR to COMMARCORSYSCOM for action through the EES web portal. The ESSDR will contain the following information:

(a) Site name/number: Name of Activity, City and State.

(b) Date submitted.

(c) Project Manager and ESO: Name and contact information.

(d) Site history: Briefly describe past MEC and/or MPPEH use at the site.

(e) MEC and/or MPPEH known or suspected to be present. Identify quantity, type/ nomenclature, and condition.

(f) Identify any encumbering explosives arcs and how they will be mitigated.

(g) Provide justification of low likelihood of encountering MEC and/or MPPEH.

(2) COMMARCORSYSCOM will provide the project manager a written response within two weeks of receiving the ESSDR.

(3) ESSDR responses do not expire.

e. A Small Arms Range No Further Action (NFA) ESSDR may be prepared for former ranges where only small arms ammunition were used.

(1) To qualify for a Small Arms Range NFA ESSDR, the former range must have been used exclusively for training with small arms ammunition and have received regulatory NFA

concurrence. In addition, the site must not have had previous munitions response actions executed on it under an approved ESS.

(2) All submittal, review, and response details described ESSDR also applies to a Small Arms Range NFA ESSDR.

4. Site Identification and Notification

a. When MEC and/or MPPEH are first encountered at a site where their presence was previously unsuspected, the on-site supervisor shall immediately suspend all operations put at risk due to the MEC and/or MPPEH and shall notify the project manager.

(1) The project manager shall contact the installation EOD unit, who will determine and mitigate the immediate explosives hazards.

(2) The installation/project manager shall submit an ESSDR to COMMARCORSYSCOM for determination of future actions.

b. If MEC or MPPEH is discovered by EOD at a site where their presence was previously unsuspected, either the "emergency response incident report" or the pertinent information will be submitted to COMMARCORSYSCOM via the installation's ESO.

c. COMMARCORSYSCOM will maintain submitted reports concerning found MEC or MPPEH.

5. Explosives Safety Submission (ESS)

a. General

(1) An ESS is a document which details how explosives safety and environmental requirements are applied to specific munitions responses. Munitions response actions may include: investigations; removal actions; and remedial actions to address the explosives safety hazards and human health or environmental risks presented by unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC) which present an explosive hazard. An approved ESS is required before munitions response actions may begin.

(2) The project manager may submit one or more ESS's for each munitions response site.

(3) A Project Plan, Work Plan, Standard Operating Procedure (SOP), Quality Control Plan (QCP), Quality Assurance Project Plan (QAPP), etc, may not be submitted in lieu of an ESS. Conversely, the ESS shall not be used in the field as a substitute for these documents. The Project Plan, Work Plan, SOPs, QCP, QAPP, etc. shall not contain less stringent requirements than those prescribed in the ESS.

b. ESS Types

(1) MRS investigation/characterization.

(2) NFA. An NFA ESS may be used to change the status of a site in the MRS site inventory.

(3) Time-Critical Removal Action (TCRA).

(4) On-site construction support where the likelihood of encountering MEC and/or MPPEH is determined to be moderate or high.

(5) Selected munitions response.

c. ESS

(1) Format

(a) The project manager shall prepare an ESS in accordance with appendix (a), "Guide for Preparing an Explosives Safety Submission".

(b) An ESS should be submitted a minimum of 60 days prior to the anticipated project start date.

(2) Processing

(a) The ESS shall be submitted via the EES Web Portal with a formal cover letter to the DDESB. This letter should be from the installation CO, or if not on an active installation, from the project manager.

(b) While awaiting DDESB approval, COMMARCORSYSCOM is authorized by reference (a) to provide written interim approval when circumstances warrant and requested by the installation or the project manager. A request for interim approval must be made via formal letter to COMMARCORSYSCOM. Although interim ESS approval authorizes the project manager to

precede the project manager is accepting the risk that the DDESB may impose different or additional conditions.

d. ESS Amendments and Corrections. Once an ESS is approved, no changes can be made to any part of the munitions response process unless the ESS is amended or corrected.

(1) Amendments

(a) An ESS shall be amended when a proposed change increases explosives safety hazards/risks, identifies requirements for additional or increased explosives safety controls, or enlarges an ESQD arc. All munition response activities will be halted until the amendment has been approved.

(b) Project managers may also request interim approval of the amendment when there is a demonstrated need to expedite the review and approval.

(2) Corrections

(a) An ESS shall be corrected when a proposed change does not increase explosives safety hazards/risks, identify requirements for additional or increased explosives safety controls, or enlarge an approved ESQD arc. An example of an ESS correction is; when a geophysical detector is switched with one of equal or greater capability. Munition response activities are not required to be halted for corrections to the ESS.

(b) ESS corrections shall be submitted, via email, to and approved by COMMARCORSYSCOM.

(3) Processing

(a) Draft ESS amendments and corrections should be reviewed prior to the final document being entered into EES. Draft ESSs may be provided to COMMARCORSYSCOM via email.

(b) All modified text shall be shown using "track changes" or *Italic* font.

(c) Each changed page and map shall include the amendment or correction number and date in the footer or legend, respectively.

(d) The cover page of an ESS amendment or correction shall retain the same title as the basic ESS and all page

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footers and map legends shall reflect the amendment or correction number and date (month and year).

(e) Both ESS amendments and corrections shall be submitted using the same process as the original ESS.

(4) An ESS expires three years from the date of the latest approval. A project manager may request to extend the three-year period by submitting a comparative analysis of the ESS against current explosives safety and environmental criteria.

6. Oversight. COMMARCORSYSCOM provides project execution oversight through MRS audit and TAV programs.

a. Audits. COMMARCORSYSCOM shall audit selected MRSS to assess the extent to which the project complies with applicable environmental, safety, and occupational health requirements related to the management of MEC and/or MPPEH. The project manager may also request a MRS audit in order to satisfy a specific project goal.

(1) Notification. Normally, at least 30 days in advance of an MRS audit, COMMARCORSYSCOM will provide the project manager, and the applicable installation, notification of the upcoming MRS audit. Included in this notification will be specific areas of interest and topics to be reviewed. Once notified, the project managers shall coordinate the MRS audit with the UXO contractor or other munitions response personnel.

(2) Scope

(a) Audits will review the following, as applicable: ESS; Project Plan, Work Plan, SOPs, QCP, QAPP, etc.; site specific health and safety plan; environmental protection plan; and UXO worker qualification and certification documents.

(b) Audits will observe the following operations and procedures, as applicable: general explosives safety practices; explosives transportation and storage; occupational safety and health practices; quality control (QC) and quality assurance (QA) programs; exclusion zone (EZ) management; environmental compliance; geophysical instrument checkout and use; anomaly detection and identification; manual/ mechanized MEC and/or MPPEH removal; MEC treatment/disposal; MPPEH management; and data management.

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(3) Report

(a) Within 30 days of the MRS audit, an audit report will be provided to the project manager.

(b) The MRS audit report will document each finding and rate the project as SATISFACTORY or UNSATISFACTORY.

(c) The Audit Report is considered a document internal to the Marine Corps. In order to protect UXO contractor business-sensitive information (including proprietary data, documents, and personnel records) from unauthorized disclosure, distribution is limited.

(4) Audit Response. Within 30 days of receipt of the MRS audit report the project manager shall submit a written response to COMMARCORSYSCOM. The response shall address each discrepancy, including corrective actions taken. If the project manager wishes to refute any discrepancy, they shall provide sufficient justification and substantiation. Failure to provide a response to the MRS audit will preclude COMMARCORSYSCOM from providing Marine Corps project verification.

b. MRS TAVs. The project manager may request an MRS TAV to assess the level of project compliance. The project manager may request an MRS TAV tailored to a specific need or area, or one as broad in scope as an audit. MRS TAVs are most beneficial when conducted early in the project.

7. After Action Report (AAR). An AAR for completed munitions responses is required per reference (c) and shall be submitted within six months completion. The purpose of the AAR is to document the explosives safety aspects of the selected response have been completed per the approved ESS. It allows cancellation of all ESQD arcs and the DDESB to close out their site file.

a. AAR Format. The AAR must provide:

(1) A brief description of the site to include

(a) Identification of the site (e.g., name, unique identifier).

(b) Site location

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- (2) A request to cancel any EZ or site approval established in the ESS.
- (3) A summary of the MEC and/or MPPEH found.
- (4) A description of the relative effectiveness and any limitations of the technologies used during the munitions response and the effects on residual risk relative to that originally projected.
- (5) A summary of the QC and QA reports for the response.
- (6) Maps showing:
 - (a) Areas from which MEC and/or MPPEH was removed.
 - (b) Areas within the site where response actions were not performed and the rationale for not addressing those areas.
 - (c) The known or reasonably anticipated end use of each area.
- (7) A summary of the land use controls that were implemented, if any, and the areas to which they apply.
- (8) A summary of provisions for long-term management.
- (9) If applicable, a copy of either the NDAI or NOFA decision document, or a brief synopsis of the rationale for the NDAI or NOFA determination (an electronic link to the decision document is acceptable).
- (10) An AAR shall be submitted using the same procedures and guidelines as those previously identified for an ESS.
 - b. The AAR will be submitted via the EES web portal.

8. Transfer of Real Property

a. Real property known or suspected of containing explosive hazards may not be transferred out of DoD control (other than to the U.S. Coast Guard) until:

- (1) COMMARCORSYSCOM has formally verified that the final munitions response was completed in accordance with the approved explosives safety documentation; and

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(2) DDESB has approved the munitions response portions of the Finding of Suitability for Transfer (FOST).

(3) The recipient of the property is fully informed of both the actual and potential hazards relating to the presence or possible presence of explosives, and restrictions or conditions placed on the use of the property to avoid harm to users due to the presence of explosives.

b. Formal verification of the munitions response is based upon, but not limited to, a review of the approved ESSs and AARs, QC and QA reports, MRS audit and or MRS TAV reports (including responses to MRS audit findings), Record of Decision or similar decision document, Remedial Action Completion Report, Finding of Suitability of Transfer, and proposed deed language addressing any remaining MEC and/or MPPEH contamination. The project manager shall submit these documents as part of the land transfer request.

9. Technical Resources. COMMARCORSYSCOM will maintain all munitions response-related correspondence and documents. This repository is not intended to be a substitute for other required document repositories (e.g., the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) administrative record)

Chapter 8

Explosives Safety Training and Certification Requirements

1. Background. In order to implement an effective ESMP, explosives safety professionals (ESPs) must fully understand not only explosives safety regulatory requirements, but also the interaction between those requirements and the requirements of ammunition life-cycle management. Formal training/experience in a variety of disciplines is necessary to achieve this understanding. Marine Corps ESPs must also have full knowledge of the distinctions among the DoD explosives safety requirements/policies, Services specific requirements, and when deployed, North American Treaty Organization (NATO) regulations in order to function effectively in increasingly joint and multi-national environments.

2. Scope. Explosives safety personnel have the ability to enhance operations, including combat capabilities, by identifying and offering solutions to commanders that mitigate considerable risks to DoD personnel, property, and the environment. Explosives safety involves identifying potential hazards and developing and managing complex solutions to highly technical, often high-risk, operations. Competency in this career field requires advanced training in explosives safety policies and standards. The training and certification program provides designated ESOs with a roadmap for career development. The program identifies a logical framework for developing competencies required of personnel in the 0017 Explosives Safety job series from the entry to senior level positions within the DoD.

3. Explosives Safety Training. An ESP is a highly skilled military or civilian professional that has been trained to evaluate risks and hazards associated with conventional A&E. In order to effectively implement an explosives safety program in multiple environments, appropriate training is necessary.

a. A variety of training is available; on-the-job training (OJT), formal classroom instruction, and seminars that offer specialty certifications. Acquiring learning credits through additional instruction can greatly supplement work experience. Industry training seminars and certification preparation are available through programs accredited by the International Society of Explosives Engineers (ISEE), such as the Explosives Academy. Reference (u) contains a list of industry programs available to ESPs.

b. Training Requirements. Training requirements for ESPs assigned to or responsible for implementing, overseeing, managing, and ensuring explosives safety compliance are outlined below. Specific courses and periodicities are contained in this chapter. Completion of the explosives safety courses and continuing professional developmental training is required to ensure the requisite level of knowledge is maintained at all levels.

(1) Installation explosives safety officers (ESO), regional explosives safety program managers, and explosives safety compliance inspectors will meet all training requirements contained in this chapter and those required by reference (c).

(2) Supervisors of explosives safety personnel are highly encouraged to complete the training contained within this chapter.

(3) Tactical safety specialists (TSS) are highly encouraged to complete the training contained in this chapter. A TSS who is designated as an ESO must meet the same training requirements as an ESO.

c. Deployment Training. The following courses should be completed by personnel who will have explosives safety responsibilities prior to deployment.

(1) Ammo-69 Shipboard Explosives Safety. The applicable module must be selected based on the ship platform.

(2) Ammo-105-DL Explosives Safety Awareness in Multi-national Operations for Technical Staff.

(3) Ammo-107, Introduction to Explosives Safety management for Safety professionals.

(4) Tactical Explosives Safety Workshop. This workshop is provided by COMMARCORSYSCOM as required.

d. Supplemental Training. Additional training requirements, for other than ESO certification, are contained in reference (c).

e. Conferences and Seminars. All ESPs should budget for and attend DoD, DON, and Marine Corps explosives safety seminars and workshops. Attendance at a seminar/workshop will count as continuing training.

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4. Marine Corps Explosives Safety Officer Certification. The Marine Corps ESO certification program ensures the Marine Corps is developing personnel qualified to serve as explosives safety management (ESM) subject matter experts (SMEs). Certification will be provided from COMMARCORSYSCOM only to those personnel designated in writing as an ESO. TSSs may receive certification when they meet the requirements of Chapter 11 paragraph 19. The certification program incorporates formal training, OJT, developmental assignments, and self-development activities. Certification will only be granted when both course work, and OJT, if required, has been satisfactorily completed. All recommendations for certification will be sent from the installation Safety Director to COMMARCORSYSCOM.

a. Personnel Requirements. A combination of experience and training requirements must be met prior to certification. This combination of training and experience is required due to the unique hazards associated with explosives and the multiple disciplines of an ESMP. Personnel assigned explosives safety responsibilities are required to perform various duties and functions and should have at a minimum experience in:

(1) Developing, implementing, and managing an ESMP to reduce risks and mitigate the potential consequences of an intentional or unintentional detonation of A&E.

(2) Identifying and eliminating hazardous conditions arising from the loading, handling, assembly, transportation, and shipment of A&E.

(3) Developing explosive ESQD standards, lightning protection, grounding, and bonding principals.

(4) Preparing facilities explosives site approval documents and requests for deviations from established explosives safety standards.

(5) Ensuring compliance with applicable explosives safety policies and regulations throughout those aspects of the A&E life cycle addressed by the installation or activity ESMP to protect human health and the environment.

(6) Developing correspondence and administrative skills: experience with Naval correspondence; proficiency with basic computer programs; and ability to prepare and present informational briefs.

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b. Personnel Without Experience. Personnel selected as an ESO and not possessing the requisite background and experience in explosives safety management identified in paragraph 4.a should be required to gain this experience under the direct supervision of a certified ESO.

(1) The length of this apprenticeship will be, at minimum, of sufficient duration to encompass one ESSA and one ESI.

(2) Performance of duties, as outlined in this Order, and reference (c), during the period of apprenticeship will be assessed by the supervising ESO as "Satisfactory" or "Unsatisfactory." The apprenticeship may be extended until such time as a demonstrated satisfactory rating is attained for all assigned duties/responsibilities.

c. Required ESO Training. The following paragraphs outline the training required for ESO to attain certification. Upon completion of both the mandatory training courses and on-the-job training (OJT) (if required), COMMARCORSYSCOM will issue a Letter of Certification stating that the individual has met all basic experience and training requirements for certification as a Marine Corps ESO.

d. Training Extensions. In special circumstances, requests for extension may be granted. Requests for extension must contain justification and be forwarded to COMMARCORSYSCOM for approval prior to the scheduled certification award date.

e. Training Requirements. All personnel requiring certification will, within 24 months of assignment or designation as an ESO, meet a minimum level of training prior to receiving certification. Course and registration information for web-based training/computer-based training (WBT/CBT) or instructor-led training can be found at <http://www.dactces.org/>. Training is continually reviewed and updated to ensure required training remains relevant.

(1) Initial Training. The following courses must be completed within 24 months of appointment to ESO:

(a) AMMO-45, Introduction to Ammunition (WBT).**

(b) AMMO-76, Identification of Ammunition (WBT).**

(c) AMMO-49, Naval Explosives Safety Managers/
Supervisors Orientation (WBT).

(d) AMMO-67, HAZMAT Familiarization and Safety in Transportation (WBT).

(e) AMMO-36, Explosives Safety for Naval Facility Planning (initial course, instructor led).

(f) AMMO-74, Explosives Safety Officer Orientation Course (instructor led). All of the above courses must be completed prior to registering for AMMO-74.

(g) Ammo-68, Military Munitions Rule

** Not required for personnel having completed the Ground Ammunition Managers Course, AOCP Level I or equivalent, and the basic EOD course.

(2) Follow-on Training. The following courses must be completed within 48 months of appointment to ESO:

(a) AMMO-29, Electrical Explosives Safety for Naval Facilities (initial course, instructor led).

(b) AMMO-43, Intermodal Dry Cargo Container/CSC Re-inspection.*

(c) AMMO-51, Naval Motor Vehicle and Railcar Inspection (initial course, instructor led).

* Only required for personnel who have a responsibility to inspect Inter-modal containers.

(3) Refresher Training. All explosives safety courses that have a recertification requirement per reference (c) must be completed at the specified periodicity to maintain an ESO certification. ESO not completing refresher training will not be recertified until refresher training has been completed.

(4) Continuing Training. Explosives Safety personnel who have received certification will, for purposes of professional development, complete (at the rate of at least one different course per year) a course that is related to explosives safety knowledge, program management, or benefits job performance. This course is separate from any course that requires periodic re-certification. The Defense Ammunition Center Course Catalog and reference (u) contain multiple courses that will benefit career progression and professional development.

f. Certification Documentation. All documents associated with ESO certification must be loaded into the EES Web Portal under the ESO training section. All appointment letters, recommendation letters, and training certificates will be uploaded into the portal. Contact COMMARCORSYSCOM for courses currently not contained within the portal for inclusion.

g. Recertification. Prior to the certification expiration date, ESO will request recertification through their Safety Director. Recertification requests will be sent from the base Safety Director to COMMARCORSYSCOM.

h. De-Certification. ESO may be decertified by COMARCORSYSCOM for:

(1) Failing to complete mandatory continuing and refresher training requirements. An ESO might not be decertified in situations where the ESO has notified COMMARCORSYSCOM and explained the circumstances and is clearly not responsible for failure to maintain training requirements. The individual must make every effort to complete all training requirements within the time frames specified. An ESO may be recertified upon completion of delinquent training.

(2) Failing to adequately manage the installations explosives safety program.

i. Revocation. Revocation is an action taken to permanently remove an individual as a certified explosives safety professional. In the event of a revocation, administrative action must be taken to ensure the individual is not certified as a Marine Corps ESO per this chapter. ESO certification will be revoked for failure to satisfactorily perform the duties and responsibilities of an ESO and whenever such action is determined to be in the best interest of safety. Revocation of certification is mandatory in the event an explosive mishap is caused by gross acts of negligence, flagrant disregard of procedural and/or safety precautions, or other behavior indicating incompetence or unreliability. In this regard, it should be recognized that incidents and mishaps can and do happen through inadvertent acts, carelessness, and minor rule infractions. Revocation may be made by COMMARCORSYSCOM in consultation with the installation commander and the ESO's immediate supervisor.

5. Assistant Explosives Safety Officers. In the event that the size of installation, diversity of mission, operational tempo,

or other circumstances dictate the designation of more than one individual as an ESO, all training and certification requirements apply. ESOs are responsible for establishing and carrying out the installation explosives safety program in accordance with provisions of this Order and reference (c), and for providing supervision, direction, and guidance to subordinate personnel.

6. Unit/Tenant Explosives Safety Representative. Unit/Tenant commanders (Regimental/Squadron or higher) having an explosives mission will appoint an Explosives Safety Representative (ESR). When appointed, the ESR will conduct all applicable aspects of the unit explosives safety program and serve as liaison between the unit/tenant and the installation ESO. The installation ESO will advise and monitor these representatives on their conduct of, and compliance with, the explosives safety program. ESRs will require a level of training to competently assist the installation ESO in implementing the installations explosives safety program. It is recommended that ESRs, not having previous explosives safety training and experience, complete Ammo-18, Basics of Naval Explosives Hazard Control, AMMO-45, Introduction to Ammunition, and Ammo-76, Identification of Ammunition. ESRs will not receive an ESO certification letter.

7. COMMARCORSSYSCOM Responsibilities

- a. Establish training/certification requirements for ESP involved in the implementation, oversight, management, or compliance of an ESMP.
- b. Maintain the training application in the EES web portal.
- c. Review and update as required, all training curriculum listed in this chapter, and associated ESO training.
- d. Issue a Letter of Certification to Marine Corps ESOs upon completion of the mandatory training courses outlined in this chapter.
- e. Issue a Letter of DeCertification to Marine Corps ESOs who fail to maintain currency in training requirements without cause.
- f. Revocation of certifications for ESOs who fail to satisfactorily perform the duties and responsibilities of an ESO, as defined in this Order.

Table 8-1.--Training Requirements

	On The Job Training (Note 3)	Initial Training (Note 1)	Follow On Training	Refresher Training (Note 2)	Continuing Training
ESO	At a minimum participate in one ESSA and one ESI.	AMMO-36 AMMO-45 AMMO-76 AMMO-49 AMMO-67 AMMO-74 AMMO-68	AMMO-29 AMMO-43 AMMO-51 *AMMO-69 *AMMO-105-DL *Tactical Explosives Safety Workshop	AMMO-29 AMMO-36 AMMO-43 AMMO-51	A minimum of one course per year related to professional development
ESR	N/A	AMMO-18 AMMO-45 AMMO-76	N/A	N/A	N/A
TSS	N/A	AMMO-69 AMMO-107 TESO Workshop	N/A	N/A	N/A

Notes:

1. All courses should be completed prior to registering for AMMO-74.
 2. Refresher training will be completed at intervals specified in appendix D of reference (c).
 3. OJT is only required for personnel not having the basic qualifications and experience identified in chapter 8, paragraph 4 of this Order.
- * Required prior to deployment.

Chapter 9

Installation Explosives Safety Program Requirements

1. Background. An effective ESMP ensures the Marine Corps is capable of meeting its warfighting requirements, while protecting personnel and facilities from potentially unsafe operations. Collection, analysis, and management of program data contribute to the overall effectiveness of the ESMP and supports compliance with program requirements.

2. Responsibilities

a. Installation Commander. Ensure the ESO has access, allowing the ESO an opportunity to address explosives safety issues.

b. Installation Safety Director. Ensure the ESO's primary duty is the management of the installation's explosives safety program. Assignment of additional collateral duties to an ESO is highly discouraged; however, should additional duties be assigned, they shall not interfere with the performance of the ESO's primary duty.

c. Installation ESO

(1) Serve as the installation's single point of contact for all explosives safety matters and manage the installation's ESMP in accordance with this Order and other current regulatory directives.

(2) Conduct/ensure that all required inspections are performed in accordance with this Order and applicable directives, and that the results are properly documented.

(3) Review SOPs, briefs, training plans, work requests, and any other documents that relate to explosives safety and munitions operations.

(4) Conduct explosives safety training and briefings, as required or requested.

(5) Ensure that all files, records, and reports are maintained, retained as required, and readily accessible.

(6) Maintain a current publication and reference library of all directives associated with explosives safety and all

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munitions operations performed aboard the installation. Publications/references may be maintained in paper printed media or electronic media (e.g., CD-ROM, internet).

(7) Participate, as an active member, in the SADT to facilitate the preparation of ESSAR's and provide activity-level review and approval of ESSAR per reference (d).

d. Support Activities. Commanders of activities rendering munitions support are responsible for ensuring all operations involving the storage, handling, transport, security, accountability, management, manufacture, assembly/disassembly, and repair of munitions are conducted in accordance with provisions of this Order and applicable references.

e. Unit Commanding Officers and Officers-in-Charge. All COs and OICs that requisition, receive, handle, store, or transport munitions are responsible for the following:

(1) Publish SOPs that govern explosives operations performed within their unit. For those operations for which technical manuals, field manuals, Naval Air Systems Command (NAVAIR) Conventional Weapons Loading (CWL) manuals and checklists are published, a separate SOP is not required. However, SOPs are required for all common functions, to include storage, handling, transportation, and end-of-life-cycle management.

(2) Ensure that all personnel involved in the storage, transport, handling, maintenance, receipt/issue, and use of munitions receive required training prior to their assignment to duties involving munitions.

(3) Provide copies of all work requests for any work inside the 110% ESQD arcs to the ESO.

(4) Provide copies of all Malfunction, Mishap and A&E MLSRs to the ESO.

f. Unit Explosives Safety Representatives. Unit ESRs shall serve as liaison between the unit and the installation ESO. The installation will have a by-name list of Unit ESRs. ESR's will assist the installation ESO, as required, with all aspects of the unit's explosives safety mission.

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3. Inspection Program. Both periodic and random inspections will be conducted and documented to assess the effectiveness of the ESMP. The following are the minimum standards for an installation explosives safety program. Inspections are primarily performed and documented by unit personnel. ESOs are responsible for reviewing the inspection process and conducting independent inspections as required. All inspections will be performed utilizing an approved or locally developed checklist. Inspection results and corrective actions must be documented and incorporated into the ESO's ESSA.

a. Magazine, Magazine Area and Storage Inspection. All facilities and locations used for storage or handling of ammunition and explosives will be inspected per reference (c).

(1) Contingent upon available manpower, munitions storage and handling locations with high rates of activity and those remote from the main ammunition storage area should be inspected on a more frequent basis, as identified in reference (c). The ESO, in conjunction with unit personnel, shall determine the inspection frequency requirements for all locations. Unit personnel may perform these inspections utilizing the required inspection SOP and checklist. The ESO will review unit performed inspection documentation on a regular basis and document the review in the ESSA.

(2) The ESO will ensure that organizations responsible for inspected facilities are informed of all unsafe conditions and that any work orders/repairs that may be necessary are generated by the responsible organization.

(a) A record of work order follow-ups will be maintained by the responsible unit and monitored by the ESO.

(b) Any uncompleted work orders, not involving major construction/renovation, in excess of 90 days old will be reported by the ESO, in writing, to the installation commander with copies to the unit commander and to the organization responsible for performing the repair.

(c) Results will be documented and a summary report generated for inclusion in the installation commander's ESSA report via the chain of command.

(3) Records of all inspections and actions taken to correct any identified deficiencies must be maintained in the installation Explosives Safety Office.

b. Physical/Visual Inspection of Lightning Protection and Electrical Bonding/Grounding Systems. All facilities, locations, and equipment used to store, maintain, handle, or transport munitions will require an inspection of all lightning protection and electrical bonding/grounding systems per reference (c).

c. Site Inspection

(1) Facilities, such as unit arms rooms, security force armories, storage of inert or display munitions areas, and installation fire departments, shall be inspected at least annually by the ESO. Contingent on available manpower, these locations may be inspected on a more frequent basis.

(2) The ESO, in conjunction with unit personnel, shall determine the inspection frequency requirements for all locations.

(3) Unit personnel may perform more frequent inspections utilizing a locally approved inspection checklist.

(4) Units will maintain a copy of the inspection checklist. ESOs will review the unit inspection records as part of the ESSA.

d. Fire Safety Inspections

(1) All locations/facilities involved in the storage, issue/receipt, transport, maintenance, and handling of munitions will conduct regularly scheduled inspections for compliance with fire safety and fire protection equipment requirements. Guidance and inspection criteria may be found in chapter 4 of reference (c). ESOs will monitor units and fire departments to ensure regular inspections are conducted.

(2) This monitoring may be performed in conjunction with other inspections. Failure of units or fire departments to conduct regular inspections will be reported by the ESO, in writing, to the installation commander with copies furnished to the unit commander and to the organization responsible for performing the inspection. ESOs will maintain a file copy of these reports for a period of three years.

e. Review of Qualification/Certification Program. ESOs will:

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(1) Review all A&E Qualification/Certification (Qual/Cert) Programs for compliance with reference (e). Navy tenant commands that do not fall under reference (e) will be reviewed for compliance with reference (v).

(2) Meet with representatives of units having personnel in the program, and review records for completeness and accuracy.

(3) Reviews must be documented and incorporated in the ESO's ESSA report.

f. Conduct Annual Explosives Safety Stand Downs. ESOs will ensure that an explosives safety stand down is conducted per reference (c) for personnel involved in the storage, receipt/issue, transport, handling, or maintenance of munitions.

(1) Training will be documented via entries in individual training records.

(2) The stand down may use training aids, visual aids, guest expert speakers and inert display items are encouraged. The following topics are recommended, but are not all inclusive, for incorporation into the stand down:

(a) Statement/explanation of the explosives safety program goals.

(b) Explanation of Hazard Class/Division.

(c) Storage Compatibility Groups.

(d) Fire/chemical hazard symbols, firefighting procedures, and evacuation distances.

(e) Review of storage, handling, and transportation requirements.

(f) Review of sources of information on explosives safety and requirements.

(g) Discussion of SOPs relative to safety warnings, cautions, and equipment.

(h) Discussion of Qual/Cert Program.

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(i) Discussion of procedures for handling MPPEH or other munitions found on the installation.

g. ESSA. ESOs will conduct a complete ESSA on an annual basis. The ESSA is a formal program for installations to conduct appraisals of ongoing munitions operations to determine the effectiveness of their explosives safety program. ESSAs emphasize the importance of a proactive approach to explosives safety issues. ESSA's will be performed in accordance with chapter 4 of this Order.

4. Files, Records, and Reports

a. Records Management. Records contribute to the strength and success of program management. They provide documentation to support trend analysis, training requirements, justification for fiscal and manpower requirements, and tracking corrective action processes. Some records are mandatory, as they directly relate to ESI or other regulatory requirements. Others, although not mandatory, provide significant assistance in program management. It is the ESO's responsibility to establish how the documentation is to be maintained. Unless otherwise regulated, either paper or electronic copy is authorized. Electronic copies must have the appropriate electronic signature if one is required. Regardless of how the records are maintained, they must be readily accessible to the ESO.

b. Records Retention. Records created as a result of this Order shall be managed according to National Archives and Records Administration approved dispositions per reference (g) to ensure proper maintenance, use, accessibility and preservation, regardless of format or medium.

c. Mandatory Documentation. At a minimum, the following reports/records must be maintained, or be accessible, by all ESOs. Some records/reports may be maintained by individual units and reviewed by the ESO as part of normally conducted inspections as determined by local conditions or requirements, and be subjected to review during explosives safety compliance evaluations/inspections.

(1) Annual Magazine/Storage Facility Inspection Reports. These reports are required for ESI review and contain elements to support other areas, such as SOPs, site plans, and accountability. Maintain these records for three years from date of inspection.

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(2) Visual Inspections/Tests of Lightning Protection and Electrical Grounding Systems. Visual inspection data shall be stored in a data file for retrieval for use as required for trend analysis or for use during compliance evaluations and inspections. Maintain these records for a minimum of six test/inspection cycles.

(3) Site Inspections. These inspections contain elements for review during compliance evaluations/inspections, such as storage authorization letters, Qual/Cert review, and SOP review. Maintain these records for three years from date of inspection.

(4) Fire Safety Inspection Reports. All locations/facilities involved in the storage, issue/receipt, transport, maintenance, and handling of munitions will conduct regularly scheduled inspections for compliance with fire safety and fire protection equipment requirements. ESOs will monitor units and fire departments to ensure regular inspections are conducted. Maintain these records for three years from date of inspection.

(5) Hazards of Radiation (RADHAZ). Maintain access to surveys and EMCON Bills.

(6) Log of Inert Training/Display Munitions. Inert training/display munitions log must be maintained per chapter 2 of this Order. These records will be maintained permanently and validated annually until final disposition.

(7) Annual Qualification/Certification Program Review Reports. For units not using an electronic program, hardcopy reports will be maintained for one year from date of review.

(8) ESI Inspection Reports and Corrective Action Plans. Maintain reports and plans in an approved electronic database.

(9) ESSA Inspections. Maintain ESSA reports for three years from date of inspection.

(10) Explosives Safety Site Approvals. Site approvals will be maintained for each facility, as required by reference (c), for as long as the facility is used for storage, handling, manufacture, maintenance, or modification of munitions. Should the facility be removed from service as a munitions site, a site approval request to remove the ESQD arcs must be submitted. This final site approval will be archived, not destroyed.

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(11) Comprehensive Installation Maps. Comprehensive installation maps or sets of maps must be developed in accordance with reference (d). Marine Corps GeoFidelis GIS/enterprise mapping system must be used for all maps.

(a) Maps must show locations and ESQD arcs, storage/operating facilities and locations, explosives vehicle traffic routes, any easements and environmentally sensitive areas, and emergency evacuation routes.

(b) Maps will be reviewed annually for correctness and the review documented by a Memorandum for the Record (MFR). Maintain these records for one calendar year from date of review.

(c) Both base comprehensive and Fire Department maps will be of sufficient size/clarity to be serviceable and useable in daily routine use.

(12) Annual encroachment review of areas encompassed by ESQD arcs by non-ammunition related activities. Annual encroachment reviews may be documented via the same MFR prepared for map review.

(13) Inventories of Potential Explosion Sites/Exposed Sites (PES/ES). All PES and ES within explosives arcs will be inventoried and maintained in the installation site portion of the EES web portal.

d. The following reports/records must be uploaded, routed and archived via the EES Web portal:

(1) DDESB Evaluation Reports and Corrective Action Plans.

(2) Explosives Safety Determinations/Explosives Safety Submissions (ESD/ESS)/After Action Reports.

(3) AMHAZ Handling Review Board Survey Results. Maintain survey reports and any corrective actions undertaken.

(4) Explosives Safety Event Waivers.

(5) Non-DoD Ammunition Storage Requests.

(6) Roll-on/Roll-off (RO/RO) Site Approval Requests.

(7) Installation Facility Data. Sited facilities (PES and ES) must have all pertinent explosives safety quantity distance data uploaded under the Installation Site tab of the EES Web portal.

(8) Commanders' Letters of Storage Authority. Storage authority, as permitted by reference (c) and this Order, the installation commander has granted will be maintained on file for each facility so authorized.

(9) Explosives Safety Compliance Reports and CAPS.

(10) Explosives safety training certifications.

5. Publications and References. Installation ESOs must maintain, or have access to, current reference documents required to support explosives safety. ESOs use electronic web sites to ensure only the latest version of the publication is being referenced. Appendix C provides a list of recommended publications to support explosives safety. If hard copy publications are being maintained:

a. Publications will include the latest changes/revisions.

b. Reviews will be conducted semi-annually to ensure latest changes/revisions have been incorporated.

Chapter 10

STANDARD OPERATING PROCEDURES

1. Background. Standard Operating Procedures (SOPs) are step-by-step procedural documents used to ensure compliance with technical, explosives safety, personal protective equipment, federal, state and local environmental protection, information and physical security requirements.

2. Scope. The requirement for approved written procedures applies to all Marine Corps A&E operations, unless specifically excluded.

3. SOP Applicability

a. SOPs are required for all A&E operations not conducted in accordance with technical directives, approved checklists, or Fleet Marine Field training Manuals (FMFMs). This requirement includes DoD and non-standard tenants and contractors when in support of Marine Corps operations.

b. SOPs, along with applicable reference publications, shall be kept in the work area with the procedures readily available for use when performing the operation.

c. SOPs are not required for units who solely transport, store and handle limited quantities of C/D 1.4S.

4. Approval Authority. The CO is responsible for approving all A&E SOPs. SOPs may be signed by individuals in an "Acting" capacity or those with "By Direction" authority.

5. Roles and Responsibilities

a. The Process Supervisor is responsible for.

(1) Ensuring everyone assigned to a process has read and understand the requirements of the SOP.

(2) Stopping a process if unexpected safety, health or environmental hazards are found, or if significant deviations from the SOP are necessary in order to conduct the process.

(3) Continuously reviewing SOPs during recurring processes to ensure that they are changed as necessary to reflect current procedures, and changes to reference documents.

b. The SOP user (worker/operator) is responsible for reading, understanding, and following the SOP. If the user identifies a hazard or operation, not addressed in the SOP, or does not understand an operation, the user will stop the process and notify the supervisor of the problem.

c. Contractors are responsible for development, review, validation, approval, and use of SOPs for A&E operations wholly under their control. Marine Corps personnel shall provide appropriate oversight as specified in contractual requirements.

d. SOPs, along with applicable reference publications, shall be kept in the work area with the procedures readily available for use when performing the operation.

6. SOP Development. A&E SOPs shall be developed and formatted in accordance with this Order.

a. Title Page. Page at the beginning of the SOP that identifies the SOP name and number.

b. References. A list of all current applicable references.

c. Table of contents. A concise list of elements within the SOP.

d. SOP Review Process

(1) SOP Review

(a) Initial Review. The following personnel will review SOPs prior to initial use at Marine Corps activities/tenant Commands:

(1) Personnel responsible for the technical requirements and execution of the process (e.g., supervisors and operators).

(2) Personnel responsible for support of the process in accordance with sections of the SOP, including mishap responses.

(3) Occupational safety and health, medical (e.g., industrial hygiene), and environmental personnel if the process involves or may potentially involve any applicable procedures.

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(4) ESO.

(5) CO or designated representative.

(b) For contractor operations, the equivalent levels of review would be, for example, Site Health and Safety Supervisor or Senior Unexploded Ordnance Supervisor and Site Superintendent of the contractor.

(2) Continuous Review. SOPs shall be reviewed and changed as necessary, but at a minimum annually, to reflect changes. The person responsible and/or supervisor of the process must document the date of annual review.

(3) Change Review. All changes must be documented and subjected to an appropriate level of review.

(4) Baseline Review. SOPs will be annually reviewed. SOPs must be updated and reapproved four years from the date of the current approval signature.

e. Statements

(1) Supervisor's Statement. This statement provides a record of the signature and date of the supervisor(s), responsible for managing the operation. These supervisors are responsible for making sure that the SOP is up to date. This record maintains the list of qualified people with up to date training. A suggested supervisor's statement follows:

"I have read and understand this SOP. To the best of my knowledge, the processing described within this SOP can be done in a safe, healthful and environmentally sound manner. I have made sure all persons assigned to this process are qualified, have read and understand the requirements of this SOP, and have signed the worker's/operator's statement for this process. I will ensure the SOP has current procedures. If a major change to the SOP is necessary, I will ensure that the process is stopped until the SOP is revised and approved. If unexpected safety, health, or environmental hazards are found, I will make sure the process is stopped until the hazards have been eliminated."

Supervisor's Name

Signature

Date

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(2) Worker's/Operator's Statement. This statement indicates that the worker/operator clearly understands his/her duties regarding the operations in the SOP. The worker/operator and supervisor must review the SOP and sign and date the statement to be authorized to work under the SOP. A suggested Worker's/Operator's Statement follows:

"I have read this SOP and I have received adequate training to perform the process according to the SOP. I will follow the SOP unless I identify a hazard not addressed in it or encounter an operation I cannot perform according to the SOP. If that occurs, I will stop the process and notify my immediate supervisor of the problem."

Worker's/Operator's Name

Date and Signature

Supervisor's Name

Date and Signature

f. Step-By-Step Procedures. This is the most important section of the SOP. The procedures should be written so that a person unfamiliar with the operation could perform a validation of the process.

(1) Provide the worker/operator with clear and concise step-by-step instructions for performing the process.

(2) Do not include instructions for operations not relevant to the SOP.

(3) The worker/operator must not be required to leave the work area to locate other references nor jump from section to section in the SOP to perform the process safely and correctly. In the event that the worker/operator has to leave the work area to locate other references they should stop the process until the process can be conducted in accordance with an approved SOP.

(4) Use of technical manuals as part of the step-by-step procedures is encouraged.

(5) Always use warnings, cautions, and notes at the first occurrence of critical steps. The word "WARNING" shall be used in cases of potential personnel death or injury. The word "CAUTION" shall be used in cases of potential equipment or

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facility damage. The word "NOTE" shall be used in cases that affect product or process quality.

(6) If applicable, include procedures for routine decontamination and restoration of equipment and facilities to a safe working condition should the process have been stopped due to an unacceptable hazard or other unforeseen event.

(7) Include procedures for disposition and management of any scrap or wastes, including waste military munitions, which may be generated by the operation.

g. Diagrams

(1) Building or Site Diagram

(a) A diagram of the building or site showing the location of operation related items is to be included in the SOP (see next paragraph for exception). The diagram shall include location of safety related items, such as fire extinguishers, fire suppression systems, eye wash stations, emergency showers, first aid kits, spill cleanup kits, ventilation systems or stations, and emergency breathing devices. The diagram must illustrate explosive and personnel limits, evacuation routes, and emergency exits.

(b) Building diagrams are optional for inclusion in the SOP if a diagram approved by the process supervisor is posted at the facility.

(c) Site diagrams must be included in the SOP for temporary and/or field operations to include explosives routes if applicable.

(2) Processing Diagrams. This includes any information needed to clarify or amplify the information provided in the step-by-step procedures. Often this will take the form of diagrams to indicate steps in the operation. Illustrations showing details of processing, material handling, excavating, and other equipment, block diagrams of processing and workflow and other illustrative graphic materials are appropriate.

h. Equipment Lists

(1) Equipment and Supplies List (if applicable). Provide a list of all the special and/or critical tools, equipment, and supplies used in the process.

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(2) Safety Equipment List. Provide a list of all the special or mandatory safety equipment (including personal protective equipment) and systems, which must be in place and working properly in order to protect the safety of personnel, equipment, facilities, and the environment during the processing.

i. Hazard Control Briefing

(1) A hazard control briefing will be prepared, taking into account the results of the hazard analysis and risk assessment. The briefing will be given to all employees using the SOP prior to initial use of the SOP. The briefing may be repeated as often as necessary based on the work supervisor's analysis of its effectiveness. The current briefing will be a permanent part of the SOP. The Hazard Control Brief must be up to date and include the hazard analysis results. The hazard control briefing will also be given to all visitors and other transients/observers to the A&E, MPPEH, and/or MEC location. Records documenting recipients of the hazard control briefings shall be maintained for a minimum of one year after the date the briefing was given.

(2) At a minimum, hazard control briefings will address the following:

(a) Hazardous materials used, consumed, or produced in the process.

(b) The ways in which exposure to hazards and hazardous materials are avoided or minimized, including the use of personal protective equipment.

(c) Signs of unacceptable exposure to the worker/operator/visitor, or damage to the equipment, from the hazardous materials being processed.

(d) First aid or other actions to be taken immediately should exposure to an unacceptable hazard or hazardous materials occur.

(e) SOP hazard analysis results. (Documentation leading to results, including process/methodology, mishap triggering events, projected potential mishaps, initial and final risk index, must be readily available on request.)

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(f) At least one worker/operator who will be performing the operation covered by the SOP shall take part in the hazard analysis and risk assessment.

j. Emergency Procedures. The required hazard analysis of a process will identify any potential fire, spill, explosion, runaway reaction, release of hazardous vapors, mechanical failure, injury, etc., which could occur during processing and which would require immediate action to control. Procedures for responding to these emergency events will be provided as step-by-step procedures, and used for rehearsal of emergency response. The emergency response procedures (which may be incorporated as part of the step-by-step instructions for the process) include:

(a) A single point of contact to notify in case of an incident.

(b) Initial and follow-up actions that the worker/operator must take in case of an incident.

k. Review and Expiration Requirements

7. Operational Risk Management (ORM). As part of SOP development, the ORM process shall be conducted, and the resulting hazard analysis and risk assessment shall be used as a basis for developing the SOP. The ORM methodology and analysis developed for the SOP must be included as an element of the SOP.

8. Preliminary Hazard Analysis and Risk Assessment. This analysis and assessment is used to support SOP development and is appropriate for the level of ORM per reference (n). The results shall be a permanent part of the SOP as a hazard control brief and shall be included as an element of the SOP.

9. Validation. The supervisor will oversee the performance of SOP validations with the necessary workers/operators and other personnel to ensure complete understanding at all levels. The supervisor should request assistance from other authorities when needed. The supervisor and workers/operators, before the initial use, shall conduct a validation of applicable sections of an SOP, or whenever there is a major change to the operation, process, or facility. All validations will be documented, signed and dated by all persons performing the validation. For existing SOPs it is recommended that whenever a new supervisor is assigned that the SOP be reviewed and a new step-by-step dry run of the process be completed

Chapter 11

Operational Explosives Safety

1. Background. The Marine Corps continuously trains and deploys with ammunition and explosives. The hazards associated with the storage, handling, transportation, and employment of ammunition and explosives are compounded in an operational environment. This chapter provides explosives safety information to support the operational plans of Commanders. The information in this chapter is intended to:

a. Assist commanders and personnel in making the best possible and logical use of the limited facilities available for the safe storage and handling of ammunition and explosives.

b. Enhance the survivability and dependability of ammunition and explosives.

c. Reduce the hazards involved in handling and storing ammunition and explosives.

d. Provide explosives safety personnel the tools to identify, communicate, and mitigate risk.

e. Identify at what level risk can be accepted.

2. Application of Explosives Safety Requirements. The following identifies the explosives safety criteria that must be applied, depending on the type of operation, participating members, and location:

a. When outside the U.S.; comply with host nation, Multi-National, or U.S. explosives safety standards, whichever is more stringent, unless standards applicability is mandated in an International Agreement.

b. Within the U.S; comply with the requirements contained in reference (c) and this Order.

c. Reference (w), advises commanders of U.S forces operating as part of a multinational (MN) (alliance or coalition) military command; they should follow MN doctrine and procedures ratified by the U.S.. For doctrine and procedures not ratified by the U.S., commanders should evaluate and follow the MN command's doctrine and procedures, where applicable and consistent with U.S law, regulations, and doctrine.

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d. U.S. Forces participating in NATO operations should use the explosives safety guidelines found in references (x) and (y) to develop mutually agreeable standards for storage.

e. Reference (z) may be mandated for use in an International Agreement (IA) or as part of a UN/MN operation.

3. Applicability. Reference (a) provides the minimum criteria for explosives safety and munitions risk management in operational planning, training, and execution.

4. Explosives Safety Munitions Risk Management (ESMRM). ESMRM must be integrated into the planning and execution process as required by reference (m). Integrating ESMRM into combined, joint, coalition, and partner nation plans, exercises and missions is required unless the Geographic Combatant Commander (GCC) determines strategic or compelling operational needs mandate otherwise.

5. Asset Protection. The protection of assets in an operational environment is paramount and can be the difference between mission success or failure. Depending on the operational value of the assets, greater protection may be warranted than required by explosives safety criteria. In the operational environment space is often at a premium. The placement of mission critical assets near ammunition and explosives storage/operating areas should be avoided whenever possible. Two levels of asset preservation are defined below and should be applied dependent on the nature of the assets.

a. Minimum Separation Distance. Minimum separation distance is the required explosives safety distance contained in the applicable tables of reference (c). At this distance from the PES, mission capability will likely be impaired or delayed in the case of an explosives incident. This distance should prevent prompt propagation; however, delayed propagation between PESs is possible.

b. Asset Preservation. Asset preservation is a distance greater than the minimum separation distance contained in reference (c). At this distance, from a PES, assets are expected to be usable and mission capable following an explosives incident. This separation distance should prevent prompt propagation between PESs.

6. Explosives Safety Site Plans. All locations where military munitions are present, or forecasted to be present, shall have

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an approved explosives safety site plan. Areas that cannot meet ESQD criteria must have an approved deviation per chapter 3 of this Order. Site plan packages will be prepared and submitted in accordance with reference (c).

a. Examples of locations that must be considered for explosives safety site plan approval are contained in reference (a) and (m).

b. For Combat Operating Bases (COBs) and Combat Out-Posts (COPs), the GCC must provide specific guidance on risk and consequence management from military munitions at these locations and determine site approval requirements.

7. MILCON Approval Process. For consequence acceptance decisions that require MILCON projects that cannot meet explosives safety requirements of reference (a), the GCC must provide an endorsement to the appropriate Military Service Secretary for MILCON funding and project approval, prior to construction start. Endorsement and submission package must contain the information contained in reference (c) for a Secretarial Certification and the below information.

a. Statement of operational necessity.

b. Acceptance of the potential consequences from munitions and munitions related operations.

c. Validation frequency of the strategic or compelling operational requirements to ensure the identification of risks exposure. Review frequency must not exceed 5 years.

d. C&RI assessment per reference (m).

8. Deviations. For locations which cannot meet explosives safety siting requirements, a deviation must be developed and submitted to the appropriate approval authority.

a. Deviations for CONUS training operations on Marine Corps installations will be submitted per chapter 3 of this Order.

b. Deviations for ammunition and explosives operations conducted at another Service's installation or joint installation, The service with the operational necessity shall have the responsibility of submitting the event waiver request and their higher headquarters will provide the operational necessity statement. The service responsible for the

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installation will issue the event waiver, following concurrence endorsements by the installation and all in their chain-of-command

c. Deviations for OCONUS non-enduring locations will be developed and submitted in accordance with reference (m).

9. Limited Quantities of Hazard Division (HD) 1.2.2, HD 1.3, or HD 1.4. For reasons of operational necessity, limited quantities, not to exceed 50 lbs. NEW, of a combination of HD 1.2.2, HD 1.3, or HD 1.4 may be stored and used in operations, to include armored vehicles located outside a Basic Load Ammunition Holding Area (BLAHA) or an Ammunition Holding Area (AHA), without regard to QD and DoD explosives safety site approval. The amount of HC/D 1.4S is not included in the limits identified above, however no more than 3000 lbs. NEW of HC/D 1.4S can be stored. These areas must be approved in writing by the installation Commander and meet all fire, security, and lightning protection system requirements of references (c) and (k).

10. Field Storage. Field storage is primarily intended for situations that require limited amounts of ammunition and explosives munitions to be stored away from the standard storage environment to support specific training or for small units operating in austere environments during combat missions. The following guidelines will govern temporary storage at these facilities/sites:

a. Field storage is authorized for up to 90 days on certified Marine Corps operational ranges to meet training requirements. The explosives arc from the field storage site must be within the parameters of the established range. Explosives arcs that exceed range parameters will require an event waiver in accordance with chapter 3. Field storage on operational training ranges of another Service will require compliance with that Service's requirements.

b. Storage at COBs and COPs, the GCC shall provide specific guidance on risk and consequence management from military munitions at these locations. All non-enduring locations will meet the requirements of reference (m).

c. Storage sites for training operations not located on Marine Corps certified ranges/training areas shall be formally sited or have an approved event waiver prior to any explosives operation.

11. Forward Arming and Refueling Point (FARP) Operations. All FARPs, in which explosives operations are conducted, must be approved at the appropriate level of command, as outlined below prior to conducting operations.

a. Training evolutions involving FARP operations, conducted on U.S. controlled operational training areas/ranges approved for the type munitions being used may be approved by the installation commander. When a FARP operation is established at locations other than on approved operational training areas/ranges, formal DDESB site approval is required prior to the conduct of operations. All FARP training operations shall be established in accordance with the separation distances specified in figure 11-1. Units conducting FARP operations shall conduct all operations, per current Naval Air Training and Operating Procedures (NATOPS) manuals and Conventional Weapons Loading (CWL) checklists.

b. FARP Operations

(1) Permanent FARP sites that are used for contingency operations must be sited per reference (c). FARP sites that are established in situations where advance notice is not possible shall be approved by the GCC or designated Component Commander.

(2) Contingency FARP sites shall be established in accordance with the separation distances specified in Figure 11-2. The separation distances shown are the minimum required to prevent prompt propagation of explosive sites. However, subsequent reactions are possible with death to exposed personnel and substantial damage to assets expected. Aircraft and equipment will not be usable following such an incident. In order to prevent propagation or reaction between explosives sites, greater separation (asset preservation) distances should be provided. PTR separation distances should afford this level of protection.

Table 11-1.--Forward Arming and Refueling Point Operation
Separation Distances

From:	To:	Rearm Point	Ordnance Staging Area	Ordnance Buildup Area	Ordnance Storage Area	Red Label Area	Sling Out Area	Refueling Point	Bulk Fuel Storage	Billeting Bivouac Area	Runway/Taxiway (DoD use)	Runway/Taxiway (Joint use)	Inhabited Building	Public Trans Route
Rearm Point		IM	None	IL	IM	IM	IM	IL	IBD	IBD	PTR	IBD	IBD	3
Ordnance Staging Area		IM	IM	IL	IM	IM	IM	IL	IBD	IBD	PTR	IBD	IBD	3
Ordnance Buildup Area		2	IM	IL	IM	IM	IL	IL	IBD	IBD	PTR	IBD	IBD	3
Ordnance Staging Area		2	IM	IL	IM	IM	IM	IL	IBD	IBD	PTR	IBD	IBD	3
Red Label Area		IM	IM	IL	IM	IM	IM	IL	IBD	IBD	1	IBD	IBD	3
Sling Out Area		IBD	IBD	IBD	IBD	IBD	IBD	IBD	IBD	IBD	1	IBD	IBD	3
Notes:	1. No ESQD applies, however, applicable NAVAIR airfield safety criteria shall be met.													
	2. K30 used for HC/D 1.1 items only. Use applicable PTR distance for non-mass detonating explosives.													
	3. PTR distance based on traffic density (low, medium, high). Refer to NAVSEA OP 5, chapter 7.													

Table 11-2.--Forward Arming and Refueling Point Operation
Contingency Separation Distances

From:	To:	Rearm Point	Ordnance Staging Area	Ordnance Buildup Area	Ordnance Storage Area	Red Label Area	Sling Out Area	Refueling Point	Bulk Fuel Storage	Billeting Bivouac Area	Runway/Taxiway (DoD use)	Runway/Taxiway (Joint use)	Inhabited Building	Public Trans Route
Rearm Point	IM	IM	IL	IM	IM	IM	100'	IBD	IBD	K45	IBD	IBD	IBD	2
Ordnance Staging Area	IM	IM	IL	IM	IM	IM	100'	IBD	IBD	K45	IBD	IBD	IBD	2
Ordnance Buildup Area	IM	IM	IL	IM	IM	IL	100'	IBD	IBD	K45	IBD	IBD	IBD	2
Ordnance Staging Area	IM	IM	IL	IM	IM	IM	100'	IBD	IBD	K45	IBD	IBD	IBD	2
Red Label Area	IM	IM	IL	IM	IM	IM	100'	IBD	IBD	K45	IBD	IBD	IBD	2
Sling Out Area	IM	IM	IL	IM	IM	IM	100'	IBD	IBD	K45	IBD	IBD	IBD	2
Notes:	<p>1. Where asset preservation is a primary concern, use K24/K30 separation for H/D 1.1, and PTR separation distance for H/D 1.2, 1.3, or 1.4. Applies wherever IBD is not specified.</p> <p>2. PTR distance based on traffic density (low, medium, high). Refer to NAVSEA OP 5, Vol 1, chapter 7.</p>													

12. Captured Enemy Ammunition (CEA)

a. The purpose of this paragraph is to provide procedural guidance for commanders to safeguard operating forces involved in CEA handling, transportation, and storage operations. The major cause of CEA accidents involves untrained personnel handling foreign ordnance. Contact the nearest EOD unit for additional information on the discovery, identification, reporting, and disposition of CEA. Careful planning, risk management, and the use of trained personnel will help mitigate the hazards of CEA operations.

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b. CEA operations pose a significant threat to operating forces. There are many unknowns associated with CEA, such as NEW, fuzing mechanisms, markings, and fillers. CEA operations are inherently dangerous; thus, the storage, handling, transportation, and destruction of CEA present a challenge. Leaders at all levels must understand the proper procedures to react to, plan, and execute CEA operations. Operations involving CEA will be assessed using the five-step risk management process to provide maximum protection to personnel and property from an unintentional detonation. CEA operations should ensure that only the minimum numbers of personnel are exposed to the minimum quantity of CEA for the minimum amount of time.

c. Retrograde Operations. A cache of CEA retrograded to an ammunition supply point/munitions storage area (ASP/MSA) should be inspected by qualified EOD personnel to ensure the CEA is safe to handle and transport prior to movement and storage. CEA must be stored in a designated secure area within the ASP/MSA, but at a minimum PTR distance from any area containing U.S. munitions. Regardless of its condition, CEA shall not be intermingled with U.S. munitions stocks. When PTR distance cannot be met, at a minimum CEA, must be placed at IM separation distance from DoD stocks and the risk accepted in accordance with reference (m).

d. Receipt, Storage, Segregation, and Issue of Captured Enemy Ammunition

(1) Receipt of Captured Enemy Ammunition. CEA arriving at an ASP/MSA that has not been inspected by EOD must be inspected as soon as possible after receipt to determine its explosives safety condition, type, and caliber. Only trained and certified EOD personnel shall perform the inspection of all CEA stocks prior to storage. If EOD personnel are unavailable, UXO qualified/certified civilian personnel meeting the requirements listed in reference (aa) may perform the inspection. However, ASP/MSA personnel will identify these stocks as requiring inspection by EOD personnel. Combat Engineers and Ammunition Technicians should not perform inspections on CEA, as they are not trained in the characteristics of foreign munitions. The inspection of CEA shall take place only at designated sites that meet a minimum of PTRD from all other area within the storage area. No CEA will be placed into storage without a safety assessment.

(2) Storage of Captured Enemy Ammunition. CEA will be stored in a separate area within the ASP/MSA from serviceable and unserviceable DoD munitions. When CEA is placed in storage, protective measures should be taken (e.g., separation distances, use of barricades, fire breaks) to protect DoD serviceable assets. CEA will be stored at PTR distance from DoD munitions. When PTR can't be met CEA will be stored no closer than IMD. Serviceable and unserviceable CEA should be separated from each other in storage. When space permits, CEA should be stored in multiple small stack quantities. This type of storage is preferred over larger, more volatile stacks.

(3) Issue of Captured Enemy Ammunition. In unique circumstances, CEA may be issued to using units in the same manner as U.S. munitions. All requests for serviceable CEA are approved and assigned a priority for issue to U.S. units engaged in special missions or training by the Combatant Commander (COCOM). CEA is issued based on the following priorities:

- (a) Intelligence
- (b) Special warfare
- (c) Special Operations Forces
- (d) Combat units
- (e) Marine Logistics Group (MLG).
- (f) Substitutes or supplements to U.S. munitions.

e. Captured Enemy Ammunition Storage Compatibility Group. Prior to placing in storage, the CEA should be assessed, if possible to determine its Storage Compatibility Group (SCG). Qualified explosives personnel (i.e., EOD, UXO qualified civilian personnel) will assess the CEA and determine the SCG. Factors used in determining the CEA SCG are caliber or size, filler, fuzing mechanisms, and NEW. Once the SCG has been determined, stocks of CEA will be segregated according to the SCG chart located in reference (c). In the event no SCG can be determined, the CEA must be assigned SCG "L".

f. Determining the Net Explosive Weight of Captured Enemy Ammunition. The NEW of CEA will be calculated using the Service publication on foreign munitions or by using the NEW of a similar type and caliber munitions in the DoD inventory. A source for foreign ordnance NEW can be obtained from the Naval

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EOD Technology Division (NAVEODTECHDIV), Indian Head, MD. For unknown munitions, the entire weight of munitions will be used as the NEW.

g. Fire Prevention. The same method used to prevent fires for DoD stocks will be employed in preventing fires for CEA stocks. However, due to the unknown hazard factors associated with CEA, storage areas containing CEA stocks should additionally identify the location of CEA on their fire plan. Fire prevention methods for ASAs are located in references (c).

h. Serviceable CEA. Serviceable CEA will be retained for security, intelligence, Research, Development, Test and Evaluation (RDT&E), training, demilitarization or other purposes when authorized by the headquarters exercising operational control of the discovering unit's operation. CEA used for any of the above operations shall be clearly marked as "Serviceable". Serviceable CEA shall be segregated from DoD stocks as indicated in paragraph 12d(2) of this chapter.

i. Unserviceable CEA. Unserviceable CEA stored in the same storage magazine, pad, or container as serviceable CEA will be clearly marked as Unserviceable and separated (i.e., sandbagged or placed in other barricaded area). Serviceable and unserviceable CEA will be separated from DoD munitions by PTRD.

j. Handling. Trained munitions personnel will supervise the handling of all CEA. No CEA will be handled without certification from EOD that the CEA is safe for movement.

k. CEA Accountability. CEA will be accounted for as follows:

(1) CEA that has been inspected, certified, or cleared by EOD or qualified UXO civilian explosives safety inspectors must be receipted, inspected, and accounted for in the same way as DoD munitions. Once CEA is identified, it is inventoried by the Services for accountability and control. Local stock numbers will be assigned to CEA using the procedures contained in reference (j). Assignment of local stock numbers and accurate accountability should be done as soon as possible after receipt. Reporting and disposition instructions for CEA are the same as for DoD munitions. Close control of CEA is required.

(2) CEA shall be accounted for using a method that ensures accountability. A preferred method is using Ordnance Information System (OIS), or NAVMC 10774 cards; however, spreadsheets, log books, or any means of tracking is acceptable. The preferred method of accounting for CEA is by the piece; however, accounting for CEA by gross weight is also an acceptable method.

1. Transportation. The following requirements pertain to the transportation of CEA:

(1) Transporting CEA. CEA should not be transported with DoD ammunition. When possible, CEA should be placed in an unoccupied trailer, and not in the bed of the conveyance. When an armored vehicle is available, it should be used to tow a trailer loaded with CEA to provide additional protection to personnel.

(2) Inspections of Loaded Conveyance

(a) Inspection at Origination. Before moving or loading CEA into any conveyance, an EOD or Technical Escort Unit (TEU) team must certify that it is safe to handle and transport. When possible, an ammunition shipping inspector should be consulted about safe loading and tie-down procedures. The EOD or TEU team should provide the driver with any firefighting instructions.

(b) Inspection at Destination. Vehicles loaded with CEA should not be taken directly into the ASP. Vehicles arriving with CEA should be directed to a holding area for inspection by EOD or TEU personnel. Following the transport of CEA, any change noted in the condition of the CEA (e.g., the discovery of a missing safety pin, explosives filler exudation, or other unusual conditions) will be reported to EOD personnel for a new assessment prior to removal from the transport vehicle.

(c) Blocking and Bracing. Due to the unknown factors associated with CEA, protection against unintentional detonation associated with the stress of movement is critical. CEA loaded into a conveyance must be secured to prevent movement and its impact with other CEA during transport. Packaged CEA should be secured using cargo straps to prevent movement. Tie down procedures will be followed. Unpackaged CEA should be placed into wooden boxes and then secured to the vehicle. When packaging is not available, the bed of the conveyance can be

covered with sand to prevent movement. When using this technique the load should be constantly checked to verify the amount of sand is sufficient to prevent movement and contact with the conveyance. During loading, consideration must be given to protecting exposed fuzes, primers, initiators, and safety devices.

m. Security. CEA will be controlled and safeguarded in the same manner as that prescribed for DoD munitions of similar hazard classification, SCG, Security Risk Code (SRC), and caliber and type (e.g., SRC Category (CAT) 1-like CEA will be handled as CAT 1 DoD munitions).

n. Demilitarization and Disposal. Untrained personnel shall not conduct CEA disposal or demilitarization operations. CEA disposal operations conducted by untrained personnel have the potential to cause unnecessary battlefield contamination, personnel injury, collateral damage, and destruction of items required for intelligence. Only authorized personnel will conduct CEA disposal or demilitarization operations. All disposal operations will be conducted in accordance with approved procedures provided by EOD personnel.

13. Coalition and/or Multinational A&E. Coalition and/or MN ammunition may be stored with DoD A&E only if it has been hazard classified in a manner equivalent to DoD explosives hazard classification procedures as outlined in reference (a).

a. Coalition and/or MN A&E with a DoD-equivalent hazard classification that is stored with DoD A&E:

(1) May be stored in the same storage structure or on the same storage pad but must be separated from DoD A&E.

(2) May be stored in the same storage structure or on the same storage pad together with DoD A&E provided the risk is accepted by the appropriate authority. The acceptance of risk must be documented per applicable COCOM instructions and must consider the surveillance, propellant stability controls, packaging, and transportation, handling and operational practices of such A&E.

b. Coalition and/or MN A&E, either without a DoD-equivalent hazard classification or when the equivalency of the hazard classification procedures is uncertain, will be separated from DoD A&E by IM distances.

c. A&E operations. The explosives safety separations between an A&E operation and a storage site depends on several factors including the hazard class present, the net explosives weight present, and the level of protection required. The following are the minimum required levels of protection when A&E operations are involved.

(1) Concurrent DoD and coalition and/or MN A&E operations (e.g., ammunition issues, returns, inspections) will be separated by a minimum of intraline distance (ILD)).

(2) Non-concurrent DoD and coalition and/or multinational A&E operations may be performed on the same pad, site, or facility provided the A&E of the first party is removed prior to the second party beginning A&E operations.

d. A&E operations (U.S or coalition/MN) at risk from A&E storage sites (U.S or coalition/MN) will be given ILD level of protection from that storage site.

e. A&E storage sites (U.S or coalition/MN) at risk from A&E operations (US or coalition/MN) will be given IMD level of protection from that A&E operation.

f. Coalition and/or MN A&E storage or operations will be separated by IBD and/or PTR distance from non-A&E facilities or locations.

g. Where mission necessity or operational constraints will not allow these minimum separation distances to be maintained, a deviation from the appropriate command level, or when required, from the COCOM. When coalition and/or MN A&E hazard DoD personnel or resources, the deviation will be coordinated with the coalition and/or MN units involved. Mitigating measures may include a MOA to allow the affected Commander to inspect coalition and/or MN A&E sites for compliance with safe storage and operating practices. Such agreements will be coordinated in accordance with COCOM policies and instructions.

14. Protective Construction. This paragraph addresses protective construction designs for the storage of A&E in an operational environment. The information contained in this paragraph and further defined in reference (ab) are mainly for identifying protective construction designs that can reduce the maximum credible event (MCE) and associated QD criteria. The information contained herein will assist operational field

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storage personnel in determining ammunition and explosives storage construction requirements based on their unique situations.

a. Operational Field Storage. The protective construction designs identified in the Operational Field Storage, reference (ab), are typically conducted OCONUS on designated real estate either provided by a host nation or obtained as part of movement through enemy territory. In most cases, insufficient land is provided to meet criteria of references (a) and (c).

b. Minimum Separation Distance. A basic rule relating to A&E storage is that when minimum required IM separation distances cannot be met between storage sites containing munitions, then the NEW associated with all A&E in the deficient sites must be summed together and will form the basis for QD. Not meeting IM greatly increases the required explosives safety distances. The fundamental rule for efficient and safe A&E storage is to meet minimum IM separation distances and reduce the MCE to the smallest quantity of A&E possible.

c. Reducing MCE. MCE is the worst single event that is likely to occur from a given quantity of A&E. Reducing the MCE will permit a reduction in QD because the effects by a lower MCE explosion will generally be less severe. Once determined, the MCE can be used as the basis for determining required QD. Below are the two most common ways to accomplish MCE reduction:

(1) Distance. The greater the distance from a PES to an ES; the lower the MCE is at the ES. The problem with use of distance alone is that it requires vast quantities of real estate to provide the required IM separation distances, usually making it unfeasible for many operational storage scenarios.

(2) Separation by barriers, barricades, or other similar fragmentation defeating protective construction. Properly constructed fragmentation defeating protective construction can be used to stop fragmentation or reduce their speed to a point where they no longer present a risk to the adjacent A&E storage and the MCE can be reduced. Barricades are effective in preventing immediate propagation of explosion by high-velocity, low-angle fragments. However, they provide only limited protection against any delayed propagation of explosives caused by a fire resulting from high-angle firebrands.

d. Approved Protective Construction Designs. Certain storage scenarios have been proven, through testing, to prevent

prompt propagation at significantly reduced separation distance. These scenarios include some with barricades and some without barricades. In all cases, the DDESB approvals are very specific regarding the conditions and limitations that must be followed. Reference (ab) and associated reference documents identify those scenarios approved by the DDESB and authorized for use in the operational environment to reduce the MCE.

15. Fuel Storage. Fuel storage criteria are contained in reference (a).

16. Risk Assessment Tools. Several tools are available to assist explosives safety personnel in assessing hazards associated with ESQD non-compliance. These tools are available at the DDESB web site or by contacting COMMARCORSYSCOM.

a. Automated Safety Assessment Protocol-Explosives (ASAP-X). ASAP-X is a Microsoft Excel spreadsheet designed to assess hazards associated with ESQD non-compliance. Directions for use of ASAP-X can be found in reference (ac). ASAP-X is required for use to support deviations involving ESQD-related risk.

b. SAFER. This software is used to perform risk-based explosives safety site planning in accordance with reference (ad). Contact COMMARCORSYSCOM to obtain this software.

17. Tactical Explosives Safety Specialists (TSS). A TSS is available to provide commanders with tools to compliment force preservation efforts, and ensure safety in the operational environment. The TSS supports commanders in protecting forces and assets from potential incidents that could adversely affect current and future missions and/or operations within their areas of responsibility (AORs). The TSS, when trained in explosives safety can provide the explosives safety expertise in theater, which is generally not available to COCOMs during combat and contingency operations. Chapter 8 of this Order provides required courses for installation ESO which TSSs should complete to have a sufficient understanding of the hazards associated with ammunition and explosives.

18. Tactical Safety Specialists Certification. TSSs requiring ESO certification will follow the certification process for an ESO contained in chapter 8 of this Order. Upon completion of the required initial courses and OJT (if required), a TSS will have their immediate supervisor submit a request for ESO certification to COMMARCORSYSCOM. The request will contain all certificates of completion of the required courses and a signed

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letter stating the TSS has participated in the conduct of an ESSA and an ESI. The request will be forwarded to COMMARCORSYSCOM with a recommendation for certification as an ESO. Requests not containing the above elements will be returned without certification. Once certified, the TSS must continue to complete all mandatory refresher training and continual training to maintain certification. The certified TSS will be entered into the ESO Training Database and all training tracked. Any TSS who fails to complete mandatory refresher or continual training will have their certification revoked.

19. Technical Assistance Visit. Tactical explosives safety support is available from COMMARCORSYSCOM during all contingency and training evolutions as well as all ESMRM C&RI assessments. Requests for explosives safety support should be submitted to COMMARCORSYSCOM at least 60 days prior to a CONUS operation and 90 days for an OCONUS operation. Requests should identify the length of time the support is required and the type of support required (e.g., site plans, evaluations, waivers).

20. Tactical Explosives Safety Workshop. Due to the unique situations that are encountered in an operational environment, COMMARCORSYSCOM has developed a tactical explosives safety workshop. This workshop provides personnel with explosives safety responsibilities the tools to assist Commanders in identifying risks and mitigating efforts associated with the storage, handling, and transportation of ammunition and explosives. This workshop can be requested through COMMARCORSYSCOM.

Appendix A

Guide for Preparing an ESS

1. Background. This appendix is a guide to assist in the development of an ESS.

a. Project Manager. Provide the name and contact information of the project manager.

b. Site Identifier and Description. Provide the current and/or former name(s) or other unique identifier(s) for the site. Identify the size (in acres) of each site. If the site is divided into areas of concern or parcels, identify those as well. Indicate the status of the affected MRS, e.g., active installation, transferring or transferred under BRAC.

c. Regional map(s). Include a regional map or maps depicting the location of the planned munitions response relative to the activity or installation and region. Map scale is not critical. Do not include this map in Appendix C, of the submission, which is reserved for ESQD maps.

d. Scope of Munitions Response. Briefly summarize the overall scope of the proposed actions, including intermediate and future goals or project objectives. Do not include a description of actions which will be described later in Sections 5 or 6 of the submission. Identify the current, determined, or reasonably anticipated future land use of the site. If multiple proposed actions or land uses will be occurring within the site, identify significant differences and respective timeframes. Also include a brief description of any construction or other activities taking place on the site concurrent with the proposed munitions response.

e. History of Munitions Use. Summarize the site history and/or background concerning munitions use, explaining why MEC and/or MPPEH are known or suspected to be present in the site. Identify the source documents.

f. Previous Studies of Contamination. Summarize the conclusions drawn from previous reports of studies, investigations, characterizations, and/or surveys of MEC and/or MPPEH contamination.

g. Justification for NFA Decision. Provide a thorough justification supporting the NFA decision. Include excerpts from documents showing regulatory concurrence with NFA decision.

2. Project Dates. Provide the date on which munitions response activities are scheduled to begin. Indicate the potential consequence, if any, should DDESB approval not be obtained by the anticipated start date. Also provide an estimated project completion date.

3. Types of MEC and/or MPPEH

a. Types and Quantities of MEC and/or MPPEH. Identify the types and quantities of MEC and/or MPPEH known or suspected to be present.

b. Munition with the Greatest Fragmentation Distance (MGFD). Select from among the known or suspected MEC and/or MPPEH known, the munition which has the greatest fragmentation distance. This will be the primary MGFD(s) for the site. If one known munition item has a larger hazardous fragment distance, while another munition item has a larger maximum fragment distance, both must be identified as primary MGFDs (Primary-1 and Primary-2). A minimum of one contingency MGFD can also be identified to reduce the potential for work stoppage. Selection of the contingency MGFD may be based on anecdotal evidence suggesting that a MEC and/or MPPEH item with a larger MFD may be present at the site. Greatest fragmentation distance sources of information for both the primary and contingency MGFDs, in order of preference, are: (1) the latest DDESB Technical Paper (TP) 16 Fragmentation Data Review Form; or (2) DDESB TP-16 Primary Fragment Range Generic Equations Calculator (GEQ). Fragmentation Data Review Forms and GEQ printouts for MEC and/or MPPEH listed in Table 3-1 shall be included in Appendix B of the submission. Identify the primary and contingency MGFDs in a table, an example of which is shown in Table 3-1. Ensure that each MGFD identified in this table is included in Table 6-1. Identify source documents in table notes. When the ESS covers multiple MRSSs, create separate primary and contingency MGFD tables for each site.

Table A-1.--MGFD and Contingency MGFD

MGFD type	Munition item	HFD (ft)	MFD-H (ft)
Primary-1	20-mm Mk I HEI projectile (a)	73 (c)	645 (c)
Primary-2	20-mm M97 HEI projectile (a)	66 (c)	651 (c)
Contingency-1	37-mm M63 HE projectile (b)	118 (c)	1,044 (c)
Contingency-2	3-in/50 Mk 27 projectile (b)	180 (c)	1,823 (c)

Table notes:

The RI Report could not positively identify the specific 20-mm projectiles found (ABC, 2010). Therefore, two common 20-mm projectiles are identified as Primary MGFDs.

From interviews included in PA Report (XYZ, 2004).

From Fragmentation Data Review Form (DDESB, 2012).

If while executing a munitions response, an MEC item is discovered which has a greater MFDH, HFD, or K328 distance than the ESS-approved MGFD all operations will be halted and the project manager who will notify COMMARCORSYSCOM for guidance.

c. If the approved ESS included:

(1) Only a Primary MGFD; operations will resume only after the amended ESS is approved and all safeguards associated with the newly selected MGFD are in place. The change in MGFD will be documented in the AAR.

(2) Both a Primary MGFD and one or more contingency MGFDs; for a munition falling between the primary and contingency MGFD, the project manager will notify COMMARCORSYSCOM of the new MGFD and verify that explosives safety protections required by the munition item found, (the first contingency, or next contingency MGFD) have been implemented.

(3) Any munition resulting in greater fragmentation hazards than the contingency MGFD will result in all munition response activities being halted until an ESS Amendment can be approved.

d. Maximum Credible Event (MCE). At a site where only bulk explosives or non-munition items are known or suspected to be present, the MCE will determine the appropriate ESQD arcs and EZs. The MCE is determined by using the maximum amount of explosives allowed to be present.

4. MEC and/or MPPEH Migration. Describe naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, wave action) that could cause the migration or exposure of MEC and/or MPPEH, and all procedures for monitoring and managing such. Identify the frost line depth. Describe controls which will be in place for MEC and/or MPPEH left above the frost line but below the proposed removal depth.

5. Detection and Positioning Technologies. Since the detection and positioning technologies to be employed directly impact the overall effectiveness of the response actions and the residual explosives safety hazards, briefly describe each.

a. - Detection Equipment, Method, and Standards. Summarize the techniques and equipment which will be used to detect subsurface MEC and/or MPPEH. When describing the detection methods, include the rationale used to select them. Address limitations and mitigating actions, if any, e.g., equipment, terrain, soil type. Identify the performance standards. Include any contractual or regulatory standards that are being imposed. Summarize methods used to establish or validate the performance standards, e.g., use of industry standard objects (ISOs) emplaced in an instrument verification strip (IVS). If an IVS is used, specify what ISOs were buried and at what depths. If ISOs were used in an IVS, there must be a corresponding discussion in Section 7.1, which addresses the use of ISOs as blind seeds used as part of the Geophysical System Verification (GSV) program. If advanced anomaly classification technologies are to be used, explain what methods will be used to establish or validate their expected performance. Affirm that the same detection technologies are being used to acquire and reacquire anomalies. To assure compliance with the Navy Hazards of Electromagnetic Radiation to Ordnance (HERO) program, identify the extent to which radio frequency emissions from the detectors will affect known or suspected MEC items which have electromagnetically-susceptible initiators or fuzes. Note: since magnetometers and gradiometers are passive devices, they do not transmit an energy field and need not be HERO certified.

b. Positioning System, Method, and Standards. Identify the positioning system to be used and the methods by which it will be employed. Include any contractual or regulatory positioning system standards that are being imposed. This information is not required for construction support unless the project calls for reacquisition of anomalies.

c. Equipment Checkout. Describe daily checkout procedures for each critical piece of equipment, e.g., detectors, navigational equipment.

d. Data Collection and Storage. Summarize the various processes (e.g., hardware, software, and storage media) which will be employed to collect, process, and archive data amassed during the response action. This information is not required for construction support unless the project calls for reacquisition of anomalies.

6. Response actions

a. Response Technique. Identify the overall munitions response techniques being proposed (e.g., surface removal, excavation, LUCs). If multiple techniques will be employed, describe each in terms of who is doing it, and how and when it is to be done. Provide details regarding vegetation reduction, if being performed. Describe the equipment and processes to be employed. Identify the measures which will be taken to protect vegetation reduction operators from the explosive and non-explosive hazards associated with the operation. If a mechanized MEC processing operation is being proposed, describe the equipment and operation. If low input mechanized operations are being proposed provide justification for the low-input categorization. Describe the types of protections, including engineering controls, which will be employed to defeat hazardous fragments and protect essential personnel. Shield thickness and barricade design shall be based on the MGF and approved on a case-by-case basis. Describe the types of blast overpressure protections, including personnel protective measures and engineering controls, which will be employed to reduce arcs or reduce minimum separation distances. Describe the processes by which UXO technicians intrusively investigate and recover MEC and/or MPPEH. Describe how recovered MEC and/or MPPEH will be hazard classified in accordance with OP 5 Volume 1. Describe the decision tree used by the SUXOS and the Unexploded Ordnance Safety Officer (UXOSO) to determine whether MEC and/or MPPEH are unsafe to move, or safe to move to the designated collection point or storage location. State that MEC safe-to-move

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decisions must be documented in writing prior to movement. Collection points must be within the boundary of the site and be separated from intentional detonations by HFD of the MGF in order to prevent propagation. If engineering controls are being used the HFD will be the expected sandbag throw distance, but not less than 66 feet. Discuss use of munitions handling equipment and how compliance with either OP 5, or the contractor's safety standard, is to be met.

b. Exclusion Zones

(1) Identify EZs for the primary and contingency MGFs identified in example Table 3-1 in an EZ table as shown in example Table 6-1. Include a separate EZ table (6-1.1, 6-1.2, etc.) for each site. Sources for Table 6-1 information, in order of preference, are: (1) the latest DDESB TP 16 Fragmentation Data Review Form for hazardous fragment distance (HFD), MFD and blast overpressure distances, and (2) the GEQ. Calculate blast overpressure using the appropriate K-factor and the NEW from any source. EZs will be shown graphically on maps in Appendix C of the submission. Identify source documents in table notes using an abbreviated citation such as "(DDESB, 2012)", with complete citations included in Section 13. Fragmentation Data Review Forms and GEQ printouts for MEC and/or MPPEH listed in Table 6-1 shall be included in Appendix B of the submission.

Table 6-1.--EZs for MRS

Item		Fragmentation		Blast			
MGFD	NEW	HFD	MGD	K328	K40	K24	K18
20-MM MK I HEI Projectile	0.27 (b)	73 (b)	645 (b)	98 (b)	12 (b)	7 (b)	5 (b)
20-mm M97 I HEI Projectile (a)	0.18 (b)	66 (b)	651 (b)	86 (b)	11 (b)	6 (b)	5 (b)
37-mm M63 HE Projectile (b)	0.085	118 (b)	1,044 (b)	144 (b)	18 (b)	11 (b)	8 (b)

Table notes:

TNT equivalent weight.

From Fragmentation Data Review Form (DDESB, 2012).

(2) Identify by site the operation(s) to be conducted. Characterize each operation as having the potential for either an unintentional or intentional detonation, including the

collection point (CP). Identify all exposed sites. Lastly, identify the basis and size of the ESQD arcs. ESQD arcs shall be shown on ESQD maps in Appendix C of this submission. Place all of this information in a Controlling EZ table such as example Table 6-2. Include a separate controlling EZ table for each site. Only identify in table notes those data sources which were not previously identified in Table 6-1. Affirm in the Section 6.2 narrative that the selected K18 distances are used only when essential personnel wear hearing protection which provides ≥ 9 decibel attenuation.

Table 6-2.--Controlling EZs for MRS

Operation	Sited AS	ES	Basis	Notes
Manual Operations	Unintentional detonation	UXO teams	K40 of MGF	Excavating with hand tools
Manual Operations	Unintentional detonation	Public and non-essential personnel	HFD of the MGF	
Mechanized (low input operations)	Unintentional detonation	Essential Personnel	K24 of the MGF	Excavating with an excavator and mechanically screening the soil
Mechanized (low input operations)	Unintentional detonation	Public and non-essential personnel	HFD of the MGF	
Collection Point	Unintentional detonation	Explosive Operations	HFD of the MGF	Maximum NEW where K40 does not exceed HFD of the MGF
Collection Point	Unintentional detonation	Other Collection Points	K11 of other collection points	
Collection Point	Unintentional detonation	Intrusive Operations	IMD of the MGF	IMD from intrusive operation to collection point
Detonation	Intentional detonation	Public and all personnel	MFD of the MGF	
Portable magazine	Above ground magazine	Non-essential personnel in structures	IBD	OP 5 Table 7-9
Portable magazine	Above ground magazine	Non-essential personnel in the open	PTR	OP 5 Table 7-9

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(3) Identify in example Table 6-3 all potential explosion sites (PESs) such as magazines and explosives operating buildings that encumber any part of the site. If the project contains multiple sites and multiple PES encumbrances, then add a column identifying which sites are encumbered by which PESs. Alternately, include a separate table (6-3.1, 6-3.2, etc.) for each site. Use the same source document citation protocol described in paragraphs 6.2.1 and 6.2.2.

Table 6-3.--Potential Explosion Sites

PES Bldg/ Area	PES Type/ Operation	Closest Distance to Site (ft)	IL/K18 From PES (ft)	PES explosives limits by class/division (c/d) (lbs)					
				1.1	1.2.1 (MCE)	1.2.2	1.2.3 (MCE)	1.3	1.4

(4) Describe how the EZ is controlled. Describe what will be used as an entry control points (ECP), e.g. barricade, and where they will set up. Identify the contact information to be included on each ECP. Note that all ECPs must be depicted on the ESQD maps. If a waterway is encumbered by an ESQD arc, identify how and where spotters will be used to ensure operations stop if the EZ is compromised.

(5) Describe the site EZ access protocol. In general, access to EZs is limited to personnel essential to the operation being conducted. However, under specific conditions, authorized visitors may be granted access to the EZ when operations are being conducted. In addition to general MRS access requirements, formal written procedures addressing EZ access must be developed as part of the ESS. The UXOSO is responsible for conducting an operational risk management (ORM) assessment in accordance with reference (n) prior to allowing authorized visitors access to the EZ during munition response operations. In addition, the UXOSO must determine the maximum number of personnel (essential personnel and authorized visitors) that can be in the EZ at one time. The ratio of UXO-qualified escorts to visitors will be determined by the UXOSO based on this site-specific operational risk analysis. Based on the risk posed by the munitions response operation underway, the UXOSO may determine that access to the EZ is unsafe for visitors. However, every effort should be made to accommodate the authorized visitor's needs. With concurrence of the project

manager, the UXOSO will grant EZ access to authorized visitors. A request for authorization will be provided that includes: names of the individual requesting access, the identification of emergency contacts for these individuals, purpose of visit; task(s) to be performed; and rationale to support EZ access. Personnel requesting access must submit their request to the project manager and UXOSO at least ten working days prior to the proposed date of the site visit. Prior to entry, all authorized visitors must receive a site-specific safety briefing describing the specific hazards and safety procedures to be followed within the EZ for operations underway that work day. Each authorized visitor must acknowledge receipt of this briefing in writing. Authorized visitors must be escorted at all times by a UXO-qualified person assigned to the project. Any authorized visitor that violates the established safety procedures will be immediately escorted out of the EZ and/or site. Other requirements, such as Occupational Safety and Health Administration (OSHA), may also apply.

c. MEC and/or MPPEH hazard classification, movement, transportation, and storage. Describe separately how MEC and/or MPPEH items will be moved, transported, and stored.

(1) Hazard Classification. Affirm that all recovered MEC and/or MPPEH will be managed as C/D 1.1 unless otherwise classified by NOSSA (N85).

(2) Movement. Describe how the SUXOS and UXOSO determine that a MEC and/or MPPEH item is safe to move on site and how that agreement is documented prior to movement.

(3) Transportation. Describe how recovered MEC and/or MPPEH items will be transported, both on and off site. Note that if any MEC and/or MPPEH believed to pose an explosive hazard is to be transported off site, it must be certified as material documented as an explosive hazard (MDEH) prior to transport. For MDEH to be transported off-site for storage or treatment, affirm that an EOD technician from the responding EOD unit, a UXO contractor, UXO Technician III (or higher), or other designated technically qualified and certified person will certify the items as safe to transport prior to being offered for shipment following criteria in OP 5, Table 14-1. When regulations are in conflict, DOT regulations shall apply and the originator of the conflicting regulation should be notified immediately.

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(4) Storage. Affirm that OP 5 Volume 1 requirements shall be strictly adhered to by UXO contractor and EOD personnel during handling and storage. Describe how and where recovered MEC and/or MPPEH items will be held and/or stored. Describe how and where donor charges will be stored. If just-in-time or on-demand donor charges will be delivered to the site in lieu and then so state.

d. MEC and/or MPPEH Disposition Processes. Describe separately the disposition processes for MEC and/or MPPEH items.

(1) For MEC, briefly describe the use of a planned or established on-site open burn/open detonation (OB/OD) area to treat MEC recovered during a munitions response. If MEC or MDEH is being shipped off site identify the location (military or civilian) to which the material is to be transported and affirm that it is DDESB site-approved. The explosives status of any MEC leaving the site must be properly assessed and documented. All items leaving the munitions response site are considered solid waste and must comply with applicable laws and regulations governing solid waste.

(2) For MPPEH, briefly describe the processes and procedures which will be used to assess and document MPPEH as either Material Documented as Safe (MDAS) or MDEH in accordance with OP 5 Volume 1. This description must include all potential sources of MPPEH, including intentional detonations. MPPEH that cannot be certified as MDAS must be certified as MDEH prior to leaving the site. Address the processes by which the materials explosives safety status is assessed and documented and its chain of custody is maintained. For MDAS, identify how the MDAS will be demilitarized and recycled and affirm that the recycler will provide the UXO contractor with a certificate of destruction. For MDEH, the criteria in paragraph 6d(1) above must be met. For non-munitions debris, briefly describe the processes and procedures which will be implemented in order to prevent it from being comingled with MPPEH, MDAS, and MDEH.

e. Explosively-Contaminated Soil. For soil contaminated with MC above explosive thresholds, address methods used to reduce explosives concentrations to a non-reactive level or to reduce explosive hazards. For screened soil once contaminated with MEC and/or MPPEH (including small arms ammunition) being shipped off site, describe the clean-soil certification process and associated documentation.

f. Contaminated Buildings. Identify and describe processes being proposed to disassemble and/or demolish explosively-contaminated buildings and installed equipment.

g. Operational Risk Management. As required by reference (n), all operations undertaken by or for the Marine Corps must incorporate ORM principles into all phases of planning, operations, and training. Since munitions response actions involve inherent risks, the project manager shall evaluate those risks using facts, prudence, experience, judgment, and situational awareness using Table 6-4 as an example.

Table 6-4.--Hazard Analysis

Process Step	Hazard	Triggering Event	Initial Risk Index	Hazard Mitigation	Final Risk Index
1.	Manual MEC removal operations	MEC reacts to impact or movement during soil removal	C/II/3	Initial mechanized excavation beside anomaly; final excavation with hand tools	D/IV/5
2.	Mechanized MEC screening operations	MEC reacts to high-energy, uncontrolled mechanical forces	C/II/3	Use of blast shields (fragment protection) and K24 distance (blast overpressure protection)	C/IV/5

h. Contingencies. Describe alternative actions that may be implemented should site conditions prevent the primary approach from working efficiently or effectively. As an example, if the proposed operation involves mechanically screening soil using a 1-inch screen, but soil consistency prevents it from passing through the screen. Contingency MGFs shall not be identified here, but in Section 3.b

7. Quality Control (QC) and Quality Assurance (QA). Each munitions response project shall have a QC program administered by the UXO contractor and a QA program administered by an

independent, third-party source. The complexity of the QC and QA programs is dependent on the nature of the project. Both the UXO Quality Control Specialist (UXOQCS) and the UXO Quality Assurance Manager (UXOQAM) must meet the minimum qualification standards identified by DDESB TP-18 for the UXOQCS. If diving is required for the execution of underwater QC/QA tasks, the UXOQCS/ UXOQAM diver must meet the applicable diving standards in accordance with reference (aa).

a. QC Implementation. Describe the QC program by summarizing the QC processes to be employed and the standards against which the UXOQCS will be evaluating project quality (e.g., project quality objectives or contractual and/or regulatory requirements). Identify the pass/fail criteria for each criterion and the corrective action processes which will be employed should the UXOQCS identify a failure. Use a table such as the following to do this:

Table 7-1.--QC Methods

Operation	Inspection	Audit	Pass/Fail Criteria
Site Preparation: establish site boundaries; Identify MPPEH/MDEH holding area; Erect soil erosion controls, barricades, and entry control points	Conforms to Project Plan, Work Plan, SOPs, QCP, QAPP, etc.	Location of Site boundaries, MPPEH/MDEH Holding Area, erosion control efforts, barricades and entry control points	IAW Work Plan criteria and the ESS site plan.
Instrument validation, grid placement and equipment acceptance	Conforms to Project Plan, Work Plan, SOPs, QCP, QAPP, etc.	Checkout and, operation of geophysical instruments (including documentation)	100% detection and selection of MEC, MPPEH, and other metal items with one dimension > 3 inches.
Boundary survey (e.g., GPS)	Conforms to Project Plan, Work Plan, SOPs, QCP, QAPP, etc.	Professional license verification, equipment checkout against known control monument for vertical and horizontal accuracy.	Site boundaries achieve centimeter tolerance for traverse closure.

Operation	Inspection	Audit	Pass/Fail Criteria
Vegetation reduction	Conforms to Project Plan, Work Plan, SOPs, QCP, QAPP, etc.	Anomaly avoidance provided by UXO Techs. Personal protective equipment worn IAW the Health and Safety Plan.	Brush cut to no more than 6 inches above surface.

b. QA Implementation. Identify the independent, third-party source that will execute the project UXO QA program on behalf of the project manager. Identify tasks assigned to the UXOQCM which should include, but are not limited to, oversight of the following:

- (1) UXO contractor quality compliance with contract plans and specifications as defined in the Project
- (2) Plan, Work Plan, SOPs, QCP, QAPP, etc;
- (3) Inspection/evaluation/audit processes; and
- (4) Blind seeding program. Note: The UXOQAM has the authority to install blind seeds as part of the UXO QA program.

c. The UXOQCM also has authority to stop work if operations are found to be out of compliance with contract requirements and/or specifications.

8. Technical Support

a. EOD. Identify the military EOD unit that may be supporting this project, and reference the memorandum of agreement or other document which shows the understanding of support.

b. UXO Contractor. Affirm that all UXO personnel performing UXO duties meet or exceed the requirements of DDESB TP-18 for their respective jobs. In accordance with reference (e) contractors involved in the storage and handling of ammunition and explosives must be prepared to produce documentation that shows their employees performing these tasks have been trained, found qualified, and are certified by the contractor. This documentation will be made available upon request and subject to review by Marine Corps representatives. Affirm that all geophysical team members are trained for their respective jobs. If operations include diving, affirm that all

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divers meet applicable standards of: OSHA 29 CFR 1910, applicable State Department of Labor requirements; EM 385-1-1, Safety and Health requirements. All contractor employees performing munitions response duties shall have received the required 40-hour hazardous waste operations and emergency response (HAZWOPER) training (including HAZWOPER refresher training, if appropriate). Additionally, the SUXOS shall have received OSHA-mandated supervisory training. The UXOQCS and the UXOSO shall have received specialized training in quality and safety, respectively. Although the size and scope of MR projects may vary, each project is required to have a SUXOS, a UXOQCS, and a UXOSO. For smaller projects, the UXOQCS and UXOSO may be the same person. Under no circumstances shall the SUXOS also serve as either the UXOQCS or UXOSO.

c. Physical Security. Identify the extent to which Arms, Ammunition and Explosives physical security, private security forces, and/or protective barriers are required while munitions response actions are underway. This includes security of munitions storage facilities, open excavations, EZs, and the job site after operational hours. Include entry control points (ECPs) and waterway spotter locations on maps and describe how the ECPs will be controlled.

9. Environmental, Ecological, Cultural, and/or other Considerations

a. Regulatory Statute, Phase, and Oversight. Identify the regulatory statute governing the proposed munitions response action. Identify the regulatory agency or agencies providing oversight and any legally binding dates for actions to occur.

b. Environmental, Ecological, Cultural, and/or other Considerations. Address any additional environmental, ecological, cultural, or other considerations that may impact the proposed munitions response actions.

c. Non-Explosive Soil. Describe the management of soil (or other media) contaminated with explosives at concentrations that do not present an explosive hazard.

10. Residual Risk Management

a. Land Use Controls. Summarize all LUCs, both institutional controls (e.g., state, county, city ordinances, deed restrictions, signage) and engineering controls (e.g., fencing, capping) that are to be placed on the real property.

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b. Long-Term Management. Describe site management, including maintenance, monitoring, record-keeping, 5-year reviews, etc. that are initiated to manage potential residual risks after response objectives have been met.

11. Safety Education Program. Address methods to be used to educate the public or receiving entity on the hazards/risks associated with MEC and/or MPPEH that may remain following the proposed munitions response action.

12. Stakeholder Involvement. Briefly describe the extent to which stakeholders are involved and summarize how their concerns, if any, regarding the explosives safety and the environmental aspects of the munitions response are being addressed.

13. References. This section may be used to list documents referenced in the ESS.

14. Appendices

a. Appendix A "Supporting Explosives Safety Data". Include Fragmentation Data Review Form(s) or calculation sheets generated from other TP 16 tools.

b. Appendix B "ESQD Maps". The following information shall be shown on the ESQD maps (scale 1:400 preferred, but multiples of 100 required):

(1) The planned locations for MEC and/or MPPEH response-related operations and surrounding MEC response operations.

(2) ESQD Arcs/EZs. Contact COMMARCORSYSCOM to determine EZs for multiple MGFDS or complex processes (e.g., controlled burning of contaminated facilities, use of barricades and shielding or any other engineering controls designed to protect personnel or facilities).

(3) ECP and waterway spotter locations.

(4) Storage location(s) and associated ESQD arc(s) for demolition explosives and/or recovered MEC and/or MPPEH.

(5) MCE and associated ESQD arc(s) for explosive soil and contaminated buildings.

(6) All ES and PES and their relationships, whether on or off installation property. Each must be properly labeled.

(7) All other primary ESQD arcs.

(8) Map scale bar and text, revision date, project name, and legend.

c. Additional information that may be included on the ESQD maps:

(1) Areas that contain or are suspected to contain MEC and/or MPPEH.

(2) Areas that were suspected to contain MEC and/or MPPEH, but that research or site characterizations have subsequently shown do not contain such.

(3) Areas that the ESS does not address, but that either a previous ESS has addressed or a future ESS will address.

(4) The current, determined or reasonably anticipated future land use of the site that is known or suspected to contain MEC and/or MPPEH.

(5) The ownership and land use of adjacent properties, as appropriate.

(6) Any other situation that may influence or require consideration during the response (e.g., over-flight corridors, traffic routes).

(7) Soil sampling locations when the property involves concentrations of explosives in the soil high enough to present an explosive hazard.

Appendix B

Munitions Response Site Self-Assessment Checklist

1. Purpose. This MRS self-assessment checklist is intended to be used by project managers to evaluate the extent to which their UXO contractor complies with applicable environmental, safety, and occupational health requirements related to the management of MEC and/or MPPEH.

1.	Environmental
a.	If the project generates Explosive Hazardous Waste (EHW) and/or Waste Military Munitions (WMM) is it being properly managed?
b.	Is generated EHW/WMM being tracked by location and treatment status?
c.	Is EHW/WMM being managed in accordance with a Hazardous Waste Management Plan? (Note: This may be included in the Work Plan)
d.	Is the EHW/WMM storage area being managed properly regarding storage time?
e.	Is EHW/WMM in storage labeled properly?
f.	Have all WMM/EHW Site Managers (storage) been properly trained?
g.	Is the EHW/WMM storage area being inspected at the required interval?
h.	Are WMM/EHW transported off site being properly manifested?
i.	Is the transported WMM/EHW being shipped off site by a qualified Hazardous Waste Transporter?
j.	Is WMM/EHW being shipped off site properly identified by its hazardous waste codes?
k.	For WMM/EHW being shipped off site are copies of the hazardous waste manifest being retained for three years?
l.	Is the discharge of rinse water generated during the decontamination of explosively-contaminated buildings being managed in accordance with all terms or conditions of EPA, State, or locally issued permits?
m.	Are dredge spoils being disposed of at sites which have been selected, prepared, and are being used in accordance with EPA, State, or U.S. Army Corps of Engineers issued permits?

2.	Explosives Safety
a.	Are applicable explosives safety publications available and current?
b.	Is a placard specifying the explosive limits posted or painted on either the inside front wall or inside the front door of the magazine? (b)
c.	Is the complete Explosives Safety Submission approval package maintained at the project site?
d.	Has the UXO contractor developed standard operating procedures (SOPs) to address all explosive operations being conducted?
e.	Has the UXO contractor developed, validated, approved, and used SOPs for ammunition and explosives (A&E) and MPPEH operations wholly under its control?
f.	Do personnel responsible for the technical requirements and execution of the process review SOPs on a continuous basis?
g.	Is access to an exclusion zone (EZ) while munitions response operations are occurring limited to essential personnel and authorized visitors?
h.	Has the Senior UXO Supervisor developed formal, written procedures addressing EZ entry, including authorized visitor access?

2.	Explosives Safety
i.	Is recovered MEC being managed as hazard class/division 1.1, unless assigned differently, and assigned an appropriate storage compatibility group?
j.	When storage of recovered MEC and/or MPPEH at the site is necessary, is it stored separately from serviceable explosives?
k.	Is the inhabited building distance EZ and A&E security controls for collection points being maintained if the recovered MEC and/or MPPEH items remain at the collection point when there are no intrusive munitions response operations taking place?
l.	Are multiple collection points separated by at least K11 based on the total net explosive weight of the MEC and/or MPPEH items in each collection point?
m.	Are portable and mobile radios properly labeled with the Hazards of Electromagnetic Radiation to Ordnance (HERO) unsafe and HERO susceptible ordnance separation distance as indicated in the HERO survey report?
n.	Is Personal Protective Equipment (PPE) purchased by or furnished to employees being used properly?
o.	Is PPE properly maintained?
p.	Is a red (bravo) flag displayed prominently near the entrance of any building or location when work involving A&E is in progress?
q.	Is only authorized/approved equipment used for A&E operations?

3.	MPPEH
a.	Are all structures or open areas used to store MPPEH site approved?
b.	Are all structures or open areas being used to store MPPEH secure?
c.	Are explosives limits posted for MPPEH processing and storage locations?
d.	Are adequate controls in place to prevent comingling of MPPEH awaiting documentation of its explosives safety status as material documented as safe (MDAS)?
e.	Is the drum and/or structure used to hold MDAS secure?
f.	Is MPPEH stored in covered or closed containers?
g.	Is MPPEH documentation being performed by individuals who are designated in writing to perform these tasks?
h.	Does MDAS have the required two independent inspections?
i.	Does the activity have a process in place to ensure proper chain of custody for MDAS?
j.	Is documentation for MDAS items properly completed?
k.	Are personnel who assess the explosives safety status of MPPEH qualified to do so?

4.	Quality Assurance/Quality Control
a.	Does the UXO contractor have a Quality Control (QC) program and is a UXO QC Specialist (UXOQCS) assigned?
b.	Is the UXOQCS not supervised by the SUXOS?
c.	Is the Quality Assurance (QA) program administered by an independent, third-party activity?
d.	Is there a Quality Assurance Project Plan (QAPP)?
e.	Does the QAPP cover the entire scope of the MR project?
f.	Are the Project Quality Objectives being implemented in accordance with the QAPP?

4.	Quality Assurance/Quality Control
g.	Does the QAPP identify a mechanism, (e.g., a nonconformance report or deficiency notice) that formally documents nonconformance and requires root cause analyses, corrective actions, and approved departures?
h.	Does the QAPP identify the pass/fail criteria for each task and the corrective action processes which will be employed should the UXOQCS identify a failure?
i.	Does the UXOQCS issue daily QC reports and are the reported facts consistent with other contractor production reports?
j.	Has the UXO contractor implemented the three phases of quality (preparatory, initial, and follow-up) and is the UXOQCS inspecting each definable feature of work by phase?
k.	Has the UXO contractor implemented the Geophysical System Verification process and has the UXOQCS installed an Instrument Verification Strip and emplaced blind seeds?

5.	Security
a.	Are barricades set up at EZ entry points to deter unauthorized access to areas that are known or suspected of containing military munitions?
b.	Is the EZ established at the approved distance?
c.	Are magazines fenced at a minimum of 30 feet (outer clear zone) or 20 feet (inner clear zone), not placed closer than intermagazine distance (based on magazine explosive limit) to a magazine, and not closer than intraline distance to operating buildings?
d.	Are guards assigned to protect A&E which has been recovered, but which has not been secured in magazines?
e.	Are high-security locks being used to secure magazines?
f.	Are keys to magazines stored separately from other keys and accessible only to those individuals whose official duties require access to them?
g.	Are keys either in the physical possession of authorized personnel or in approved storage?

6.	Storage
a.	Have all locations where A&E are being handled or stored obtained Explosives Safety site approval?
b.	Are "portable" magazines properly sited?
c.	Are commercially built, pre-engineered "portable" magazines/magazine groups properly grounded to provide 25 ohms or less ground resistance?
d.	Are magazine ground systems tested, inspected and records maintained as required?
e.	Are magazines free and clear of extraneous materials?
f.	Is there a firebreak or cleared space (vegetation maintained at a maximum of 18 inches) at least 50 feet wide around each magazine?
g.	Are correct hazard/fire division symbols posted on magazines?
h.	Are requirements for A&E stored in containers being observed?
i.	Are empty container requirements being met?
j.	Are different types of A&E stored together? If so, is storage compatibility being maintained?
k.	Are partially filled containers of A&E marked "light box"?
l.	Are A&E inventory records being properly maintained?

7.	Training and qualifications
a.	Have all UXO personnel conducting munitions responses actions been trained and qualified in accordance with the Department of Defense Explosives Safety Board Technical Paper 18?
b.	Has the UXOQCS and the UXO Safety Officer received specialized training in quality and safety, respectively?
c.	Has the UXO contractor obtained from the Bureau of Alcohol, Tobacco, Firearms, and Explosives an Explosives Users License/Permit?
d.	Are personnel qualified at defined levels/work tasks/SOPs as applicable?
e.	Have all site workers received their initial Hazardous Waste Operations (HAZWOPER) training?
f.	Have all managers and supervisors of site workers received supervisory training?
g.	Have all site workers, managers, and supervisors received HAZWOPER refresher training annually?
h.	Have all personnel engaged in explosives operations been certified by qualified medical personnel to be physically qualified, and do all site workers possess a current medical surveillance examination certificate?
i.	Do all explosives drivers possess a current explosive driver license or certificate?
j.	Do all civilian A&E and hazardous material drivers meet commercial driver's license endorsement requirements?
k.	Do all explosives drivers possess a current medical certificate to transport explosives?
l.	Do UXO contractor personnel who, by contract requirement, are tasked with the responsibility of transporting or preparing shipments of MEC and/or MPPEH for transport over public traffic routes (PTRs) meet all training requirements of 49 CFR Part 172 and applicable state requirements?

8.	Transportation
a.	Do vehicles used to transport explosives have one first-aid kit, four placards, one fully charged Underwriters Laboratory rated 10 B:C or greater capacity extinguisher, and one set of wheel chocks?
b.	If the vehicle used to transport explosives has a drop-in or sprayed-on plastic bed liner, are the explosives or ammunition items packaged in approved shipping containers that will protect from initiation by static electric discharge?
c.	Are vehicles used for the transportation of A&E given a pre-loading inspection?
d.	Has EOD or UXO contractor personnel determined that recovered MPPEH or MEC items are safe to transport over PTRs, and made this determination in writing (for UXO contractors this written determination must be made by the Senior UXO Supervisor and the UXO Safety Officer)?
e.	Has the UXO contractor obtained written acknowledgement from the lease vehicle carrier to transport explosives?
f.	Are vehicles used over PTRs for the transportation of A&E inspected using DD form 626?

Appendix C

Reference Publications

DoDI 6055.16	Explosives Safety Management Program
DoD 6055.09-M	Ammunition and Explosives Safety Standards
DoD 4140.62	Material Potentially Presenting an Explosives Hazard
DoD 4145.26	DoD Contractor's Safety Manual for Ammunition and Explosives
DoD 4160.21-M	Defense Material Disposition Manual
DoD 4160.28-M	Defense Demilitarization Manual
DoD 5160.65M	Single Manager for Conventional Ammunition
CJCSI 4360.01	Explosives Safety and Munitions Risk Management for Joint Operations Planning, Training, and Execution
SECNAVINST 5100.10J	DON Policy for Safety, Mishap Prevention, Occupational Health and Fire Protection Programs
SECNAV M-5210.1	DON Records Management Program
MCO 3500.27C	Risk Management
MCO 3570.1C	Range Safety
MCO 3571.2G	Marine Corps Explosives Ordnance Disposal (EOD) Program
MCO 4400.150	Consumer Level Supply Manual
MCO P5090.2A	Environmental Compliance and Protection Manual
MCO 5100.29B	Marine Corps Safety Program
NAVMC Directive 5210.11E	Marine Corps Record Management Program
MCO 5530.14A	Marine Corps Physical Security Manual
MCO 8010.13	Class V(W) Administration and Management Program
MCO 8011.5A	Class V(w) Ammunition Policies, Procedures and Information for Training, Programmed Testing, and Security
MCO 8015.3A	Marine Corps Class V (w) Physical Inventory Control Program (PCIP)
OPNAVINST 8020.15A MCO 8020.13	Explosives Safety Review, Oversight, and Verification of Response Actions Involving Military Munitions
MCO 8020.14	Marine Corps Explosives Safety Compliance Program
MCO 8023.3B	Marine Corps Qualifications and Certification Program for Class V Munitions and Explosives

MCO 8025.1E	Malfunction Investigation and Reporting
TM 11240-15/3F	Motor Vehicle Licensing Official's Manual (Marine Corps)
OPNAVINST 8020.14A	Department of the Navy Explosives Safety Management Policy Manual
OPNAVINST 8023.24B	Navy Personnel Ammunition and Explosives Handling Qualification and Certification Program
NAVSEA OP 5 Vol 1	Ammunition and Explosives Ashore
NAVSEA OP 5 Vol 3	Ammunition and Explosives Ashore for Contingencies, Combat Operations Other Than War and Associated Training
NAVSEA OP 2173	Approved Handling Equipment for Weapons and Explosives
NAVSEA OP 3563 Vol 1	Electromagnetic Radiation (Hazards to Fuel and Other Flammable Material)
NAVSEA OP 3563 Vol 2	Electromagnetic Radiation (Hazards to Ordnance)
NAVINST 8020.7D	Hazards of Electromagnetic Radiation to Ordnance Safety Program.
NAVINST 8020.8C	Department Of Defense Ammunition and Explosives Hazard Classification Procedures
NOSSAINST 8020.14	Shore Stations Explosives Safety Compliance (ESI) Program
NOSSAINST 8020.20	Conducting DON Ammunition and Hazardous Materials (AMHAZ) Handling Review Boards
NOSSAINST 8020.22	Explosives Safety Site Approval
NOSSAINST 8023.11	DON Standard Operating Procedures Development Implementation and Maintenance for Ammunition and Explosives
NAVSEAINST 8023.8C	Transportation of Detonators and High Explosives in the Same Motor Vehicle or Aboard the Same Military Aircraft
NAVFAC P-307	Management of Weight Handling Equipment
SWO10-AF-ORD-010	Identification of Ammunition
SWO-AF-HBK-010	Motor Vehicle Driver and Shipping Inspectors Handbook for Ammunition, Explosives, and Related Hazardous Materials
SWO23-AG-WHM-010	On-Station Movement of Ammunition and Explosives by Motor Vehicle
SWO23-AH-WHM-010	Handling Ammunition and Explosives with Industrial Materials Handling Equipment (HME)

Joint Publications 3-16	Multinational Operations
AASTP-1	Allied Ammunition Storage and Transportation Publication
AASTP-5	Allied Ammunition Storage and Transportation Publication
IATG	United Nations (UN) International Ammunition Technical Guidelines (IATG)
DDESB TP 14	Approved Methods and Algorithms for DoD Risk-Based explosives Siting
DDESB TP 15	Approved Protective Construction
DDESB TP 16	Methodologies for Calculating Primary Fragment Characteristics
DDESB TP 18	Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel
DDESB TP 19	User's Reference Manual for the Safety Assessment for Explosives Risk Software
DDESB TP 23	Assessing Explosives Safety Risks, Deviations, and Consequences
DDESB TP 27	Guidance for Implementing and Managing an Explosives Safety Training Program
NAVAIR 00-80-T-103	NATOPS Conventional Weapons Handling Procedures Manual (ashore)
MIL-HDBK-274	Electrical Grounding for Aircraft Safety
MIL-HDBK-1027/3B	Military Handbook Range Facilities & Misc Training Facilities Other Than Buildings
AFMAN 91-201	Explosives Safety Standards
DA PAM 385-64	Department of the Army Pamphlet 385-64; Ammunition and Explosives Safety Standards