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Safety

Explosive and Chemical Site Plan Development and Submission

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SUMMARY of CHANGE

DA PAM 385-65

Explosive and Chemical Site Plan Development and Submission

This rapid action revision, dated 20 July 2009-

- o Provides authorization to use Department of Defense Explosives Safety Board-approved risk-based methodology for approving Explosives Safety Site Plan's that do not meet explosive safety quantity distance criteria (para 2-20).
- o Corrects terminology for chemical warfare material (para 3-5).
- o Clarifies the requirements for chemical safety submissions for chemical warfare materiel sites (para 3-5a, 3-5b, 3-5c, 3-5d, 3-5e, 3-5f, 3-5g, 3-5i, and 3-5s).
- o Clarifies the requirement for Maximum Credible Event modeling by allowing the use of all Army/Department of Defense Explosives Safety Board-approved air dispersion models (para 3-5h).
- o Clarifies the requirements for soil sampling, chemical agent monitoring, Interim Holding Facility, transportation, protective equipment and decontamination, hazard analysis, protective action, conventional ordinance, security, and site closure plans to be described in the chemical safety submissions, not provided in their entirety (para 3-5j, 3-5k, 3-5l, 3-5m, 3-5n, 3-5o, 3-5p, 3-5q, 3-5r, and 3-5t).
- o Makes administrative changes (throughout).


Safety

Explosive and Chemical Site Plan Development and Submission

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:


JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

History. This publication is a rapid action revision. The portions affected by this rapid action revision are listed in the summary of change.

Summary. This pamphlet provides guidance and directions in accordance with AR 385-10. It requires positive action at all levels of command, supervision, and operations to implement the procedures contained herein.

Applicability. This pamphlet applies to the Active Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve, unless otherwise stated. During mobilization, procedures in this publication can be modified to support policy changes as necessary.

Proponent and exception authority. The proponent of this pamphlet is the Chief of Staff, Army. The proponent has the authority to approve exceptions or waivers to this pamphlet that are consistent with controlling law and regulations. The proponent may delegate this approval authority, in writing, to a division chief within the proponent agency or its direct reporting unit or field operating agency, in the grade of colonel or the civilian equivalent. Activities may request a waiver to this pamphlet by providing justification that includes a full analysis of the expected benefits and must include a formal review by the activity's senior legal officer. All waiver requests will be endorsed by the commander or senior leader of the requesting activity and forwarded through

their higher headquarters to the policy proponent. Refer to AR 25-30 for specific guidance.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Director, Army Staff (DACS-SF), 200 Army Pentagon, Washington, DC 20310-0200.

Distribution. This publication is available in electronic media only and is intended for command levels A, B, C, D, and/or E for the Active Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve.

Contents (Listed by paragraph and page number)

Chapter 1

Explosive Safety Site Plan Management, page 1

Purpose • 1-1, page 1

References • 1-2, page 1

Explanation of abbreviations and terms • 1-3, page 1

Policy on existing explosives facilities • 1-4, page 1

Chapter 2

Explosives Safety Site Plans, page 2

Description • 2-1, page 2

Fundamentals of site planning • 2-2, page 2

Facility modifications or change in use • 2-3, page 7

Funding for projects requiring explosives safety site plans • 2-4, page 7

Siting a nonexplosives exposed site • 2-5, page 7

Explosives safety site plans for non-Department of Defense explosives activities on Army installations • 2-6, page 7

Waivers, exemptions, certificate of compelling reasons • 2-7, page 8

*This edition publishes a rapid action revision of DA Pam 385-65.

Contents—Continued

Determining the need for an explosives safety site plan • 2–8, *page 8*
Explosives site plan development and installation-level coordination • 2–9, *page 10*
Preliminary explosives safety site plan • 2–10, *page 10*
Final explosive safety site plan • 2–11, *page 11*
Explosives safety site plan contents • 2–12, *page 11*
Quantity distance computation worksheet • 2–13, *page 12*
Maps • 2–14, *page 13*
Drawings • 2–15, *page 13*
Review and approval of explosives safety site plans • 2–16, *page 14*
Maintenance of approved explosives site plans • 2–17, *page 15*
Automation • 2–18, *page 15*
Technical assistance • 2–19, *page 15*
Risk-based siting • 2–20, *page 15*

Chapter 3

Chemical Safety Submissions and Chemical Site Plans, *page 15*

Chemical safety submission and chemical site plan description • 3–1, *page 15*
Chemical safety submission and chemical site plan contents • 3–2, *page 16*
Situations that require a chemical safety submission and/or chemical site plan • 3–3, *page 16*
Facilities and operations • 3–4, *page 16*
Chemical safety submission for a chemical warfare material site • 3–5, *page 17*

Chapter 4

Explosives Safety Submissions for Non-Time-Critical Munitions Response Actions, *page 18*

Guidelines for explosive safety submissions • 4–1, *page 18*
Background • 4–2, *page 18*
Location • 4–3, *page 18*
Munitions and explosives of concern— amount, type, and depth • 4–4, *page 19*
Explosive safety quantity distance (include maps in appendix A) • 4–5, *page 19*
Start date • 4–6, *page 20*
Munitions and explosives of concern migration • 4–7, *page 20*
Detection equipment and response techniques • 4–8, *page 20*
Disposition technology • 4–9, *page 20*
Technical support • 4–10, *page 20*
Environmental, ecological, or cultural considerations • 4–11, *page 21*
Residual risk management • 4–12, *page 21*
Public/stakeholder involvement—Munitions and Explosives of Concern Safety Education Program • 4–13, *page 21*
Contingencies • 4–14, *page 21*
After action reports • 4–15, *page 21*
Appendix A—maps • 4–16, *page 21*
Appendix B—minimum separation distance calculations • 4–17, *page 21*
Appendix C—shielding • 4–18, *page 21*

Appendixes

- A. References, *page 22*
- B. Explosive Safety Quantity Distance, *page 26*
- C. Explosives Safety Site Plan, *page 27*
- D. Explosion Sites, *page 28*
- E. Request information for explosive safety site plan, *page 30*
- F. Sample letter head for a request for Explosive Safety Site Plan approval, *page 32*

Contents—Continued

Table List

- Table 1-1: Site plan staffing and review process, *page 1*
Table 2-1: Criteria for non-Department of Defense explosives activities on U.S. Army installations, *page 8*
Table B-1: Explosive safety statistical quantity distance relationships (line 1), *page 26*
Table B-2: Explosive safety statistical quantity distance relationships (line 2), *page 26*
Table D-1: Sample explosion sites (potential explosion site) within the inhabited building distance arc (installation), *page 28*
Table D-2: Sample explosion site (potential explosion site) within the inhabited building distance arc (installation), *page 29*
Table E-1: Required information for an explosive safety site plan, *page 30*

Figure List

- Figure 2-1: Example earth-covered magazines, *page 3*
Figure 2-2: Example underground storage facility, *page 4*
Figure 2-3: Example of line of site barricade, *page 5*
Figure 2-4: Example of revetted barricade storage pad, *page 5*
Figure 2-5: Example earth-filled barricade, *page 6*
Figure 2-6: Example quantity distance computation, *page 12*
Figure C-1: Explosive safety site plan, *page 28*
Figure F-1: Sample memorandum request for explosives site approval, *page 33*
Figure F-1: Sample memorandum request for explosives site approval—Continued, *page 34*
Figure F-1: Sample memorandum request for explosives site approval—Continued, *page 35*
Figure F-2: Sample site map of area, *page 36*

Glossary

Chapter 1

Explosive Safety Site Plan Management

1-1. Purpose

Explosives safety site planning is the composite risk management (CRM) process associated with explosives/toxic chemical activities to ensure the minimum risk to personnel, equipment, and assets, while meeting mission requirements. The damage or injury potential of explosions is determined by the separation distance between potential explosion sites (PES) and exposed sites (ES); the ability of the PES to suppress blast overpressure, primary and secondary fragments; and the ability of the ES to resist explosion effects. Planning for the proper location and construction of ammunition and explosives (AE) facilities and surrounding facilities exposed to AE facilities is a key element of the explosives/toxic chemical site planning process. This management process also ensures that risks above those normally accepted for AE activities are identified and approved at the proper management level. If quantity distance (QD) requirements of this pamphlet cannot be met, risk-based siting may be used as a supplement, where risks are extremely low in accordance with guidance provided in this pamphlet, DA Pam 385-64, and DOD 6055.9-STD.

1-2. References

Required and related publications and prescribed and referenced forms are listed in appendix A.

1-3. Explanation of abbreviations and terms

Abbreviations and special terms used in this pamphlet are explained in the glossary.

1-4. Policy on existing explosives facilities

a. The single point of contact for the Explosives Safety Program is the Safety and Occupational Health manager in accordance with AR 385-10, qualified under the Office of Personnel Management standards. The Safety Office is responsible for submission of explosives/toxic chemical safety site plans (see table 1-1). The Safety Office, in coordination with installation master planning and/or facility engineering; operations; logistics; quality assurance specialist, ammunition surveillance (QASAS); fire; health; security; and environmental agencies will develop explosives/chemical safety site plans. Army Commands (ACOMs), Army Service Component Commands (ASCCs), and Direct Reporting Units (DRUs) will review and approve the explosives/toxic chemical safety site plans, chemical site submissions, and explosives safety submissions before forwarding to the U.S. Army Technical Center for Explosives Safety (USATCES). The ACOMs, ASCCs, and DRUs may provide additional limitations through correspondence conveying the Department of Defense Explosives Safety Board (DDESB) approvals to the submitter. The USATCES (as the Department of the Army (DA) Safety Office representative) will review and approve the explosives safety site plans (ESSPs), chemical site submissions, and safety submissions for munitions responses; and forward to the DDESB. The USATCES may provide additional limitations through correspondence conveying DDESB approvals to the submitter.

b. A program should be locally developed to correct deficiencies if such deficiencies exist where previously constructed explosives facilities do not comply with current safety standards. The program priority items should be based on a hazard analysis and risk assessment of each violation.

Table 1-1
Site plan staffing and review process

Installation	
Initiate ESSP	Safety or designated explosives safety representative
Coordination	Installation planners
Coordination	Facility Engineers
Coordination	Mapping
Coordination	Environmental
Coordination	QASAS
Coordination	Installation host if tenant
Coordination	Facility user/operations
Coordination	Fire Department
Coordination	Health agency
Coordination	Security

**Table 1-1
Site plan staffing and review process—Continued**

Installation	
Signature	Commander
Higher headquarters (to be determined by chain of command)	
Review—thorough review, assure all required documentation is included, priority is established and justified.	Safety
USATCES	
Review—thorough review of every aspect of the ESSP in accordance with DOD standard, Army regulations, DA pamphlets, and various other resources. Approve or disapprove.	Risk Management (SJMAC–EST); Toxic Chemical Agent Team (SJMAC–ESM); Ordnance and Explosives Team (SJMAC–ESM)
DDESB	
Review—thorough review of every aspect of the ESSP in accordance with DOD standard and various other resources. Approve or disapprove.	DDESB–PE
USATCES	
Review the approval/disapproval, provide Army approval/disapproval, and forward to installation higher headquarters.	Risk Management (SJMAC–EST); Toxic Chemical Agent Team (SJMAC–ESM); Ordnance and Explosives Team (SJMAC–ESM)
Higher headquarters	
Review the approval/disapproval, provide guidance as necessary and forward to installation.	Safety
Installation	
Initiate action as necessary and maintain permanent file of complete ESSP and approval.	Safety

Chapter 2 Explosives Safety Site Plans

2-1. Description

An ESSP describes in text and graphics the relationship between a proposed potential explosion/toxic chemical site, essential personnel and facilities, and nonessential personnel and facilities. It also contains a description of the construction specifications and placement of required auxiliary equipment. Explosives safety site plans document the results of the explosives site planning process. An ESSP package consists of all the information necessary to demonstrate compliance with the explosives safety standards (especially QD) for explosives storage or operations. Once approved, the ESSP identifies storage and operational limitations, and provides a tool for the management of associated risks. Installations must then implement controls to put the information contained in a site plan into use.

2-2. Fundamentals of site planning

a. Explosives clear zones or hazard zones. The clear zone is the area that is encircled by the explosives safety QD arcs. The Safety Office (or QASAS when safety or commander assigns responsibility for explosives safety) and installation planning board/facility engineering are responsible for monitoring and controlling construction and facility use inside explosives clear zones. Management and control of the explosives safety clear zones is an essential part of the explosives safety site planning process. Plans for future facilities and operations should be considered when determining or reviewing proposed site locations.

b. Mapping requirements for explosives clear zones. Explosives clear zones for all approved ESSPs must be reflected on the installation master plan (IMP). For tiered siting, only the largest explosives clear zone need be shown. The explosives clear zone must reflect the inhabited building distance (IBD).

c. Net explosive weight. Net explosives weight (NEW) limits listed in ESSPs are determined based on the activity to take place at the site and the separation distances available.

(1) Storage PESs are normally sited for the maximum NEW of each hazard class/division (HD) (1.1, 1.2.1, 1.2.2, 1.2.3, 1.3, 1.4) material allowed at the proposed site, based on the separations available.

(2) The NEW limitations at operating sites should consider the quantities and types of ammunition or explosives required to conduct the intended operations and the separations available.

(3) Plans for future facilities and operations should be considered when determining or reviewing proposed site locations.

(4) Sited NEW limits are often maximum limits whereas “licensed NEW limits” and “SOP NEW operating limits”

are minimum quantities, for the shortest period necessary while exposing the fewest personnel to hazards commensurate with requirements to accomplish the mission.

d. Protective construction. Hardening an ES or constructing a PES to suppress explosion effects to provide an appropriate degree of protection may allow a reduction of the separation distances required by QD tables. The rationale and supporting data that justify any such QD reduction shall be submitted to the DDESB with the site and general construction plans for approval. The DDESB has approved reduced QD for structures and containers listed in DDESB TP 15, table AP1-4.

(1) *Earth-covered magazines.* Any earth-covered structure that meets the soil cover depth and slope requirements of DA Pam 385-64. Earth-covered magazines have three possible structural strength designations (7-bar, 3-bar, or undefined). The strength of an earth-covered magazine's headwall and doors determines its designation. If an earth-covered magazine's drawing number is not listed in DDESB TP 15, then it is considered "undefined." When appropriately separated from each other, earth-covered magazines provide virtually complete protection of AE against the propagation effects of an explosion. New construction of previously approved 7-bar and 3-bar earth-covered magazines must meet the minimum requirements of the current revisions of the approved drawings. Earth-covered magazines may be approved for storage of a maximum of 500,000 pounds NEW (226,795 kilogram net explosives quantity (NEQ)) (see http://wbdg.org/design/ammo_magazines.php for more information on explosives storage).



Figure 2-1. Example earth-covered magazines

(2) *Barricaded open storage modules.* A module is a barricaded area composed of a series of connected cells with hard surface (for example, concrete, packed earth, engineered materials, and so forth) storage pads separated from each other by barricades. Barricaded open storage modules provide a high degree of protection against propagation of explosion. If flammable/combustible materials are present in nearby cells, subsequent propagation of explosion by fire is possible. Module storage is considered a temporary, expedient method and may be used as determined necessary. Barricaded open storage modules may be approved for storage of a maximum of 250,000 pounds NEW (113,398 kilogram NEQ). Storage shall be limited to AE that will not promptly propagate explosions for mass fire between modules, and that are not susceptible to firebrands and fireballs. These restrictions allow storage at K1.1 separation. Only the following AE are approved for modular storage:

(a) Robust HD 1.1 AE (for example, high explosive (HE) bombs, fuzed or unfuzed with or without fins) when stored on nonflammable pallets.

(b) Ammunition and explosives contained in nonflammable shipping containers.

(c) Module storage of AE in flammable outer packaging shall be minimized. Ammunition and explosives in flammable outer packaging must be covered with fire retardant material. Combustible dunnage or other flammable material shall not be stored within 100 feet of modules.

(d) When fire retardant materials are used to cover AE stored in modules, ventilation shall be provided between the covers and the stored AE to minimize the effects of solar heating on the AE.

(3) *Underground storage facilities.* Underground storage facilities may consist of a single chamber or a series of connected chambers and other protective construction features. The chambers may be excavated or natural geological cavities. To qualify as an underground facility, the minimum distance from the perimeter of a storage area to an exterior surface shall be greater than $0.25 W^{1/3}$ ($0.10 Q^{1/3}$).



Figure 2-2. Example underground storage facility

(4) *Barricades*. An intervening barrier, natural or artificial, of such type, size, and construction as to limit in a prescribed manner the effect of an explosion on nearby buildings or exposures. Properly constructed and sited barricades, and undisturbed natural earth have explosives safety applications for both protecting against low-angle, high velocity fragments and reducing shock overpressure loads very near the barricade. Barricades provide no protection against high-angle fragments or lobbed AE. The barricade must be thick enough so that it reduces fragment velocities to acceptable levels and high enough so that it intercepts the ballistic trajectories of the fragments of concern. The slope at the end of the barricade must be taken into account to assure that “line of site” (fig 2-3) between stacks is achieved or end is revetted as in figure 2-4 (see Definitive Drawing 149-30-01). See example of earth-field barricade in figure 2-5.

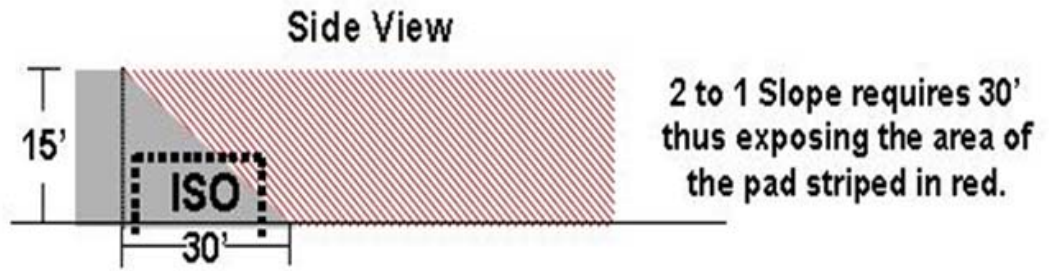


Figure 2-3. Example of line of site barricade



Figure 2-4. Example of revetted barricade storage pad



Figure 2-5. Example earth-filled barricade

(5) *Earth-filled, steel-bin-type barricades (ARMCO revetments or equivalent)*. These barricades are used to separate AE awaiting scheduled processing (for example, AE on a flight line, AE awaiting transfer to preferred storage, and so forth). They are designed to limit the maximum credible event (MCE), for QD siting purposes, of AE properly positioned in separate cells by preventing prompt detonation to adjacent cells; however, all assets in the series of cells are at risk of significant damage or loss.

e. *Quantity distance – K factors*. Net explosives weight is used to calculate QD by means of a formula $D = K * W^{1/3}$, where “D” is the distance in feet, “K” is a factor (also called K-factor) that is dependent upon the risk assumed or permitted, and “W” is the NEW in pounds. When metric units are used, the symbol “Q” denotes NEQ in kilograms. In the formula $D(m) = K_m * Q^{1/3}$, the distance “D” is expressed in meters. Thus, the units of “K” are feet/pounds^{1/3} and “K_m” are meters/kilogram^{1/3} in the two systems. The value of “K” in English units is approximately 2.52 times “K_m.” For example, if $D(m) = 4.36 * Q^{1/3}$, then $D(ft) = 11 * W^{1/3}$. Distance requirements determined by the formula with English units are sometimes expressed by the value of “K,” using the terminology K9, K11, K18, to mean K = 9, K = 11, and K = 18.

f. *Tiered explosives site plans*. Tiered siting is used for multiple explosives limits for a single PES based upon specific mission designation. Tiered ESSPs may be useful when the NEW/QD of a PES varies because of operational requirements (for example, day-to-day exercise, war plan, contingency/combat/military operations other than war (MOOTW); it is not practical on a day-to-day basis to meet the required QD separation to all ES for the largest possible NEW/QD. Under the tiered ESSP concept, the responsible commander may take management actions (for example, removal of personnel or equipment, redesignation of PES or ES) before introducing explosives or increasing the NEW for QD (NEWQD) of a PES.

(1) To prepare tiered ESSP’s, determine the NEWQD required for each type of activity at the PES and the QD separation required to each ES for each NEWQD, and determine if management actions may be taken to meet the required QD separation. If the required QD separation cannot be met even with management actions, process a waiver or exemption.

(2) Prepare a management plan to document management actions required for each tier of the ESSP. This management plan may be implemented as a base operation plan, memorandum for record, memorandum of agreement, supplement, or other appropriate means. The management plan must specify—

- (a) Description of each management action required.
- (b) Conditions under which each management action will be directed and when they will take place.
- (c) The organization responsible for implementing each management action.
- (d) Requirement for periodic review of the management plan to ensure continued viability of the planned management actions.

(3) Tiered ESSP's will include the approved ESSP and site license for each tier and reference the authorized management.

2-3. Facility modifications or change in use

Existing explosives facilities and exposed facilities within explosives clear zones may require modification or change in use to meet changing mission requirements. Such modifications and changes in use must be evaluated to determine if they affect the application of explosives safety requirements as approved in the original ESSP. Examples of situations requiring a new ESSP are—

- a. Utilization of the facility has changed (for example, explosives storage facility has changed to an operating location).
- b. Increased NEWQD.
- c. Introduction of NEWQD where none existed in previous ESSP.
- d. Different hazard divisions are introduced.
- e. Overall floor space (footprint on the map) is increased.
- f. Additional personnel performing a different function are introduced.
- g. Effectiveness of built-in safety features is compromised (for example, opening is made in a substantial dividing wall (SDW)).
- h. Facility operations are conducted by a different tenant or Service which can change the hazard distances required.

2-4. Funding for projects requiring explosives safety site plans

Expend only limited funds on a project requiring an ESSP prior to approval of the ESSP. Actual construction of a new facility, modification of an existing facility, or use of an unapproved site shall not occur until DDESB final ESSP approval is received at the installation. The investment could be lost if site plan approval is contingent on changes or new facility requirements that were not considered or adequately addressed during the ESSP preparation and review process. Additional guidance is found in AR 210-20, Real Property Master Planning for Army Installations, AR 420-1, Army Facilities Management, and DA Pam 420-1-2.

2-5. Siting a nonexplosives exposed site

It is preferable to amend the ESSP for a sited facility that exposes the new construction, modification, or change in use of nonexplosives facilities within the IBD arc. In instances where multiple explosives facilities expose the nonexplosives facility, it is acceptable to submit an ES ESSP. These ESSPs will comply with all applicable requirements of this section.

2-6. Explosives safety site plans for non-Department of Defense explosives activities on Army installations

- a. The responsible commander must consider the possible impact to current and future DOD mission requirements in the event of a mishap.
- b. The ESSPs for non-DOD explosives activities on Army installations are prepared in accordance with the requirements of this pamphlet, DA Pam 385-64, and DOD 60055.9-STD.
- c. The non-DOD activity will be evaluated based on intermagazine distance (IMD) between multiple PESs to ensure nonpropagation. Where IMD is not met, then the non-DOD sites will be added to determine the applicable IMD or IBD to DOD sites.

Table 2–1
Criteria for non-Department of Defense explosives activities on U.S. Army installations

To From	Non-DOD storage	DOD/Joint storage	Non-DOD operations	DOD operations	Shared launch facilities	DOD nonexplosives facilities/operations nonrelated
Non-DOD storage	Check for IMD	IMD	Check for IMD	IBD	IBD	IBD
Non-DOD operations	Check for IMD	IBD	Check for IMD	IBD	IBD	IBD
Shared launch facilities	IBD	IBD	IBD	IBD	ILD	IBD
DOD/Joint storage	IMD	ILD	IBD	ILD	IBD	IBD
DOD operations	IBD	ILD	IBD	ILD	IBD	IBD

Notes:

¹ In table 2–1, “check for IMD” means if IMD is not maintained between each PES, explosives quantities will be totaled.

² Joint storage includes all DOD Service components and the North Atlantic Treaty Organization (NATO) standard ammunition.

2–7. Waivers, exemptions, certificate of compelling reasons

When strategic or compelling operational requirements necessitate deviation from the standard—

a. The added risk to personnel or property must be properly documented and approved at the proper level of command.

b. Both the risk and methods used to reduce the risk to an acceptable level must be documented (see DA Pam 385–30, DA Pam 385–64, and FM 5–19).

c. A Certificate of Risk Assessment or waiver that permits temporary deviation from explosive safety standards must be documented.

(1) Waivers cannot be sited or approved by DDESB.

(2) Waivers and their supporting risk analysis must be reviewed annually for changes, for example, encroachment, increase in hazard, mission requirements.

(3) All approved waivers must be on file and QD arcs added/coordinated with the master plan.

d. A Certificate of Risk Acceptance or an exemption that permits long-term noncompliance with explosive safety standards for strategic or compelling operational requirements must be documented.

e. A certificate of compelling reason (CCR), granted by the Assistant Secretary of the Army (Installation and Environment), to build or perform a major modification on a structure that violates or will violate the provisions of DA regulations and pamphlets must be documented. The commanders of ACOMs, ASCCs, and DRUs must certify such projects are essential because of operational necessity or other compelling reasons. Expenditure of funds in violation of DA regulations and pamphlets (new construction, modifications, and so forth) requires a CCR. A CCR is valid for the life of the facility.

2–8. Determining the need for an explosives safety site plan

Contact the USATCES using command channels for military training and/or operations (other than contingencies and war) conducted outside designated military ranges that are not covered in paragraph 2–8a and 2–8b, below.

a. *Situations requiring explosives safety site plans.* The ESSP will be developed and submitted for review and approval for the following situations:

(1) New construction of AE facilities; includes but not limited to manufacturing, handling, storage, maintenance, inspection, demilitarization, and testing of AE.

(2) New construction of nonexplosives facilities within an explosives clear zone.

(3) Ammunition and explosives facility modification, change of mission, or change of operations that introduce new, additional, or increased risks (for example, operational changes, HD, toxic chemical agent hazard, personnel exposures, NEW).

(4) Modification or change of use of non-AE facilities within an explosives clear zone that require application of more stringent explosives safety criteria, reference paragraph 2–3, above.

(5) Contingencies, combat, MOOTW, and associated training.

(a) *Permanent.* Those AE related facilities where operations are expected to continue for more than 12 months.

(b) *Recurrent.* Those AE related facilities where operations are expected to occur on a periodic basis regardless of the duration of the operation. These locations may be sited using compensatory actions, such as facility evacuation or

change-of-use, to minimize the risks associated with AE operations (an approved tiered site plan is appropriate and required before commencing operations).

(6) Existing AE facilities without formally approved ESSPs.

(7) Sites used repeatedly, although not continuously as an ammunition site (other than training and development, proof, and testing ranges used to fire ammunition for which approved surface danger zones have been developed per AR 385–63 or DA Pam 385–63).

(8) Range support facilities (for example, ammunition holding areas, storage pads, resupply points, ammunition transfer points (ATPs), loading docks, burn pans, and handling areas) that are designed, constructed, and used for recurring ammunition operations and that are located on or near ranges. Range support facilities that are only used to store and handle HD 1.4 ammunition do not require ESSPs.

(9) Areas used repeatedly for tactical field training in ammunition support operations (for example, a grid square within a range used for training units in the establishment of field ammunition supply points (ASPs) or ATPs). These areas will be sited as an external footprint for anticipated ammunition operations. Tactical positions (for example, field ASPs and ATPs) within such sited areas that are an inherent part of a training scenario do not require an ESSP. However, units training within these tactical areas will perform a risk analysis of their ammunition operations to ensure they do not present an explosives safety risk to other units or assets.

(10) Locations that are used for training explosives ordnance disposal (EOD) personnel, combat engineers, and other ammunition technicians in the destruction or treatment (for example, open burn or open detonation) of AE. However, when such locations are on a range impact area that is sited per AR 385–63 and the QD arcs remain within the controlled area of a range, the locations do not require an ESSP. Combat engineer training such as cratering, breaching, cutting steel or timber, or similar operations do not require an ESSP.

b. Situations not requiring explosives site plans. Situations not requiring explosives site plans, but will be managed locally using CRM.

(1) Site and general construction plans are not required for facility modifications, change of mission, or change of operations that do not introduce additional explosives hazards or do not increase NEW, chemical agent hazards, or personnel exposure.

(2) Storage and associated handling of HD 1.4S.

(3) Interchange yards when used exclusively for the interchange of vehicles or railcars between commercial carrier and DOD activities, to conduct external inspection of the vehicles and railcars, and to conduct visual inspection for the external condition of the cargo in vehicles and railcars that passed the external inspection.

(4) Inspection stations used only for external visual inspection of vehicles or railcars, visual inspection of the external condition of the cargo packaging in vehicles and railcars that have passed the external inspection, and interchange of vehicles, trailers, and railcars between commercial carriers and DOD activity.

(5) Parking of aircraft loaded with specific munitions (HD 1.2.2 gun AE, 30 millimeter or less, HD 1.3 captive missiles, aircraft defensive flares or chaff, and HD 1.4 AE) while in designated aircraft parking areas that meet airfield criteria (and associated handling of these munitions) provided the quantity of munitions involved in the operation is limited to a single aircraft load.

(6) The handling of HD 1.3 and HD 1.4 material (300 pounds NEW) necessary for ships' security and safety-at-sea (reference DOD 6055.9–STD on pier and wharf facilities).

(7) Storage of limited quantities of HD 1.2.2, HD 1.3, or HD 1.4, for reasons of operational necessity; for example, hangars, troop buildings, and manufacturing or operating buildings. Fragmentation shielding shall be provided for HD 1.2.2.

(8) Training ranges where ammunition is present only for distribution to troops, crews, or vehicles in training and where no permanent/fixed structures exist.

(9) Inert storage accessed by personnel related to the AE mission.

(10) Locations used for a demilitarization processing operation of expended .50 caliber and smaller cartridge casings and are located outside the IBD from all PES (see para 2–5, above).

(11) Minor modifications or rehabilitation of existing facilities necessary to—

(a) Support an emergency requirement for a limited time, not to exceed 30 days.

(b) Provide operating or maintenance line modifications due to manufacturing process changes or adapting a line to other end items where modifications do not introduce additional hazards or increase the net explosives capacity or chemical agent hazard for which the facility was designed or sited.

(12) Certain contingency, combat, MOOTW, and associated training, for example those temporary AE related facilities where operations are not expected to continue for more than 12 months and are not recurrent, or for which advanced planning and approval are impractical.

(a) Requires a risk assessment for the proposed operation. This assessment shall weigh the need for the facility against the potential effects of a mishap (for example, mission impact, loss of resources, turnaround times, and so forth).

(b) Requires a schedule for the cessation of explosives operations or submittal of a site plan if the operations exceed 12 months.

(13) Training, development, proof, and testing ranges used to fire ammunition for which approved surface danger zones have been developed per AR 385–63 and DA Pam 385–63.

(14) Firing positions, for both direct and indirect weapons systems, regardless of weapon system, that meet established local range control requirements.

(15) Training in common combat engineer tasks involving operations such as cratering, breaching, cutting steel or timber, or similar operations on designated military ranges. These missions are governed by AR 385–63.

(16) Proposed sites that cannot comply with all Army/DOD siting criteria (see AR 385–10 for criteria for obtaining a CCR).

(17) Ammunition and explosives sites built prior to 1 January 1958 provided the facility is used for its original purpose and where the explosives hazards have not changed since construction. Newer facilities must not have encroached on or changed the original siting. Documentation of the facilities must be permanently recorded in the installation files and as a minimum must contain—

(a) The effective date of the applicable standards under which the facility was constructed.

(b) The date the facility was either approved, from an explosives safety viewpoint, for use or was first used. Note that the date of construction and original use information must be documented in the permanent files of the installation.

(18) Demilitarization processing equipment and operations for expended .50 caliber and smaller cartridge casings. A demilitarization operation for processing expended .50 caliber and smaller cartridge cases can be treated as a nonexplosive operation provided—

(a) Cartridge casings to be processed are screened prior to processing.

(b) Only equipment approved by USATCES for explosives safety will be used for such operations. Equipment fielded under the Ammunition Peculiar Equipment Program is automatically considered to have received approval from USATCES.

(c) Demilitarization processing equipment is operated within the manufacturer's specifications and restricted only to the processing of expended .50 caliber and smaller cartridge casings.

(d) Demilitarization processing operations must be located outside IBD from all PES.

(e) Installation commanders shall establish and implement procedures for screening and segregating the material to be processed.

2–9. Explosives site plan development and installation-level coordination

a. The installation master planner and/or facility engineers must coordinate with the Safety Office (or QASAS when safety or commander assigns responsibility for explosives safety) as soon as a need is identified to build, modify, or change the use of any explosives facility or nonexplosives facility located within an explosive clear zone/IBD arc.

b. The installation master planner and/or facility engineers assist in the development of the ESSP by providing current maps, drawings, and technical facility design assistance such as construction, grounding, and lightning protection system (LPS).

c. Site for maximum NEWs based on actual separation distances; however, license and store only mission essential quantities.

d. Coordinate the ESSP with the user, installation master planner, facility engineers, QASAS, fire, health, security, and environmental agencies, as appropriate.

e. When tenant facilities, including other Services, are exposed, coordinate the ESSP with the tenant unit for concurrence. When ESSPs expose host nation tenant facilities, notify the host nation commander of the exposure and obtain host nation approval as required by international treaty or status of forces agreement.

f. In cases where the explosives clear zone or hazard zone encroaches onto adjacent DOD or other Government agencies, for example, Army, Navy, Air Force, Marine Corps, Coast Guard, or Department of Energy, obtain written acknowledgement from the exposed Service component for inclusion with the ESSP.

g. The ESSPs involving contractors must be reviewed and approved through the Defense Plant Representative Office, Administrative Contract Office, and the designated acquisition commanders safety office prior to Army processing.

2–10. Preliminary explosives safety site plan

A preliminary ESSP is used for new construction or changed footprint on existing structures. The preliminary ESSP establishes the required NEWQD for AE facilities. A preliminary ESSP is recommended for new construction and modifications to avoid the risk of unnecessary expenditure of time and funds. Note that a safety engineer, QASAS, and other subject matter expert should coordinate with the project architect/engineer through the contracting officer at the 10 percent design phase to discuss explosives safety issues, requirements, and specifications to include a request for preparation of all required maps and drawings to be available for 35 percent design review, approval, and incorporation into site plan submittal package

- a. The preliminary ESSP provides intended uses for the facility, the site location, and the distance relationship between the PES and the ES, and as many other details as are known about the siting.
- b. A preliminary ESSP approves the physical location and siting of the planned facility based on the explosives safety standards.
- c. Specifically address the action for which approval is requested (for example, contract award, facility demolition, construction footprint).
- d. Submit for preliminary ESSP approval when the design phase of the project is between 10 and 35 percent complete.
- e. Request preliminary ESSP approval when a compressed time line (such as that imposed by the design/build process) may require contract award or site preparation activities (for example, facility demolition, grading or other site preparation) before all of the information required is available.
- f. Submit a request for final ESSP approval as soon as the construction drawings and any required structural engineering analyses are completed.

2-11. Final explosive safety site plan

A final ESSP will include the same basic information as a preliminary ESSP and verify the facility footprint and NEW. Note that a safety engineer, QASAS, and other subject matter expert should coordinate with the project architect/engineer through the contracting officer at the 10 percent design phase to discuss explosive safety issues, requirements, and specifications to include a request for preparation of all required maps and drawings to be available for 35 percent design review, approval, and incorporation into site plan submittal package.

- a. The final ESSP must include construction techniques and the specifications of installed and auxiliary equipment and validates the facility footprint or location.
- b. The final ESSP is submitted when the design phase of the project is about 60 percent complete.
- c. Actual construction of a new facility, modification of an existing facility, or use of an unapproved site shall not occur until DDESB final ESSP approval is received at the installation in accordance with AR 420-1.
- d. Explosives safety site plans for simple situations and for preexisting sites that do not have an ESSP approval may be accomplished in only one submission so long as all information requirements for a final ESSP are met.

2-12. Explosives safety site plan contents

The ESSPs must include all the information needed for the reviewer to determine if the explosives safety requirements of this pamphlet, AR 385-10, DA Pam 385-64, and DOD 6055.9-STD are met. Although the exact contents of an ESSP may vary depending on the activity to be sited, ESSP's generally include transmittal correspondence, the list of required information (see app E and interactive Web site (when it becomes available), worksheets (app C), list of ES (app D), site location map, installation map, drawings, risk assessments, documented data, and so forth). The transmittal correspondence containing pertinent information and a map may be all that is necessary for some ESSPs. Other ESSPs may require documentation such as detailed drawings, engineering analyses, risk assessments, commanders' acceptance of risk, and so forth, in order to verify compliance with explosives safety requirements. Consider that personnel reviewing the ESSP may not be familiar with the base or operation, including unique terminology, and do not know the mission or specific circumstances. Note that ACOMs, ASCCs, and/or DRUs must endorse the request for expeditious processing with a justification and the date the approval is required.

- a. The preliminary ESSP approval (when applicable) along with any changes, modifications, or specific precautionary measures considered necessary.
- b. The checklist of essential information is at appendix E.
- c. Anticipated personnel limits for the new or modified facility to include a breakdown by room or bay, when appropriate.
- d. The distances between the facility to be sited and all ES within the QD arcs impacted by the project, to include power transmission and utility lines, the installation boundary, public railways, and public highways.
- e. The NEW and HD of the AE that will be stored or handled in the facility to be constructed or modified or that will impact the projects (see app C).
- f. A description of each ES within IBD of the facility to be sited (see app D).
- g. Site maps, at a scale of 1 inch equals 400 feet or metric equivalent. Smaller or larger scale drawings may be necessary to properly reflect certain distance and structure relationships within the area of concern.
- h. Installation maps at a scale of 1 inch equals not more than 5,000 feet or metric equivalent.
- i. When standard drawings exist for the facility and are on file at USATCES or are included in DDESB TP15 and approved as standard (definitive drawings), the drawing does not need to be resubmitted. The ESSP must reference and identify the definitive drawings (see app E).
- j. Approved drawings or general construction details to include materials used, dividing walls, vent walls, firewalls, roofs, operational shields, barricades, exits, types of floor finish, fire protection system installations, electrical systems and equipment, surge suppression, ventilation systems and equipment, hazardous waste disposal systems, LPS, static grounding systems, process equipment, and auxiliary support structures (see para 2-15, below).

k. A summary of the design criteria or specifications for any engineering protections not already DDESB approved. The summary shall include a statement of the design objectives in terms of protection expected to be obtained, the explosives quantities involved, the design loads applied, material properties and structural behavior assumptions, references, and the sources of calculations used.

l. A topography map, with contours (when terrain features are considered to provide natural barricading) or topography that otherwise influence the facility's layout, as in some chemical operations.

m. Discuss future plans that may impact this siting.

n. State that the Installation Planning Board has reconciled this particular ESSP with the IMP. Provide documented evidence such as meeting minutes, dated reference, written record of reconciliation, or the IMP map.

o. Address compliance with ESSP coordination requirements (for example, host nation, tenant units).

2-13. Quantity distance computation worksheet

Use the spreadsheet format at appendix C to provide PES and ES information as follows:

a. Section I—site data.

(1) ESSP number—locally assigned number.

(2) Installation—self-explanatory.

(3) Date—date worksheet is prepared or updated.

(4) PES facility—PES structure/site number.

(5) Facility description—self-explanatory (see sample).

(6) Operation description—self-explanatory (see sample).

(7) Hazardous fragment distance (HFD)—list the NEW limitations based on computations from b, below. Use the most limiting figures. Use NEW and NEQ columns for OCONUS locations.

(8) Remarks—provide all information unique and explanatory for the PES.

b. Section II—exposed sites and potential explosion sites within the inhabited building distance arc. Identify and evaluate all ES and PES that contribute to limiting the NEW/QD for the PES being sited.

(1) List information for exposed sites.

(a) Site number.

(b) Exposed site description (for example, Wilson Road, Boundary Fence, aboveground magazine (AGM)). Note that for earth-covered magazines (ECMs), indicate front unbarricaded, front barricaded, side (S), rear (R), and K-factor (for example, 1.25, 2.75, and so forth). For aboveground structures or sites, indicate barricaded (B) or unbarricaded (U) and K-factor (K18, K30, and so forth), when appropriate.

(c) Distance between PES and ES provide measurements in English and metric overseas. English is adequate for U.S. siting. Note that in certain instances where explosives or personnel exposures are controlled, use an inner wall, room, or bay for distance purposes instead of the outermost facility corner or wall. Thorough narrative explanation and accurate depictions on the maps/drawings are required.

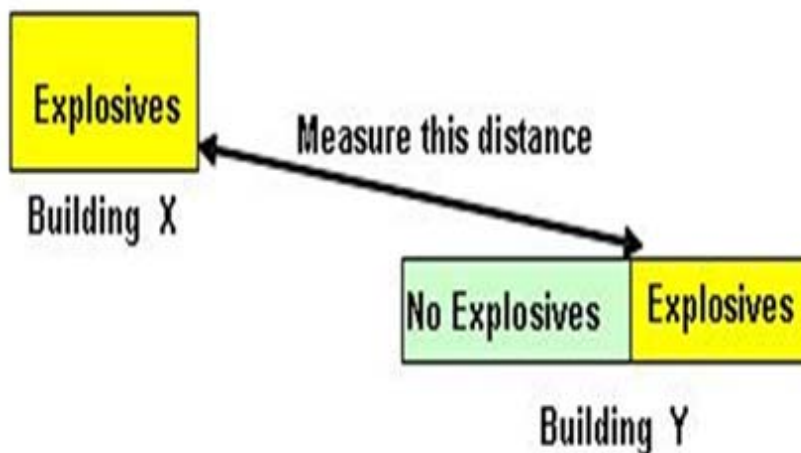


Figure 2-6. Example quantity distance computation

- (d) Protection (for example, public traffic route distance (PTRD), IBD, IMD).
- (2) *Net explosives weight allowed for pounds and net explosives quantity for kilograms).*
 - (a) 1.1
 - (b) 1.2.1 (MCE)
 - (c) 1.2.2
 - (d) 1.2.3 (fragment distance—expressed in parentheses, for example, (18), (21). Note that 1.2.3 is not commonly used/available.
 - (e) 1.3 (expressed in pounds or kilograms, not as physical capacity)
 - (f) 1.4 (usually expressed as mission essential quantity (MEQ)).
- (3) *Other considerations.*
 - (a) Ensure exposures requiring a minimum separation distance (for example, 100 feet for parking areas exclusively supporting the PES) are identified.
 - (b) For nonexplosive ES site plans, identify all PESs within the evaluation zone.
 - (c) For some ES site plans, it may not be necessary to identify all PESs; for example, identifying the nearest PES is sufficient to site unmanned miscellaneous structures requiring 50 feet separation from any PES.
 - (d) Establish a maximum facility NEW/QD limit of 500,000 pounds.

2-14. Maps

Maps of the site and the installation are key elements of the ESSP. The maps should show the exact location of the facility and its relationship to surrounding installation boundaries, facilities, utilities, roads, and operations.

- a. The site map should be scaled at 1 inch equals 400 feet (or metric equivalent). Smaller (minimum 1 inch/600 feet) or larger (maximum 1 inch/200 feet) scale maps may be necessary to properly reflect certain distance and structure relationships within the area surrounding a given project.
- b. The installation map should be scaled at 1 inch equals 5,000 feet (or metric equivalent).

2-15. Drawings

a. Construction information for ECMs, barricades, barricaded open storage modules, special structures, ARMCO revetments, and underground storage must meet the requirements as specified in DOD 6055.9-STD to be considered for reduced separation distances.

b. Facility construction drawings listed in DDESB TP 15 can be referenced by drawing number; inclusion of drawing is only necessary when modifications are applicable. Note that as of the date of the guide, many standard drawings do not comply with the most up-to-date LPS and SDW requirements. Check with USACE or USATCES for more specific information. Note that the USACE Web site (<http://www.usace.army.mil>) lists the COE standard drawings that are considered limited reference. Click on the “Lessons Learned” button and then click on “TM 5-1300 updates” for the verbiage explaining that the current drawings are not to be used for new construction.

c. The LPS drawings must meet the requirements as specified in DOD 6055.9-STD, DA Pam 385-64, and NFPA 780 (always use the most restrictive requirements).

d. Electrical drawings must meet the requirements as specified in DOD 6055.9-STD. Design and installation of electrical equipment and wiring for explosives environments must comply with standards as specified in DOD 6055.9-STD, chapter 6, DA Pam 385-64, and NFPA 70, Article 500 of the Code “Hazardous (Classified) Locations,” (also known as National Electric Code).

(1) Areas containing explosives dusts, or explosives that may through handling produce dust capable of being dispersed in the atmosphere, shall be regarded as class II, division 1.

(2) Areas in which explosives sublimation or condensation may occur shall be regarded as both class I, division 1 and class II, division 1.

e. Operating buildings shall have static grounds bonded to the facility’s grounding system.

f. Approved drawings or general construction details to include—

- (1) Front view.
- (2) Side view.
- (3) Top view.
- (4) Exits.
- (5) Materials used—
 - (a) Roof construction.
 - (b) Outer wall construction particulars.
 - (c) Inner wall construction particulars.
 - (d) Window/glass enhancements.

- (e) Type of floor finish.
- (6) Dividing walls.
- (7) Operational shields.
- (8) Vent walls.
- (9) Firewalls.
- (10) Fire protection system installations.
- (11) Electrical systems and equipment (voltage, explosion proof, distribution, generators, backup, and so forth).
- (12) Ventilation systems and equipment.
- (13) Security system.
- (14) Telephone system.
- (15) Air conditioning.
- (16) Heating (electric, gas, steam, radiant).
- (17) LPS (bonding particulars, terminal particulars, 100 feet sphere).
- (18) Static grounding systems (counterpoise, ground rods, surge suppression).
- (19) Process equipment.
- (20) Auxiliary support structures.
- (21) Barricades (height, base width, top width, length).
- (22) Hazardous waste disposal systems (when applicable).

2-16. Review and approval of explosives safety site plans

a. Explosives safety site plans (both preliminary and final) submitted for DDESB review and approval will be submitted through command safety channels to the director, USATCES. The USATCES will perform Army-level review and approval. The ACOMs, ASCCs, and/or DRUs will formally designate the internal review within their commands. Two copies of the entire submission must be provided to USATCES if the ESSP is submitted in hard copy. Electronic submissions are preferred and will be required by DDESB in 2011.

(1) When a tenant organization is proposing action which requires ESSP review and approval, the tenant organization's review and approval chain will approve the ESSP before submitting the plan to the host installation's ESSP review and approval chain and subsequently to USATCES and DDESB. The ACOMs, ASCCs, and DRUs will formally designate alternate review paths and approving official. Copies of approved alternate review paths will be provided to USATCES.

(2) When an Army PES risks other Service equipment or the appropriate explosives safety arcs encumber other Service real estate, the effected Service originator/reviewer level concurrence/nonconcurrence will be obtained and attached to the submission for review at the remaining Army review levels. The ACOMs, ASCCs, and DRUs will establish procedures to obtain concurrences at each review level below the military Service level. The USATCES will accomplish final Army coordination with military Service level safety offices of the other Services.

b. Each level will review the submission with regard to the technical aspects of explosives safety requirements and provide, as an endorsement of the submission, a command recommendation for approval at the next level of review. If the ACOMs, ASCCs, and DRUs approval authority does not recommend approval, the submission should not be forwarded for Army approval. Any additional conditions or implementing restrictions attached during the review phase become part of the original submission.

c. The USATCES provides the Army level review and approval on properly prepared and submitted routine submissions in about 90 days.

d. The DDESB makes its decision on properly prepared and submitted routine submissions in about 90 days. The ACOMs, ASCCs, and DRUs approval authority must provide the following information when requesting expedited review or approval—

- (1) Date reply is required.
- (2) Proposed contract award date.
- (3) Reason expedited review is required.
- (4) Reasons for not forwarding the submission in time for routine processing.

e. The DDESB approvals are returned to originators through command channels. The addition of conditions or implementing restrictions at any level will be considered additional conditions of approval. These may be more restrictive than the DDESB conditions of approval but may not relax them.

f. A copy of the complete site plan package, together with DDESB and USATCES approval correspondence must be retained as a permanent record at the installation of origin. This information may be subject to review during future DDESB explosives safety surveys and other outside inspections and reviews. Upon closure of installations, forward these files to the USATCES with an explanation of circumstances for historical records.

g. Copies of DDESB final decisions and the complete submittals on which they are based will be maintained at the USATCES permanently. The USATCES maintains an inventory of Army historical files of current and former Army PES.

h. The DDESB's approval of the final ESSP is required before inclusion of the project in the proposed budget year authorization or before NATO or host nation approval. The ACOMs, ASCCs, and/or DRUs will indicate in all DD Form 1391 (FY_, Military Construction Project Data) submitted to HQDA that either the project is not subject to these standards or complies with them and indicate the date and currency of the DDESB approval.

i. Each installation with PES must maintain a consolidated map or drawing of all DDESB approved explosives or toxic chemical sites indicating the real estate encumbered (within the generated inhabited building arcs) by the sitings as well as the controlling ammunition/explosives/toxic chemical siting generating the encumbrance. Future uses of these encumbered areas for construction or personnel presence must conform to the exposures allowed by DA Pam 385-64 and this pamphlet.

2-17. Maintenance of approved explosives site plans

Approved ESSPs (including the approval correspondence from DDESB and USATCES) will be maintained by the installation safety office and using organization. The installation safety office or commander's designated explosive safety representative will validate accuracy of the site plans against current inventories and mission as part of the explosives license reviews.

2-18. Automation

The Department of Defense and the Services have developed software that will automate the development of conventional ESSPs. Two products are currently available: Explosives safety siting (Army preference) and Assessment System for Hazard Surveys (ASHS). Integration of the software into the installation's Geographical Information System is the responsibility of the installation. Experience from software beta testing suggests that support may be required from the software developer to complete the software deployment. That support is provided on a cost reimbursable basis paid by the installation.

2-19. Technical assistance

The USATCES is a source for technical assistance for explosives/toxic chemical site planning. Contact—

a. Address. Defense Ammunition Center, USATCES (SJMACEST), 1 C Tree Road, Building 35, McAlester, OK 74501-9053.

b. E-mail. EST-SitePlan@dac.army.mil.

c. Phone. (918) 420-8919/(918) 420-8808.

d. DSN. 956-8919/956-8808.

e. Facsimile. (918) 420-8503, DSN 956-8503.

2-20. Risk-based siting

a. The DDESB approved the use of a risk-based methodology for approving ESSPs that do not meet explosives safety QD criteria. Army organizations are authorized to use DDESB-approved risk-based methodologies, such as specified in DDESB Technical Paper 14, Approved Methods and Algorithms for DOD Risk-Based Explosives Siting, for risk-based siting. The Safety Assessment for Explosives Risk (SAFER) software tool is one such approved method.

b. In certain situations, risk-based site plans provide commanders and responsible authorities the ability to determine, in consideration of applicable mitigating measures, and accept risk to allow the conduct of operations that, absent a waiver, would not be allowed under the standard Army site plan approval process. The use of risk-based methodologies requires completion of a Certificate of Risk Acceptance per DA Pam 385-30. Risk-based site plans will follow the approval chain for Certificates of Risk Acceptance as outlined in DA Pam 385-30. Once the Certificate of Risk Acceptance is approved, it will be submitted, with the risk-based site plan, to USATCES for Army review and approval. USATCES will submit the Army-approved risk-based site plan to the DDESB for review and approval.

Chapter 3

Chemical Safety Submissions and Chemical Site Plans

3-1. Chemical safety submission and chemical site plan description

A chemical safety submission (CSS) is a document which describes and seeks approval from ACOMs, DA, and the DDESB for construction of new chemical agent facilities and operations or modification of existing facilities and operations. A chemical site plan (CSP) is usually a component of a CSS and describes the physical layout of a site and the relationships between all of the facilities on the site in terms of the type of exposure to the hazards imposed by each facility. The CSP must include maps that graphically display the hazard arcs for all exposures. When necessary for large or complex projects, the CSS may be submitted in two phases; preliminary CSS and final CSS. Generally, a CSP is also required and is included with the CSS. When a CSS and CSP are submitted separately, the CSP should be submitted first and may serve as a preliminary CSS. Approval of a preliminary CSS will often permit the start of initial

construction activities. In certain circumstances, a CSP may be all that is required. In other situations, only a CSS may be required. The USATCES will assist in determining what is required for a particular project.

3-2. Chemical safety submission and chemical site plan contents

General requirements for a CSS/CSP are described in DA Pam 385-61. Additional requirements for recovered chemical warfare materiel (RCWM) sites can be found in DA Pam 385-72. When the CSP is for a facility where operations include explosives, the information described for a conventional ESSP in chapter 2 of this pamphlet is also required. The CSS/CSP is sent for review and approval through command channels, to USATCES for DA approval and to DDESB for DOD approval. There is basic information that is required for active storage locations, demilitarization facilities, and RCWM sites. The format for all three is similar; however, due to differences in mission and operations, some of the information required may vary.

3-3. Situations that require a chemical safety submission and/or chemical site plan

- a.* Construction of a new chemical facility on a new site— CSS and CSP.
- b.* Construction of a new nonchemical facility within the public access exclusion distance (PAED) on an existing chemical site that has an approved CSP— CSS for the new facility and amendment to the existing CSP for the site submitted separately.
- c.* Construction of a new chemical facility on an existing chemical site that does not have an approved CSP— CSS for the new facility and CSP for the site submitted separately.
- d.* Construction of a new nonchemical facility on an existing chemical site that does not have an approved CSP— CSP for the site.
- e.* Construction of a new nonchemical facility on an existing chemical site that has an approved CSP— amendment to the approved CSP.
- f.* Modification of an existing chemical facility that increases NEW limits and/or chemical agent hazards of an existing chemical facility— CSS for the facility and CSP for the site submitted separately.
- g.* Modification of an existing chemical facility on an existing chemical site that affect containment or exposure— CSS for the facility and amendment to the existing CSP for the site submitted separately.
- h.* Recovered chemical warfare material cleanup sites.

3-4. Facilities and operations

The same requirements as an ESSP plus the following requirements—

- a.* A brief narrative concerning the mission and function of the various components of the operation for the reviewers to have a general understanding of the project. The narrative will include a brief explanation of operations to be conducted. It must be written where anyone could read the document and have general knowledge of the operation.
- b.* Description of proposed facilities construction (earth-covered magazine, workshop, and so forth) (standard/nonstandard design).
- c.* Realistic MCE with a reasonable probability of occurring is included. When explosive components are present, the MCE will be based on the MCEs of the most disruptive explosive component.
- d.* Hazard zones calculated and plotted to protect all nonrelated personnel within the exposure limits found in DA Pam 385-61.
- e.* Levels of protective clothing and equipment for each phase of the operation have been defined and operational constraints evaluated by a hazard analysis.
- f.* Hazard analysis, risk assessment, and risk management plan have been developed and used to develop standing operating procedures (SOPs) for the operation.
- g.* Arcs drawn on maps in accordance with DA Pam 385-61.
- h.* Evacuation procedures for personnel within the PAED are developed and included.
- i.* Decontamination and disposal plan for personnel and contaminated items have been developed and included.
- j.* Drawings showing the location of first aid equipment, emergency showers, hot line, personnel decontamination line, filter systems, mask areas, level A protection areas, equipment testing, communication systems, ventilation systems and specifications, wind indicators, command post, television monitors, security guards, fencing, and other items as appropriate.
- k.* Approval in writing from host installation and host installation command.
- l.* A brief overview of the agent-monitoring plan.
- m.* Drawings showing drainage and any sumps that may be in the building.
- n.* Maps (1 inch equals 400 feet) showing explosive classes and limits of neighboring explosive facilities, 1 percent lethality distance of neighboring chemical facilities and the 1 percent lethality distance of the facility/structure being sited. All neighboring facilities, utility services, and installation boundaries must be included and identified.
- o.* Any topographic maps showing location, surrounding area, as well as having the location of the site identified on the map.

- p.* Wind rose showing prevailing wind directions with percentages of wind direction changes plotted by month.
- q.* Actual distances between proposed facility/operation and all other facilities within PAED, other explosives locations (actual or planned) with hazard arcs extending over the proposed facility, other chemical locations (actual or planned) with 1 percent arcs extending over the proposed facility, installation boundaries, ammunition area boundaries, chemical exclusion and limited area boundaries, public railways, waterways, highways, all facilities within PAED identified as to use and occupancy, all facilities within PAED identified as to explosives limits and chemical contents (ammunition, bulk, neat, dilute, type of agent, and so forth), all facilities with QD arcs over the proposed facility identified as to their use, explosives limits, and chemical contents (ammunition, bulk, neat, dilute, type of agent, and so forth).
- r.* Drawings depicting dividing (blast resistant) walls (including engineering design analysis in accordance with TM 5-1300 where appropriate), vent walls, firewalls, roof construction and materials, operational shields and barricades, doors and door hardware, windows with details on frames, mounting and glazing, floor coverings and finishes to be used, fire protection, detection, and suppression systems (sprinklers, alarms, deluges), electrical systems and equipment, heating, ventilation, and air conditioning systems, hazardous waste disposal systems (filters, sumps, and so forth), LPS (100 foot rolling ball), static grounding and bonding systems, cables, wires, pipes, and other conductors entering the facility, security systems, auxiliary support structures to be built/used, all where/if applicable.
- s.* A brief narrative must be provided which defines facility explosives limits stated (HD/SCG), individual bay limits stated, personnel limits, operational controls to be implemented to limit exposures, traffic density stated for nearby public transportation routes (highways, ships channels, railroad lines), all where/if applicable.
- t.* A site closure plan.
- u.* If the proposed construction is for a change house it must also include:
 - (1) Lay out of showers and clothes changing area.
 - (2) A map showing the change house in relationship to all structures, water towers, utility services, and installation boundaries.
 - (3) Decontamination plan for any clothing or items that may be contaminated with agent.
 - (4) If the change house is connected with a laundry lay out of laundry and plan for prevention of cross contamination.
- v.* If the proposed construction includes laboratory operation, it must include—
 - (1) Lay out of laboratory.
 - (2) A map showing the laboratory in relationship to all structures, water towers, utility services, and installation boundaries.
 - (3) Decontamination plan for any items that may be contaminated with agent.
 - (4) Types of floor coverings/finishes to be used.
 - (5) Hood ventilation diagrams with redundant fans.

3-5. Chemical safety submission for a chemical warfare material site

The chemical warfare material (CWM) sites must meet all the requirements of DA Pam 385-64 and the safety and health requirements of AR 385-10 and DA Pam 385-61 (Reference: DACS-SF Memorandum for Distribution; SUBJECT: Approval of Safety Submissions for Non-Stockpile Chemical Warfare Materiel (CWM) Response Activities, 29 February 2000). Safety submissions for a CWM response submitted for review/comment are required to contain the following:

- a.* A cover letter with brief description (one or two lines per subject) that states the location of the CWM site, the type of CWM expected to be found, the start date of the CWM response, the unit submitting the CSS or CWM site plan, and the activity that will be performing the response, the reviewer and date of review, and the point of contact, with phone number and e-mail address.
- b.* Documentation demonstrating that the host installation, if applicable, and any support activities have been provided a copy of and concur with the submission. Such documentation will be submitted in two copies to USATCES and address any matters of concern.
- c.* A brief description of any past munitions-related activities that could have resulted in the presence of munitions and explosives of concern (MEC), including chemical agent.
- d.* The specific types of MEC, including CWM, that are expected to be encountered.
- e.* A description of planned work (work plan). The narrative will include a brief explanation of CWM response activities to be conducted. This brief narrative should be written to allow readers to obtain a general knowledge of the planned response. This narrative is to be included, but separate from the body of the CSS or CWM site plan.
- f.* The start date of any response activities that will result in an intentional contact with CWM or ground-disturbing or intrusive operations in areas known or suspected to contain CWM (for example, sampling, excavation, any disruption of the soil).
- g.* Maps to be included are a regional map and a site map. The CWM site map will show the location of any storage magazines or the Interim Holding Facility (IHF) to be used to temporarily store demo materiel or recovered MEC, the

locations of any planned demo areas (show exclusion zone), and QD/No Significant Effects (NOSE) and 1-percent lethality. All maps will be provided in a legible scale from which features and distances can be clearly determined (for example, 1 inch equals 400 feet).

h. The MCE with Army/DDESB-approved air dispersion model input parameters; include wind rose and average wind speed.

i. A description of any technical support to be provided (for example, by the 20th Support Command (CBRNE), Edgewood Chemical Biological Center, and so forth).

j. A description of the soil sampling plan, if applicable.

k. A description of the Monitoring Plan defining chemical agent monitoring to be used during site activities that have a potential to result in a chemical agent release, including agent type, location, monitoring equipment, and basic procedures employed.

l. A description of the IHF plan, with details on the storage location; type of structure; license for quantity and class of explosives (if applicable); security measures; fencing; construction; utilities; LPS (if applicable) and appliances, if any.

m. A description of the transportation plan providing details on how RCWM will be transported, when it will be transported, and by whom.

n. A description of the task-specific levels of Personal Protective Equipment and the decontamination procedures for personnel and equipment.

o. A summary of the Hazard Analysis of those activities that pose a potential chemical agent and explosives hazard.

p. A description of elements of the protective action plan (in the event of a chemical release) that detail emergency response, shelter or evacuation plans, chemical event reporting, public affairs, security, medical support, environmental monitoring, support, and so forth.

q. A description, if required, of how conventional MEC and MPPEH will be addressed (for example, handled, stored, demilitarized).

r. A description of the CWM site security plan.

s. A description of any coordination made or to be made with civil authorities.

t. A description of site closure plan.

Chapter 4

Explosives Safety Submissions for Non-Time-Critical Munitions Response Actions

4-1. Guidelines for explosive safety submissions

The following are the USATCES guidelines for preparing explosive safety submissions (ESS) for non-time-critical munitions response actions (NTCRA) for conventional MEC. The official DOD requirements for ESS are contained in the DOD 6055.9-STD. If there are any conflicts, the DOD standard takes precedence. Following these guidelines is an outline for completing an NTCRA ESS (see DA Pam 385-64 for ESS requirements for other types of MEC activities (for example, time critical removal actions, intrusive sampling, construction support, and “no DOD action indicated” response decisions) and for the routing and approval process). The NTCRA ESS should—

a. List the table of contents and give the page number for each paragraph.

b. List any acronyms and abbreviations that are used after the table of contents.

4-2. Background

a. Give a brief site history and the reason for munitions response. For example, “This is a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) response to remove unexploded ordnance (UXO) remaining from former range operations.”

b. Give the reason for MEC presence at site. Is it a former impact area, a training area, or an opening detonation/burning ground at a depot that was closed by a base realignment and closure (BRAC) commission?

c. List any previous munitions responses performed on site and any previous ESS approvals for the site.

4-3. Location

a. Describe the region; for example, “The former Doyle Range is located at Fort Benning, GA in southwest Georgia near the city of Columbus in Chattahoochee County.” Include all maps in appendix A.

b. In appendix A, provide maps and show the boundaries of the munitions response area (MRA). Within the MRA, show the boundaries of the munitions response site (MRS) covered by the submission. State in the text the size in acres and also, list the acreage on the map. The recommended scale for these maps is 1:400. Larger scale maps are permissible if necessary to show the entire MRA or MRS. Label the MRA and MRS on the map and either put a line around them or color-code them so the MRS covered by the submission is clearly distinguishable from the MRA in which it lies.

c. In both the text of the ESS and on the maps, explain and show any areas in the vicinity of the MRS containing MEC not addressed by this ESS or previously addressed in a prior ESS. If they will be addressed in a later amendment or ESS state that. Again, show the boundaries of these areas or color-code them to differentiate them from the MRS covered in the ESS.

4-4. Munitions and explosives of concern— amount, type, and depth

a. Give an analysis of MEC found or suspected to be at the site and why. If sampling was conducted as part of site characterization state what MEC (and, if relevant, what munitions debris (MD)) was actually found. If an Engineering Evaluation/Cost Analysis (EE/CA), Remedial Investigation/Feasibility Study (RI/FS), Archives Search Report (ASR), or preliminary assessment was conducted state the results and recommendations. If improved conventional munitions or submunitions are present, check with USATCES for current guidance.

b. Establishing the munition with the greatest maximum fragment distance (MGMFD), the munition with the greatest HFD (MGHFD), and, where applicable, the MCE.

(1) Each MEC item has a calculated maximum fragment distance (MFD). The MFD is the calculated maximum horizontal range of primary fragments for a MEC item. The MGMFD is the MGMFD that can reasonably be expected to exist in the MRS covered by the ESS.

(2) Each MEC item has a calculated HFD. The HFD is the distance to which a MEC item will project hazardous fragments to a density of 1 per 600 square feet. The HFD is equal to IBD (based on fragmentation) for QD purposes.

(3) The MGHFD is the MGHFD that can reasonably be expected to exist in the MRS covered by the ESS (review the fragmentation database at <http://www.ddesb.pentagon.mil/documents.html>).

(4) It is possible that a MRS can have more than one MGMFD or more than one MGHFD. Example: Cases where geophysical investigation and/or intrusive sampling show that different grids within an MRS have different subportions of a MGMFD or MGHFD.

c. List the maximum MCE for buildings or soil contaminated with explosives. For soil to be considered explosive it must have either 10 percent or greater content by weight of secondary explosives or nitroglycerine, nitrocellulose or nitroguanidine, or 2 percent or greater by weight of primary explosives. Secondary explosives are those found in the bursting and/or boosting charges of projectiles, bombs and warheads, such as TNT or RDX. Primary explosives are those found in primers and detonators, such as lead styphnate or lead azide. If buildings are contaminated with explosives give an MCE based on the amount of explosives estimated to be present. This may be based on sampling or past experience with similar operations.

d. If during the removal action, an item with a larger MGFD is found, the ESQD arcs must be adjusted, operations will continue, and an amendment must be submitted. The distances for fragments are found in DDESB TP 16.

4-5. Explosive safety quantity distance (include maps in appendix A)

The QD rules for munitions responses are contained in DA Pam 385-64, chapter 19.

a. List the minimum separation distance (MSD) for both intentional and unintentional detonations (see DA Pam 385-64 for guidance on choosing the correct MSDs).

b. If approved engineering controls are used to reduce the MSD for intentional or unintentional detonations, they must be referenced. The DDESB TP 15 lists approved engineering controls. Use of other engineering controls requires submission of a complete engineering design package with the ESS.

c. The QD maps must show all of the following (1:400 scale is preferred).

(1) Each MRS covered by the ESS and all ES within any MSD arc. For example, if there is a farmhouse in the maximum horizontal fragment range arc both the arc and the farmhouse should be shown on the map.

(2) Explain here what type of magazine will be used to store MEC or donor material (demolition explosives), the explosive storage limit in pounds NEW, and the locations for them.

(a) An LPS is required in accordance with DA Pam 385-64, DOD 6055.9 STD, and NFPA 780. State that the LPS will be installed, inspected, and tested in accordance with DA Pam 385-64.

(b) Show the magazine location on a map and show the IBD arc and the PTRD arc. When no magazine is required because donor material will be brought in as needed, state that.

(c) In some cases, a portable magazine will be placed in the MRS. This is not advisable, but if done, the following must be accomplished before emplacing the magazine: remove MEC from the footprint of where the magazine will lie and, in addition, remove MEC within 75 feet of the magazine footprint. Remove the MEC to the same removal depth planned for the rest of the MRS. After this removal, emplace the magazine and continue removal beyond 75 feet from the magazine. The 75-foot separation distance is a conservative figure based on preventing an accidental detonation during intrusive operations of up to 200 pounds 1.1 (for example, from a 500 pound bomb) from initiating the explosives in the magazine. If project personnel want to remove to a lesser distance than 75 feet from the magazine, then a lesser distance may be used based on 1.1 magazine distances prescribed in DA Pam 385-64.

(3) Show the MSD arc for unintentional detonations. This is normally done by drawing the MSD arc around the entire MRS unless different parts of the MRS have different MSDs, in which case draw multiple arcs for these separate portions of the removal area.

(4) Show the MSD arc for intentional detonations on the map. If shots will be consolidated to a designated location in the MRS, so state and draw the MSD arc around that location only. If shots will be blown in place the MSD arc for intentional detonations must be shown around the entire MRS. If both techniques will be used the largest arc must be shown around the entire area. If the location for intentional detonations is outside the MRS, show it and its MSD arc on the map or a separate map.

4-6. Start date

This is the date surface or intrusive removal activities will begin. State any potential repercussions of a late approval. If possible allow three months for approval from date of submission to USATCES. Contact USATCES if an earlier start date is required.

4-7. Munitions and explosives of concern migration

- a. Wind or water erosion.* Describe if these factors may cause MEC to migrate or become exposed.
- b. Tidal wave and storm actions.* Describe if these factors may cause MEC to migrate.
- c. Frost heave.* List the depth of the frost line recorded for the area. Frost heave is a phenomenon that could push MEC to the surface if the removal action does not go below the frost line and the soil is frost-susceptible. The frost susceptibility of soil is dependent on 3 factors— the ability of the soil to retain water (for example; sand versus clay); the amount of water in the soil (dependent of rainfall, topography, and so forth); and the number of freeze/thaw cycles. If the removal action does not go below the frost line and the soil is frost susceptible, then state what type of periodic monitoring may have to be done (see DA Pam 385-64 for specific information on frost line considerations).

4-8. Detection equipment and response techniques

- a.* State the removal depth. The depth must be appropriate for the site and the future use. If, for example, the future use is residential the depth of clearance should be to depth of detection. If items are suspected to be deeper than can be detected then institutional controls may be required for public safety. For example if the calculated penetration depth of the MGF is 10 feet for the soil type and the detection depth is only 6 feet then a deed restriction and/or construction support may be appropriate.
- b.* State the depth of detection (that is, detection capabilities) for each type of MEC known to exist at the MRS. For example, if the stated depth of clearance is 4 feet but the equipment being used can only detect one of the types of MEC to a depth of 30 inches, something must be done to account for this. Either soil would have to be removed in lifts or the clearance depth adjusted to 30 inches.
- c.* Summarize clearance techniques and the equipment that will be used.
- d.* Describe the quality assurance (QA) and/or quality control (QC) standards that will be used to determine a pass or failure criteria for a grid.
- e.* List any alternate detection or removal techniques if different techniques are being considered in the event the original plans do not work as well as intended. If the alternate detection or removal techniques are approved in advance that will allow a smooth transition and avoid costly delays pending approval of an amendment.

4-9. Disposition technology

- a.* Explain how intentional detonations (that is, demolition operations) will be conducted.
- b.* State whether or not engineering controls will be used for intentional detonations, for example, the sandbag method will be used to reduce the MSD arc for intentional detonations to 200 feet.
- c.* Explain how access within any applicable MSD will be controlled for the area within the MSD arcs, for example, road blocks will be set up, houses will be evacuated, or work will be performed only on days when buildings are empty of workers.
- d.* Describe the process used to inspect, certify, and verify material potentially presenting an explosive hazard (MPPEH) to determine that it poses no explosive hazards. The MPPEH thus determined is no longer MPPEH but is MD. Describe the disposition of MD. For example, “Inspected, certified, and verified MD will be shipped to a smelter for complete melting.” If MPPEH is removed from the grid to a consolidation point prior to being inspected, certified, and verified as MD, the location where it was consolidated must be sited and shown on the map as an explosives storage area.
- e.* Describe any off-site disposal of MEC (if applicable) (for example, transport to a hazardous waste incinerator).

4-10. Technical support

- a.* Describe the technical support for the removal action. For example, if suspected chemical items are found, contact U.S. Army Forces Command’s 20th Support Command (CBRNE) Chemical Warfare Material, 22nd Chemical Battalion (TE). This was formerly Tech Escort (TEU). For unknown items not suspected to be chemical contact EOD for FUDS, munitions response personnel will call the local police department, who will request TEU/EOD support.
- b.* State UXO personnel will meet the qualifications listed in TP 18.

4-11. Environmental, ecological, or cultural considerations

List any environmental, ecological, or cultural considerations if they influence the degree of removal. For example, if there are endangered species living in the area and that prevents denuding the munitions response area so that only a surface removal action can be performed, that must be explained here.

4-12. Residual risk management

a. Describe any land use controls (LUC) and or deed restrictions for the munitions response area. For example, there is a surface use only deed restriction or a deed notice stating that the land was once contaminated with MEC.

b. Explain the long-term management planned for the area. Will there be recurring reviews required every 5 years?

c. Explain any construction support if and when required (see DA Pam 385-64 for requirements).

d. Describe the planned future use of area. For example, residential construction, farming, livestock, and so forth. Include adjacent properties as appropriate. Identify any differences in future use within area.

4-13. Public/stakeholder involvement—Munitions and Explosives of Concern Safety Education Program

Describe any public or stakeholder involvement and MEC safety education programs, for example, there is a restoration advisory board that meets monthly, visitors to the site will be provided brochures describing the residual MEC hazards and actions to take if suspected MEC is encountered.

4-14. Contingencies

a. Potential or anticipated changes may be explained here to prevent the need to submit amendments and corrections. If significant changes to an approved ESS are made, an amendment or correction must be submitted.

b. Major changes affecting explosives safety or the effectiveness of the response require an amendment, for example—

(1) A change in the clearance depth.

(2) A change in LUC.

(3) Any change affecting an MSD or QD arc.

(4) A new magazine storage location or demo ground is established. Note— Submit amendments for approval up the same chain as the original ESS.

(5) A correction, primarily administrative in nature. For example—

(a) A minor change in QA/QC procedures.

(b) A change from a “mag and flag” operation to a geophysical survey based clearance.

(c) A change in MEC contractors. Note— Submit corrections for information only up the same chain as the original ESS.

4-15. After action reports

Two copies of after action reports are required to be submitted to USATCES for all ESS once the removal action is completed (see DA Pam 385-64 for complete instructions).

4-16. Appendix A—maps

Include all maps here. For QD maps 1:400 is the preferred scale.

4-17. Appendix B—minimum separation distance calculations

Include any calculation sheets from TP 16 here.

4-18. Appendix C—shielding

Describe any equipment required to be shielded. If soil is being sifted or removed intentionally with MEC in it then the equipment must be shielded. The shielding must be sufficient to stop fragments from the MGF. If mechanical equipment is being used to remove soil to expose MEC without intentionally moving the MEC (for example, typical practice is to remove soil to within 1 foot of suspect anomaly) it is not required to be shielded.

Appendix A References

Section I Required Publications

AR 385-10

Army Safety Program (Cited in paras 1-4a, 2-7b, 2-8b(16), 2-12.)

AR 385-63

Range Safety (Cited in paras 2-8b(13), 2-8b(15), 2-8a(8).)

AR 420-1

Army Facilities Management (Cited in paras 2-4, 2-11c.)

DA Pam 385-61

Toxic Chemical Agent Safety Standards (Cited in paras , 3-2, 3-4g, 3-4d, 3-4, 3-5t, 3-5.)

DA Pam 385-63

Range Safety (Cited in paras 2-8b(13), 2-8a(8).)

DA Pam 385-64

Ammunition and Explosives Safety Standards (Cited in paras 1-1, 2-2d(1), 2-6b, 2-7b, 2-12, 2-15d, 2-15c, 2-16i, 3-5, 4-3, 4-5c(2), 4-5a, 4-5, 4-7c, 4-12c, 4-15.)

DA Pam 420-1-2

Army Military Construction and Nonappropriated-Funded Construction Program Development (Cited in para 2-4.)

DDESB TP 15

Approved Protective Construction (Cited in paras 2-2d, 2-2d(1).) (Available at <http://www.ddesb.pentagon.mil/>.)

DOD 6055.9-STD

DOD Ammunition and Explosives Safety Standard (Cited in paras 1-1, 2-6b, 2-8b(6), 2-12, 2-15d, 2-15c, 2-15a, 4-1, 4-5c(1)(a).) (Available at <http://www.ddesb.pentagon.mil/>.)

TM 5-1300

Structures to Resist the Effects of Accidental Explosions (Cited in paras 2-15, 3-4r.) (Available at <http://www.usace.army.mil/>.)

Section II Related Publications

A related publication is a source of additional information. The user does not have to read it to understand this regulation.

AR 75-15

Policy for Explosive Ordnance Disposal

AR 190-11

Physical Security of Arms, Ammunition and Explosives

AR 210-20

Real Property Master Planning for Army Installations

DA Pam 385-10

Army Safety Program

10 USC 2692

Storage, treatment, and disposal of non-defense toxic and hazardous materials (Available at <http://www.access.gpo.gov/cfr/index.html>.)

40 CFR

Protection of Environment (Available at <http://www.access.gpo.gov/cfr/index.html>.)

40 CFR 266 Subpart M

Military Munitions Rule (Available at <http://www.access.gpo.gov/cfr/index.html>.)

CEHNC-ED-CS-S-97-3

Safety Submission for On-Site Demolition Container for Unexploded Ordnance, U.S. Army Engineering and Support Center, Rev 1, Apr 98

Definitive Drawing 149-30-01

(Available at http://wbdg.org/design/ammo_magazines.php.)

Definitive Drawing 421-80-04

(Available at http://wbdg.org/design/ammo_magazines.php.)

DDESB TP 10

Methodology for Chemical Hazard Prediction (Available at <http://ddesb.pentagon.mil/techpapers.html>.)

DDESB TP 16

Methodologies for Calculating Primary Fragment Characteristics (Available at <http://ddesb.pentagon.mil/techpapers.html>.)

DOD 4140.62(MPPEH)

Management and Disposition of Material Potentially Presenting an Explosive Hazard (Available at <http://www.dtic.mil/whs/directive>.)

DOD 4160.21-M-1

Defense Demilitarization Manuel (Available at <http://www.dtic.mil/whs/directives>.)

DOD 5100.76M

Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives (Available at <http://www.dtic.mil/whs/directives>.)

DOD TB 700-2

Explosives Hazard Classification Procedures (Available at <http://www.dtic.mil/whs/directives>.)

DODD 4715.11

Environmental and Explosives Safety Management on Operational Ranges Within the United States (Available at <http://www.dtic.mil/whs/directives>.)

DODD 4715.12

Environmental and Explosives Safety Management on Operational Ranges Outside the United States (Available at <http://www.dtic.mil/whs/directives>.)

HNC-ED-CS-S-98-7

Use of Sandbags for Mitigation of Fragmentation and Blast Effects Due to Intentional Detonation of Munitions (Available at <http://www.saj.usace.army.mil>.)

HNC-ED-CS-S-98-8

Miniature Open Front Barricade (Available at <http://www.saj.usace.army.mil>.)

HNC-ED-CS-S-99-1

Open Front and Enclosed Barricades (Available at <http://www.saj.usace.army.mil>.)

HNC-ED-CS-S-00-3

Use of Water for Mitigation of Fragmentation and Blast Effects Due to Intentional Detonation of Munitions (Available at <http://www.saj.usace.army.mil>.)

Joint Hazard Classification System (JHCS)

Official DOD database of final hazard classification data for the military services' ammunition and explosives maintained by USATCES (Available at <http://www.ddesb.pentagon.mil>.)

MIL HDBK 419

Grounding, Bonding, and Shielding for Electronic Equipment and Facilities (This publication may be obtained from the Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.) (Available at <http://acc.dau.mil>.)

MIL HDBK 1008.4.9.1.2.

Fire Protection for Facilities Engineering, Design, and Construction (Available at <http://acc.dau.mil>.)

MIL STD 398

Shields, Operational for Ammunition Operations, Criteria for Design and Tests for Acceptance (Available at <http://assist.daps.dla.mil>.)

National Fire Protection Association (NFPA) Standard 13

Installation of Sprinkler System (Available at <http://www.nfpa.org>.)

NFPA Standard 33

Spray Application Using Flammable and Combustible Materials (Available at <http://www.nfpa.org>.)

NFPA Recommended Practice 77

Static Electricity (Available at <http://www.nfpa.org>.)

NFPA Standard 16

Deluge Foam-Water Sprinkler and Foam-Water Spray Systems (Available at <http://www.nfpa.org>.)

NFPA Standard 30

Flammable and combustible Liquids Code (Available at <http://www.nfpa.org>.)

NFPA Standard 70

National Electrical Code (Available at <http://www.nfpa.org>.)

NFPA Standard 80

Fire Doors and Other Opening Protectives (Available at <http://www.nfpa.org>.)

NFPA Standard 90A

Standard for the Installation of Air-Conditioning and Ventilating Systems (Available at <http://www.nfpa.org>.)

NFPA Standard 90B

Standard for the Installation of Warm Air Heating and Air-Conditioning Systems (Available at <http://www.nfpa.org>.)

NFPA Standard 91

Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids (Available at <http://www.nfpa.org>.)

NFPA Standard 251

Standard Methods of Tests of Fire Resistance of Building Construction and Material (Available at <http://www.nfpa.org>.)

NFPA Standard 780

Installation of Lightning Protection Systems (Available at <http://www.nfpa.org>.)

NFESC 99220001–99220012

Naval Facilities Engineering Service Center High Performance Magazine Definitive Drawings (Available at <http://www.ddesb.pentagon.mil>.)

Occupational Safety & Health Administration (OSHA)

(Available at <http://www.osha.gov/>.)

TM 3-250

Storage, Shipment, Handling, and Disposal of Chemical Agents and Hazardous Chemicals (Available at <http://www.dtic.mil>.)

TM 5-803-7

Civil Engineering Program, Airfield and Heliport Planning Criteria (Available at <http://www.dtic.mil>.)

TM 5-811-1

Electric Power Supply and Distribution (Available at <http://www.dtic.mil>.)

TM 5-811-3

Electrical Design, Lightning and Static Electricity Protection

TM 5-811-7

Electrical Design, Cathodic Protection

TM 5-855-1

Design and Analysis of Hardened Structures to Conventional Weapons Effects

TM 9-1300-250

Ammunition Maintenance

USAEC Report SFIM-AEC-ET-CR-97015

Follow-On Reactivity Study of Primary Explosives in Soil, May 1997

U.S Army Corps of Engineers Pamphlet EP 1110-345-2

Index of Design Drawings for Military Construction

U.S Army Corps of Engineers Publication HNDED-CS-S-95-01

Guide for Evaluating Blast Resistance of Non-Standard Magazines

USATCES Guide

Explosives Safety Site Plan Developer's Guide (Available at <https://acc.dau.army.mil>.)

Section III**Prescribed Forms**

This section contains no entries.

Section IV**Referenced Forms**

DA Forms are available on the Army Publishing Directorate Web site [http://\(www.apd.army.mil\)](http://www.apd.army.mil); DD Forms are available from OSD Web site (<http://www.dtic.mil/whs/directives/infomgt/forms/formsprogram.htm>).

DA Form 2028

Recommended Changes of Publications and Blank Forms.

DD Form 1391

FY__ Military Construction Project Data.

Appendix B Explosive Safety Quantity Distance

B-1. Explosive safety quantity distance relationships

This table shows the QD relationships for various activities.

From	To	Magazine	Loading dock (in storage area)	Surveillance building	Holding yard	Class/inter yard	Pack/ship building	Operating building Line 1	Service magazine Line 1	Loading dock Line 1	Lunch-room/change-house Line 1
Magazine		IMD	IMD	IL ¹	IMD	IMD	IL ¹	IBD ⁵	IBD ⁵	IBD ⁵	IBD ⁵
Loading dock in storage area		IMD	IMD	IL ¹	IMD	IMD	IL ¹	IBD ⁵	IBD ⁵	IBD ⁵	IBD ⁵
Surveillance building		IMD	IMD	IL ¹	IMD	IMD	IL ¹	IL ¹	IL ¹	IL ¹	IL ¹
Holding yard class/inter yard		IMD ²	IMD ²	IL ^{1 2}	IMD ²	IMD ²	IL ^{1 2}	IBD ^{5 2}	IBD ^{5 2}	IBD ^{5 2}	IBD ^{5 2}
Pack/ship bldg		IMD	IMD	IL ¹	IMD	IMD	IL ¹	IL ¹	IL ^{1 2}	IL ¹	IL ¹
Operating bldg Line 1		IMD	IMD	IL ¹	IMD	IMD	IL ¹	IL		IL	IL
Service magazine Line 1		IMD	IMD	IL ¹	IMD	IMD	IL ¹	IL	IMD	IL	IL
Loading dock Line 1		IMD	IMD	IL ¹	IMD	IMD	IL ¹	IL	IL	IL	IL
Operating bldg Line 2		IMD	IMD	IL ¹	IMD	IMD	IL ¹	IBD ⁴	IBD ⁴	IBD ⁴	IBD ⁴
Service magazine Line 2		IMD	IMD	IL ¹	IMD	IMD	IL ¹	IBD ⁴	IBD ⁴	IBD ⁴	IBD ⁴

From	To	Operating building Line 2	Service magazine Line 2	Loading dock Line 2	Lunch-room/change-house Line 2	Field office in ammo area	Administrative areas	Installation boundaries	Public highway and passenger rail	Recreational area	Commercial waterway
Magazine		IBD ⁵	IBD ⁵	IBD ⁵	IBD ⁵	IL ¹	IBD	IBD	PTR	PTR ³	PTR
Loading dock in storage area		IBD ⁵	IBD ⁵	IBD ⁵	IBD ⁵	IL ¹	IBD	IBD	PTR	PTR ³	PTR
Surveillance building		IL ¹	IL ¹	IL ¹	IL ¹	IL ¹	IBD	IBD	PTR	PTR ³	PTR
Holding yard class/inter yard		IBD ^{5 2}	IBD ^{5 2}	IBD ^{5 2}	IBD ^{5 2}	IL ^{1 2}	IBD ²	IBD ²	PTR ²	PTR ^{3 2}	PTR ²

Table B-2
Explosive safety statistical quantity distance relationships (line 2)—Continued

Pack and ship building		IL ¹	IL ¹	IL ¹	IL ¹	IL ¹	IBD	IBD	PTR	PTR ³	PTR
Operating building Line 1		IBD ⁴	IBD ⁴	IBD ⁴	IBD ⁴	IL ¹	IBD	IBD	PTR	PTR ³	PTR
Service magazine Line 1		IBD ⁴	IBD ⁴	IBD ⁴	IBD ⁴	IL ¹	IBD	IBD	PTR	PTR ³	PTR
Loading dock Line 1		IBD ⁴	IBD ⁴	IBD ⁴	IBD ⁴	IL ¹	IBD	IBD	PTR	PTR ³	PTR
Operating building Line 2		IL	²	IL	IL	IL ¹	IBD	IBD	PTR	PTR ³	PTR
Service magazine Line 2		IL	IMD	IL	IL	IL ¹	IBD	IBD	PTR	PTR ³	PTR
Loading dock Line 2		IL	IL	IL	IL	IL ¹	IBD	IBD	PTR	PTR ³	PTR

Notes:

¹ If the PES contains 1.1, use unbarricaded intraline distance (K18) even if a barricade is present.

² Not considered a PES for the particular PES/ES relationship specified. No QD provisions apply.

³ IBD applies if structures (for example, bleachers) are present.

⁴ Intraline distance (K18) may be used if the parallel operating lines are engaged in similar operations and the AE at each present similar hazard. Otherwise, IBD (blast only) applies.

⁵ IBD, blast only applies.

B-2. Additional information

If QD requirements of this pamphlet cannot be met, risk-based siting may be used as a supplement, where risks are extremely low in accordance with guidance provided in this pamphlet, DA Pam 385-64, and DOD 6055.9-STD.

Appendix C **Explosives Safety Site Plan**

C-1. Explosives Safety Site Plan

The following is an example of an ESSP:

C-2. Additional information

For more information on the ESSP, contact USATCES at DSN 956-8919 or commercial (918) 420-8919.

Explosives Safety Site Plan (ESSP)												
Section I - Site Data												
Worksheet												
ESSP #:	CKU-01-06			Installation:	Camp Whatever				Date:	10-Apr-06		
PES Facility	Facility Description		Operation Description		HD MCE	HFD () NEW	HFD () NEQ	Remarks:				
1074	Drawing: 33-15-03 Dimensions: 26' X 80' Description: ECM, Stadley, 7-Bar		Occupancy: N/A User: AF Unit 1 Description: Ammunition storage in approved shipping and storage containers.		1.1	456,888	207,241	ECM 6 is proposed new construction, not yet funded.				
					1.2.1	500,000	226,796					
					MCE	≥450						
					1.2.2	500,000	226,796					
					1.2.3	NA						
					MCE	NA						
					1.3	500,000	226,796					
					1.4	MEQ	MEQ					
Section II - Exposed Sites (ES) Limiting Factors												
ES	Description/Orientation	*Distance Ft & Meter	Protection (IBD, PTR, ILD, IMD)	*1.1	HFD()	MCE	*1.2.1	*1.2.2	*1.2.3	*1.3	1.4	
1075	ECM, 7-Bar	100 ft	IMD	500,000	(23)	≥450	500,000	500,000	NA	500,000	MEQ	
	Exposure - side to side	30.5 m	K1.25	226,796			226,796	226,796	NA	226,796	MEQ	
Fence	Installation boundary	3851 ft	IBD	456,888	(23)	≥450	500,000	500,000	NA	500,000	MEQ	
	Exposure - side to all	1173.8 m		207,241			226,796	226,796	NA	226,796	MEQ	
2043	Surveillance Workshop	1914 ft	ILD	500,000	(23)	≥450	500,000	500,000	NA	500,000	MEQ	
	Exposure is side to all	583.4 m		226,796			226,796	226,796	NA	226,796	MEQ	
***ECM 6	ECM, 7-Bar	393 ft	IMD	500,000	(23)	≥450	500,000	500,000	NA	500,000	MEQ	
	Exposure is front to rear	119.8 m	K2	226,796			226,796	226,796	NA	226,796	MEQ	
Pad 7	AGM - Open storage pad	968 ft	IMD	500,000	(23)	≥450	500,000	500,000	NA	500,000	MEQ	
	Exposure is side to all	295 m	K6	226,796			226,796	226,796	NA	226,796	MEQ	
Remarks: *Metric measurements are not required within the United States.												
Highlight or use another print color to emphasize the limiting HFD, MCE and NEW for each HD.												
***Highlight or use another print color to emphasize proposed sites.												

Figure C-1. Explosive safety site plan

Appendix D Explosion Sites

D-1. Explosion sites (potential explosion site) within the inhabited building distance arc

The information in this appendix is a sample of a site plan submission.

Table D-1
Sample explosion sites (potential explosion site) within the inhabited building distance arc (installation)

Building	Common name	Building type	PES ES Both	HD 1.1 (LBS)	HD 1.2.1 (LBS)	MCE	HD 1.2.2 (LBS)	HD (XX) 1.2.3 (LBS)	HD 1.3 (LBS)	HD 1.4 (LBS)	IBD (FT)	PTRD (FT)
4100	Field office	N/A	ES									
6101	Ammo storage	ECM	Both	95,000	500,000	450	500,000	0	500,000	MEQ	F: 1647 S: 1598 R: 1141	F: 988 S: 959 R: 685
6102	Ammo storage	ECM	Both	130,000	500,000	450	500,000	0	500,000	MEQ	F: 1964 S: 1964 R: 1544	F: 1179 S: 1179 R: 927
6103	Ammo storage	ECM	Both	180,000	500,000	450	500,000	0	500,000	MEQ	F: 2484 S: 2484 R: 2201	F: 1491 S: 1491 R: 1321
7100	Surveillance workshop	Metal	Both	45,000	50,000	450	50,000	0	50,000	MEQ	1,423	854
8100	Ammo storage	AGM	Both	0	0		500,000	0	125,265	MEQ	784	470

Table D-1
Sample explosion sites (potential explosion site) within the inhabited building distance arc (installation)—Continued

AHA	AHA	Open	Both	41,800	100,000	450	100,000	0	100,000	MEQ	1,389	834
1	Hadley Road	N/A	ES									
	Residue yard	Pole barns	ES									

Legend for Table D-1:

AHA— ammunition holding area; AGM— aboveground magazine; ECM— earth-covered magazine; ES— exposed site; DWG— drawing; F— front; HD— hazard class/division; IBD— inhabited building distance; ILD— intraline distance; ILDU— intraline distance unbarricaded; IMD— intermagazine distance; LPS— lightning protection system; MCE— maximum credible event; MEQ— mission essential quantity; NEW— net explosive weight; PES— potential explosion site; PTRD— public traffic route; S— side; R— rear

Table D-2
Sample explosion site (potential explosion site) within the inhabited building distance arc (installation)

Building	Limiting ES	Limiting factor	Limiting distance	Protection required	User	Occupancy	Description	Drawing number	LPS (yes/no)
4100	N/A	N/A		ILDU	ASP operations	6	Metal structure	N/A	No
6101	PWR LINE	PTR	988	IMD	ASP operations	N/A	ECM, 25' X 80' Undefined	33-15-14-52-CE	Yes
6102	6108	IMD	140	IMD	ASP operations	N/A	ECM 25' X 80' 7 -Bar	33-15-14-52-CE	Yes
6103	Boundary	IBD	2,484	IMD	ASP operations	N/A	ECM 25' X 64' Undefined	33-15-14-52-CE	Yes
7100	Hadley Road	PTR	854	ILDU	QASAS	3 or 3	Metal butler building, 1776 sq ft, rollup door, one bay	N/A	Yes
8100	8107	IMD	220	IMD	ASP operations	N/A	Brick and stucco, 35' X 60', integral LPS, with loading dock and office area	234879-23	Yes
AHA 1	5108	ILD	382	IMD	ASP operations	N/A	Ammo temporary storage with catenary LPS	N/A	Yes
				PTR	Military and public	Medium density PTR	Access to ranges and outer boundaries of installation	N/A	No
				ILDU	ASP operations	10 essentials	Fenced yard with pole barns. Inspecting and processing inert salvage material.	N/A	No

D-2. Site plan submissions

All site plan submissions must be submitted electronically on spreadsheet as in the sample format shown above. The sample displays two pages, but the spreadsheet should be consolidated into one spreadsheet (see para 2-16 for additional information on explosion sites).

Appendix E
Request information for explosive safety site plan

E-1. Explosive safety site plan

The following is an example of the type of information needed for an explosive safety site plan.

Table E-1	
Required information for an explosive safety site plan	
Date of request	
ACOMs, ASCCs, DRUs	
Address	
City	
State	
Country	
ZIP	
Technical POC (name)	
POC phone	
POC e-mail	
Installation, garrison, activity	
Address	
City	
State	
Country	
ZIP	
Technical POC (name)	
POC phone	
POC e-mail	
Prioritize the site plan	Routine or expeditious
Date approval required	
Justification for expeditious processing	
Type site plan	Preliminary, final, or amendment
Amends ESSP — USATCES number and/or description	
Cancels ESSP — USATCES number and/or description	
Facility number	
References (list)	
New construction	Yes or No
Facility modification	Yes or No
Change of mission	Yes or No
Mission change details	
Change of operation	Yes or No
Operation change details	
Change of hazard	Yes or No
Hazard change details	
Result of DDESB survey	Yes or No

**Table E-1
Required information for an explosive safety site plan—Continued**

Eliminates waiver	Yes or No
Eliminates exemption	Yes or No
Construction description	
Dimensions of facility/site	
AE mission description	
Occupancy	
Exceptions	Yes or No
Exception details	
Risk assessments	Yes or No (if yes, enclose)
New explosives safety technology	Yes or No
New ES technology details	
Compensatory actions	Yes or No
Compensatory details	
EMR hazards	Yes or No
EMR details	
All explosives safety standards met	Yes or No
Explosives safety standards deviations — explain	
All environmental standards met	Yes or No
Environmental standards deviations — explain	
Nonessential personnel	Yes or No
Nonessential personnel details	
Personnel protective features	Yes or No
Personnel protective features details — (SDW, shields, remote operations, and so forth)	
Public, host, or tenant exposures	Yes or No
Public, host, or tenant exposure details	
Nearest IBD exposure	
Distance to nearest IBD ES	
PTR exposures	
PTR exposures — distance and details	
Roads	
Doors	
Windows	
Glass hazards	
Glass risk assessment	
Site map (1"/400' scale)	Yes or No
Site map explanation (if no, why)	
Installation map (1"/5000' scale)	Yes or No
Installation map explanation (if no, why)	
Topography map (reference para 2-13m)	Yes or No
Construction drawings (list numbers)	
Construction drawings enclosed	Yes, No, or NA

Table E-1
Required information for an explosive safety site plan—Continued

Electrical drawings (list numbers)	
Electrical drawings enclosed	Yes, No, or NA
LPS	Yes or No
LPS command acceptance	(if no above, include command acceptance of the risk)
LPS drawings (list numbers)	
LPS drawings enclosed	Yes, No, or NA
SDW	Yes or No
SDW drawings (list numbers)	
SDW drawings enclosed	Yes, No, or NA
Utilities (discuss details)	
QD calculations	DOD/DA tables, DOD/DA formulas, ESS, ASHS
ESSP is reconciled with IMP (see para 2-13)	Yes or No

E-2. Contact information

For additional information on all ESSP's, please contact USATCES at DSN 956-8919 or commercial (918) 420-8919.

Appendix F

Sample letter head for a request for Explosive Safety Site Plan approval

F-1. Request for ESSP approval

Below is a sample letter for a request for ESSP approval.

**SAMPLE
LETTERHEAD**

Office Symbol

Date

MEMORANDUM THRU Army Command, ASCC, or DRU

**FOR US Army Technical Center for Explosives Safety, SJMAC-EST, 1 C Tree Rd,
Bldg 35, McAlester, OK 74501-9053**

SUBJECT: Request for Explosives Site Plan Approval for a GOLAN 10 Protectainer at
Activity, Place.

1. References:
 - a. DOD 6055.9-STD, Ammunition and Explosives Safety Standards, 5 October 2004.
 - b. DA PAM 385-64, U.S. Army Explosives Safety Standards, 15 December 1999.
 - c. Memorandum, Department of Defense Safety Board, DDESB-KT, subject: Approval of Amended GOLAN 10 Protectainer Explosives Safety Parameters, 9 June 2004.
2. This explosives safety site plan has been reviewed against the criteria of the above references. Request final Army approval and forward to DDESB for review and approval. Approval of this site plan is requested by **DATE**. *If site plan approval is needed quickly, include justification (see DA PAM 385-64 paragraph 8-3c) and required approval date ... the MACOM must approve the expedite request.*
3. *Describe the ammunition and explosives (AE) mission that will be conducted.*
4. The requested net explosive weight (NEW) limit is 23 pounds (10.4 kilograms) hazard division (HD) 1.1 or 1.2 (diameters \leq 1.6 inches (40mm)) or 1.3 or 50 pounds NEW of HD 1.4. **Shaped charges are not allowed to be stored within the GOLAN 10.**

Figure F-1. Sample memorandum request for explosives site approval

5. The following comments are provided:

- a. The inhabited building distance (IBD), public traffic route (PTR) distance, and intraline (IL) distance is 3 feet. The nearest inhabited building is located ____ feet (____ meters) from the GOLAN 10,
- b. List the potential explosion sites (PES) that project quantity distance (QD) arcs back over the GOLAN 10 or state that no PES projects QD arcs over the GOLAN 10.
- c. A site map is located at enclosure 1. Distances between the GOLAN 10 and facilities in the vicinity are annotated on the map. List all exposed sites (ES) in the vicinity (100 feet) of the GOLAN 10.
- d. The GOLAN 10 will be oriented with the door facing away from nearby inhabited buildings or workspaces.
- e. Explosives must be stored at least 23 inches (stand-off) from any interior wall of the GOLAN 10. Positive design features are in place to ensure stand-off distance is met.
- f. Storage of the explosives permitted at the GOLAN 10 is the only activity authorized in the GOLAN 10 and its immediate vicinity. Any other operation (unpackage, breakdown, inspection, etc.) will be IAW DDESB approved criteria or conducted at an approved surveillance facility.
- g. The container's integrity must be maintained to provide the IBD protection of 3 feet. No installation of alarms/electrical systems or modifications such as drilling or welding which will negate the protective features of the GOLAN 10 are authorized.
- h. The container will be grounded in accordance with reference 1a, Chapter 7. Fences closer than 6 feet from the container will be bonded to the container.
- i. The GOLAN 10 is located in the open, and the venting pressure and by-products will not present a risk to personnel. If the GOLAN 10 is located inside a facility, explain how the pressure and by-products are vented to the outside ... include the analysis (capability of withstanding the pressure load) of the vent system.
- j. The GOLAN 10 will be labeled on the exterior near the door. The label will read "USE FOR NON-FRAGMENTING AND DDESB APPROVED FRAGMENTING MUNITIONS ONLY".

Figure F-1. Sample memorandum request for explosives site approval—Continued

-
- k. In the event of an internal explosion, the installation acknowledges that the GOLAN 10 must be inspected and re-certified prior to reuse.
 - l. Detail any special measures (i.e. IDS, camera, fences) used for security.
 - m. Additional comments.
- 6. Master planning maps will be updated to reflect the approved explosive QD arcs.
 - 7. Point of contact is **NAME, OFFICE SYMBOL, DSN, COMM,** and **EMAIL.**

Encls

SIGNATURE BLOCK

Figure F-1. Sample memorandum request for explosives site approval—Continued

F-2. Additional information

For additional information on all ESSPs, please contact USATCES at DSN 956-8919 or commercial (918) 420-8919.

Sample Site Map of Area

- Use either scaled distance or measured distances.
- If other potential explosion sites (PES) project arcs over the GOLAN, they must be shown on the map.

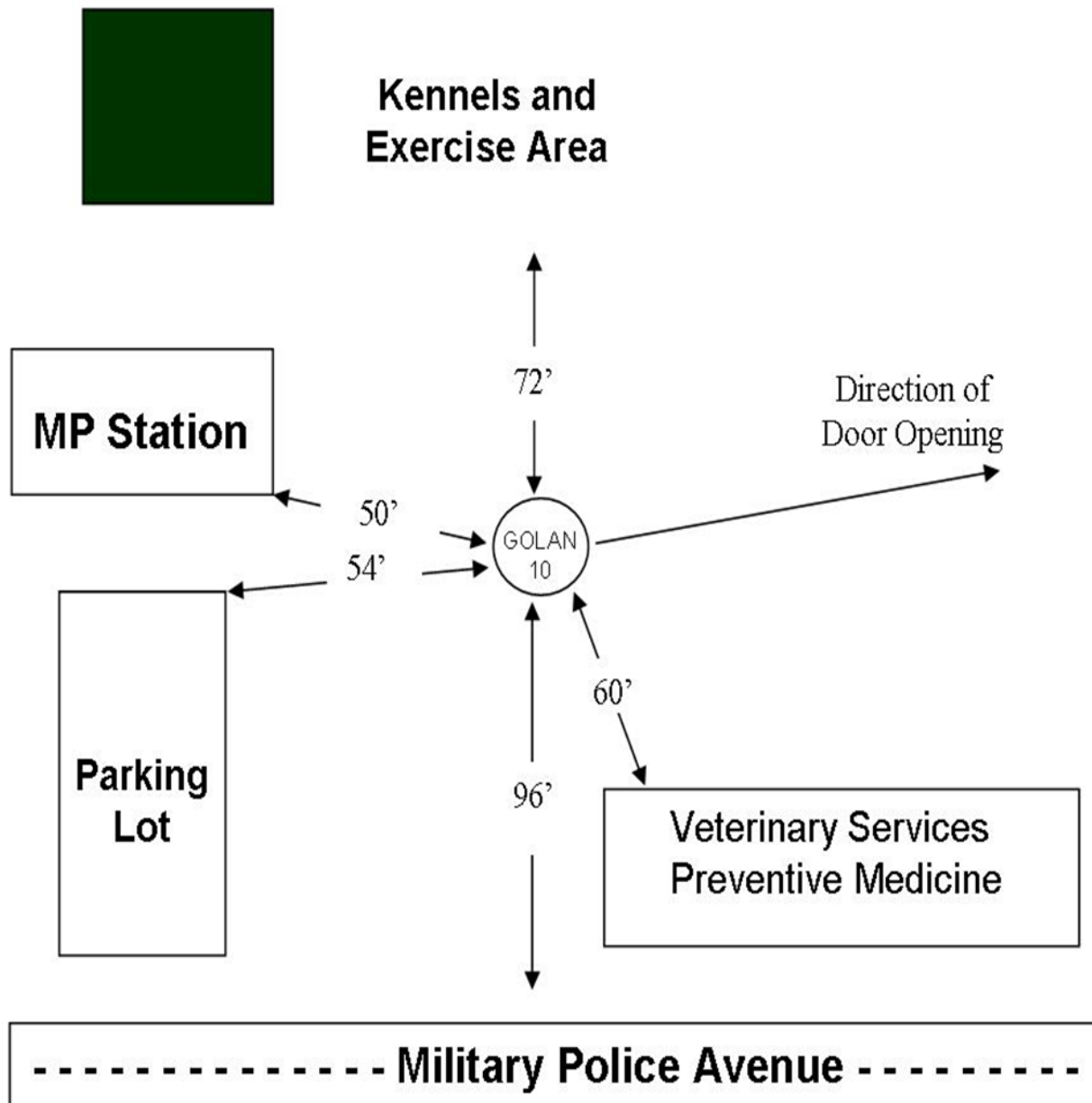


Figure F-2. Sample site map of area

Glossary

Section I Abbreviations

AA&E

arms, ammunition, and explosives

ACOMs

Army Commands

AE

ammunition and explosives

AGM

aboveground magazine

AMC

Army Materiel Command

AR

Army regulation

ARNG

Army National Guard

ASCCs

Army Service Component Commands

ASHS

Assessment System for Hazard Surveys

ASC

Acquisition Support Command

ASP

ammunition supply point

ASR

archive search report

ATEC

Army Test And Evaluation Command

ASU

ammunition storage unit

ATP

ammunition transfer point

AWG

American wire gauge

BRAC

base realignment and closure

CAPA

combat aircraft parking area

CBRNE

Chemical, biological, radiological, nuclear, and high yield explosives

CCR

certificate of compelling reason

CE

conditional exemption

CFR

Code of Federal Regulations

CIDC

Criminal Investigation Division Command

COE

Corps of Engineers

CRM

composite risk management

CSA

Chief of Staff, Army

CSP

chemical site plan

CSS

chemical safety submission

CWM

chemical warfare material

DA

Department of the Army

DA Pam

Department of the Army pamphlet

DASAF

Director of Army Safety

DDESB

Department of Defense Explosives Safety Board

DOD

Department of Defense

DODD

Department of Defense Directive

DRUs

Direct Reporting Units

DSN

defense switched network

ECM

earth covered magazine

EE/CA

engineering evaluation/cost analysis

EIDS

extremely insensitive detonating substance

EMR

electromagnetic radiation

EOD

explosives ordnance disposal

EPA

Environmental Protection Agency

ES

exposed site

ESS

explosives safety submission

ESSP

explosives safety site plan

EUSA

Eighth U.S. Army

FARP

forward area rearm/refuel point

FORSCOM

Forces Command

FSU

field storage unit

FUDS

formerly used defense site

HAS

hardened aircraft shelter

HD

hazard class/division

HE

high explosive

HFD

hazardous fragment distance

HPM

high performance magazine

HQDA

Headquarters, Department of the Army

HTRW

hazardous, toxic, reactive waste

IAW

in accordance with

IBD

inhabited building distance

ID

identification

IHF

interim holding facility

IL

intra-line

IL(B)

intra-line, barricaded

ILD

intra-line distance

IL(U)

intra-line, unbarricaded

IMA

Installation Management Agency

IMD

intermagazine distance

INSCOM

Intelligence and Security Command

JHCS

Joint Hazard Classification System

LPS

lightning protection system

LRS

Long range surveillance or launch and recovery site

LUC

land use control

MC

munitions constituents

MCA

military construction, Army

MCE

maximum credible event

MDW

Military District of Washington

MEC

munitions and explosives of concern

MEDCOM

Medical Command

MFD

maximum fragment distance

MGFD

munitions with greatest fragment distance

MGMFD

munitions with the greatest maximum fragment distance

MGMHD

munitions with the greatest maximum hazard distance

MIL STD

military standard

MOOTW

military operations other than war

MPM

most probable munitions

MPPEH

Material potentially presenting an explosive hazard

MRA

munitions response area

MRS

munitions response site

MSD

minimum separation distance

NATO

North Atlantic Treaty Organization

NEQ

net explosive quantity

NETCOM

Network Enterprise Technology Command

NEW

net explosive weight

NEWQD

net explosive weight for quantity distance

NFPA

National Fire Protection Association

NTCRA

non-time-critical munitions response actions

OB

open burn

OCE

Office of Chief Engineers

ODASAF

Office of the Director of Army Safety

OSC

Operations Support Command

OSHA

Occupational Safety and Health Administration

PAED

public access exclusion distance

PES

potential explosion site

PSI

pounds per square inch

PSP

pre-stock point

PTR

public traffic route

PTRD

public traffic route distance

QASAS

quality assurances specialist, ammunition surveillance

QD

quantity distance

RA

risk assessment

RAC

risk assessment code

RC

reserve component

RCRA

Resource Conservation and Recovery Act

RCW

reinforced concrete wall

RCWM

recovered chemical warfare material

RI/FS

remedial investigation/feasibility study

RF

radio frequency

SAFER

Safety Assessment for Explosive Risk

SCG

storage compatibility group

SDW

substantial dividing wall

SOP

standing operating procedure

SUXO

senior unexploded ordnance supervisor

TB

technical bulletin

TM

technical manual

UL

Underwriter's Laboratory

USACE

U.S. Army Corps of Engineers

USAEC

U.S. Army Environmental Center

USAESCH

U.S. Army Engineering and Support Center for Explosives Safety

USAOSC

U.S. Army Operations Support Command

USATCES

U.S. Army Technical Center for Explosives Safety

USCG

U.S. Coast Guard

UXO

unexploded ordnance

Section II**Terms****1 percent lethality distance**

The distance at which the dosage from an MCE or actual agent release may result in fatalities in 1 percent of the exposed population. A distance calculated from a given cost analysis MCE and meteorological conditions (temperature, wind speed, Pasquill stability factor) and established as the distance at which dosage from that MCE agent release would be 150 milligram per minute/m³ for H and HD agents, 75 milligram per minute/m³ for HT agent, 150 milligram per minute/m³ for L, 10 milligram per minute/m³ for GB agent, 4.3 milligram per minute/m³ for VX vapor, and 0.1 milligram per minute/m³ for inhalation and deposition of liquid VX.

Aboveground magazine (AGM)

Any open area or any structure used for explosives storage that does not meet the requirements of an ECM.

Active installations

Installations under the custody and control of the Army; includes operating installations, installations in a standby or layaway status, and installations awaiting realignment or closure under BRAC.

Administration area

The area in which administrative buildings that function for the garrison or installation as a whole, excluding those offices located near and directly serving components of explosives storage and operating areas, are located.

Aircraft parking area

Any area set aside for parking aircraft not containing explosives.

Ammunition and explosives (AE)

Includes (but is not limited to) all items of ammunition; propellants, liquid and solid; high and low explosives; guided missiles; warheads; devices; pyrotechnics; chemical agents; and components and substances associated therewith, presenting real or potential hazards to life and property.

Ammunition and explosives aircraft cargo area

An area designated for the temporary storage of transportation-configured loads of AE. These loads may or may not be loaded on the aircraft.

Ammunition and explosives area

An area specifically designated and set aside from other portions of a garrison or installation for the development, manufacture, testing, maintenance, storage, disposal, or handling of AE.

Ammunition and explosives holding area (A&E HA)

An area that is used for temporary storage, weapons assembly and staging. This area is established to fulfill the operational requirements of the various types of forward area rearm/refuel points (FARP).

Ammunition and explosives staging area

An area used as a transient area for AE. This area may be used for staging all-up-round weapons, staging weapons to support daily aircraft requirements, or for the assembling convoys.

Ammunition storage unit (ASU)

All types of explosives storage magazines including outdoor or indoor, open storage areas, sheds, bunkers, earth-covered magazines, and AGMs.

Approved Recovered Chemical Warfare Material Treatment System

A system designed to treat RCWM that have undergone test and evaluation including an independent review and approval by the U.S. Army Test and Evaluation Command to assess the operability, effectiveness, and safety of the system.

Armament pads

A location where ammunition is located for immediate loading onto combat aircraft or vehicles.

Army Commands (ACOMs)

U.S. Army Forces Command (FORSCOM), U.S. Army Training and Doctrine Command (TRADOC), and U.S. Army Materiel Command (AMC).

Army Service Component Commands (ASCC)

Army Europe, Army Central, Army North, Army South, Army Pacific, United States Army Special Operations Command (USASOC), Surface Deployment and Distribution Command (SDDC), Space and Missile Defense command (SMDC) and Eighth United States Army (EUSA).

Asset preservation

A level of protection provided to assets in an ES (from a PES) by either distance from a PES or from protective construction design features that ensure that there is no propagation of reaction from the PES to the ES assets, and that the assets are expected to be usable following an incident in the PES.

Auxiliary building

Any building ancillary to, or maintained and operated to serve, an operating building, line, plant, or pier area.

Barricade

An intervening barrier, natural or artificial, of such type, size, and construction as to limit in a prescribed manner the effect of an explosion on nearby buildings or exposures.

Basic load ammunition holding area (BLAHA)

A storage area for basic load ammunition located within the boundaries of a barracks or in the immediate vicinity thereof, in armored vehicles, trucks, trailers, structures, or on pads to ensure mission readiness. BLAHAs consist of one or more storage sites and involve acceptance of risks to personnel, facilities and equipment that are greater than that normally permitted.

Blast overpressure

The pressure, exceeding the ambient pressure, manifested in the shock wave of an explosion.

Buildings presenting munitions and explosives of concern explosives hazards

Buildings (including their installed equipment) with explosive residue that present explosion hazards. Many former munitions processing facilities contain explosives residues. These residues may be located in installed equipment, in cracks in the building floors or walls, in drains, and in many other places. If these residues are in such amounts or concentrations as to present explosion hazards, then the residue is considered MEC.

Build-up location

A location where ammunition is prepared for use. For example, bomb fins are attached to bombs, rockets assembled and fuzed, and so forth.

Burning grounds

The area dedicated to burning of energetic materials. This includes actual burning sites and facilities dedicated to the burning operation.

Burning site

The actual location used for the burning of energetic materials, for example, a burning pan.

Captive missile

A captive missile is a practice missile containing only an active guidance section—no warhead, no motor. There is no energetic matter except for a possible squib or two to power the guidance section.

Cell

Various small compartments or bounded areas forming part of a module.

Certificate of Risk Acceptance

Permanent written documentation of command's acceptance of the risk associated with an event that does not meet regulatory requirements and/or exposes Soldiers, civilian and contractor personnel, the public, or real property to a risk at greater than a de minimis threshold. An informal risk acceptance process may be substituted for a Certificate of Risk Acceptance for one-time events of one week or less duration but a Certificate of Risk Acceptance is highly recommended. Certificates of Risk acceptance will replace all waivers and exemptions by 1 October 2011.

Change house

A building provided with facilities for employees to change to and from work clothes.

Chemical agent

A substance that is intended for military use with lethal or incapacitating effects upon humans through its chemical properties. Excluded from chemical agents for purposes of this standard are riot control agents, chemical herbicides, smoke-and flame-producing items, and individual dissociated components of chemical agent ammunition.

Chemical ammunition

Ammunition, the filler of which has the basic function of producing a toxic or irritant effect on the body, a screening or signaling smoke, or an incendiary action.

Chemical event

A chemical event encompasses chemical accidents, incidents, and other circumstances where there is a confirmed or likely release to the environment, exposure of personnel, threat to security of chemical agent materiel, or any incident of concern to the local commander. The anticipated response to a chemical event is the activation of all or select portions of the initial response force, with possible service response force deployment, as necessary. False positives from real-time continuous monitoring devices are not considered chemical events.

Chemical munitions and agents

An agent or munitions that through its chemical properties, produces lethal or other damaging effects to human beings, except that such term does not include riot control agents, chemical herbicides, smoke and other obscuration materials.

Chemical safety submission (CSS)

The document that serves as the specifications for safely conducting work activities at a CWM response activity. The chemical warfare materiel safety submission details the scope of the project, the planned work activities, and potential hazards (including the MCE) and the methods for their control.

Chemical warfare materiel (CWM)

An item configured as a munitions containing a chemical agent that is intended to kill, seriously injure, or incapacitate a person through its physiological effects. Also includes V- and G-series nerve agent, H-series blister agent, and lewisite in other than munitions configurations. Due to their hazards, prevalence, and military-unique application, chemical agent identification sets are also considered chemical warfare materiel. The CWM does not include riot control agents; chemical herbicides; smoke and flame producing items, regardless of configuration; or soil, water, debris, or other media contaminated with chemical agent.

Civil authorities

State and local government authorities and State and local emergency responders (agencies from the local community that provide security, fire, and emergency medical response support to the RCWM removal or remediation activity).

Classification yard

A railroad yard used for receiving, dispatching, classifying, and switching of cars.

Clearance to depth

The location, excavation, and removal of MEC to its depth of detection.

Closure block

A protective construction feature designed to seal the entrance tunnel to an underground storage chamber in the event of an explosion within the chamber. The MAGAE blocks are passive closures that are driven by the blast from a normally open to a closed position. The KLOTZ blocks are active closures, operated by a hydraulic system to move from a normally closed to an open position (for access).

Combat aircraft parking area (CAPA)

Any area specifically designated for parking aircraft loaded with combat-configured explosives, or those being loaded, unloaded, or awaiting loading. This includes aircraft hangars and alert shelters.

Combat configured load

A mixed ammunition package designed to provide for the complete round concept, type of unit, type of vehicle, capacity of transporter, and weapons system. Contents of the package are predetermined and provide optimum quality and mix to support a particular weapons system or unit.

Combustible

Material that catches fire and burns easily; flammable.

Compatibility

Ammunition or explosives are considered compatible if they may be stored or transported together without increasing significantly either the probability of an accident or, for a given quantity, the magnitude of the effects of such an accident.

Component

Any part of a complete item whether loaded with explosives, inert (not containing explosives), or empty (not filled with explosives).

Compatibility group

The compatibility group for ammunition, explosives and/or other hazardous materials which can be stored and/or transported together without significantly increasing the probability of accident or, for a given quantity, the magnitude of the effects of such an accident. The compatibility groups are based on the system recommended for international use by the United Nations Organization and as adopted by NATO and DOD.

Competent authority

An individual of the armed forces designated in command, responsible for the direction, coordination and control of military forces. The commander alone is responsible for everything his unit does or fails to do. He cannot delegate his responsibility, or any part of it although he may delegate portions of his authority to competent individuals. An individual designated by the commander to address areas of primary interest within that individual's technical expertise.

Conditional exemption (CE)

An exemption from the regulatory definition of hazardous waste (and therefore from compliance with specific environmental requirements pertaining to the storage of hazardous waste) conditioned on compliance with certain criteria requirements as set forth in 40 CFR 266.205.

Construction support

Support provided by qualified UXO personnel during construction activities at potential MEC sites to ensure the safety of construction personnel from the harmful effects of MEC. There are 2 types of support: standby support, and active support. Standby construction support applies when a determination is made that the probability of encountering MEC is low (seldom or unlikely). Unexploded ordnance personnel will stand by and identify any MEC items encountered. If an item is encountered, UXO personnel assume site control and destroy the item or move it to a safe location for later disposal. Active construction support applies when a determination is made that the probability of encountering MEC is moderate to high (occasional, likely or frequent). The UXO personnel conduct subsurface MEC clearance for the known construction footprint either in conjunction with the construction contractor or prior to construction intrusive activities.

Conventional munitions and explosives of concern

The term conventional MEC refers to MEC (see definition) other than CWM, biological warfare material and nuclear ordnance.

Debris

Any solid particle thrown by an explosion or other strong energetic reaction. For aboveground detonations, debris usually refers to secondary fragments. For underground storage facilities, debris refers to both primary and secondary fragments, which are transported by a strong flow of detonation gases.

Deflagration

A rapid chemical reaction in which the output of heat is enough to enable the reaction to proceed and be accelerated without input of heat from another source. Deflagration is a surface phenomenon with the reaction traveling along the surface at subsonic velocity.

Demilitarize

To mutilate, disarm, neutralize, and accomplish any other action required to render ammunition, explosives, and chemical agents innocuous or ineffectual for military use.

Designated aircraft parking area

An aircraft parking area that meets airfield parking criteria.

Detonation

A violent chemical reaction within a chemical compound or mechanical mixture involving heat and pressure. A detonation is a reaction which proceeds through the reacted material toward the nonreacted material at a supersonic velocity. A detonation, when the material is located on or near the surface of the ground, is normally characterized by a crater.

Direct Reporting Units (DRU)

Network Enterprise Technology Command (NETCOM), Medical Command (MEDCOM), Intelligence and Security Command (INSCOM), Criminal Investigation Division Command (CIDC), United States Army Corps of Engineers (USACE), Military District of Washington (MDW), Army Test and Evaluation Command (ATEC), United States Military Academy (USMA), United States Army Reserve Command (USARC), Acquisition Support Command (ASC), and Installation Management Agency (IMA).

Discovered

The act or process of making something known or visible.

Distribution lines

Electrical lines supplying multiple garrison or installation locations.

Dividing wall

A wall designed to prevent, control, or delay propagation of an explosion between quantities of explosives on opposite sides of the wall.

Dud

Explosive munitions which have not armed as intended or have failed to function after being armed (see misfire).

Dummy ammunition

Ammunition or ammunition components having the appearance of actual items and not having any explosive components.

Earth-covered magazine (ECM)

Any earth-covered structure that meets the soil cover depth and slope requirements. An ECM has three possible structural strength designations (7-bar, 3-bar, or undefined). The strength of an ECM's headwall and doors determines its designation.

Earth covered magazine, nonstandard

All ECMs which are not constructed in accordance with DDESB approved drawings.

Electrical lines

See transmission lines, distribution lines, or service lines.

Engineering evaluation/cost analysis (EE/CA)

An EE/CA is prepared for many non time critical responses. The goals of the EE/CA are to identify the extent of a hazard, to identify the objectives of the response action and evaluate various alternative MEC responses for the site in terms of effectiveness, implementation, cost, and other factors; and, based on this comparison, recommend an appropriate response.

Engineering controls

Regulation of facility operations through the use of prudent engineering principles, such as facility design, operation sequencing, equipment selection, and process limitations.

Essential ammunition and explosives personnel

Essential AE personnel are Army Soldiers, civilian employees, DOD personnel, other Service members, and contractor personnel that a commander or a responsible authority determines must, by virtue of their duties, be exposed to the risks associated with AE operations. They may include, but are not limited to personnel who directly perform AE operations (for example, production, storage, transportation, EOD, QA, research, engineering, testing, and demilitarization); directly support AE operations (for example, personnel dedicated as AE drivers, emergency response, security, maintenance, inventory, and so forth); provide support services or perform functions that require occasional or periodic proximity to AE operations (for example, maintenance personnel, cleaning personnel, vending machine operators, safety personnel, engineers, and so forth). These personnel are considered essential only for the limited period for which the exposure is necessary (see definition of nonessential personnel below).

Exclusion zone for munitions and explosives of concern operations

A safety zone established around an MEC work area. Only project personnel and authorized, escorted visitors are allowed within the exclusion zone. Examples of exclusion zones are safety zones around MEC intrusive activities and safety zones where MEC is intentionally detonated.

Exemption

A written authority that permits long-term noncompliance with mandatory requirement of U.S. Army AE safety standards. Existing exemptions will be replaced at their next scheduled review date and all exemptions will be replaced not later than 1 October 2011.

Expansion chamber

A protective construction feature in an underground storage facility that is designed to reduce the blast shock and overpressure exiting the facility by increasing the total volume of the complex. It may also function as an operating area within the underground facility, as well as a debris trap.

Explosion

A chemical reaction of any chemical compound or mechanical mixture that, when initiated, undergoes a very rapid combustion or decomposition, releasing large volumes of highly heated gases that exert pressure on the surrounding medium. Depending on the rate of energy release, an explosion can be categorized as a deflagration or a detonation.

Explosives area

A restricted area specifically designated and set aside from other portions of a garrison or installation for the manufacturing, processing, storing, and handling of explosives and ammunition.

Explosives facility

Any structure or location containing AE, excluding combat aircraft parking areas or AE aircraft cargo areas.

Explosives-loaded aircraft

An aircraft is explosives-loaded when it carries munitions or explosives, internally or externally. The term does not include explosive components of aircrew escape systems or pyrotechnics installed in survival and rescue kits.

Explosives ordnance disposal (EOD)

The detection, identification, field evaluation, rendering safe, recovery, and destruction of MEC. It may also include the rendering safe and/or disposal of explosive ordnance that have become hazardous by damage or deterioration when the disposal of such is beyond the capabilities of personnel normally assigned the responsibility for the routine disposal.

Explosives or munitions emergency

A situation involving the suspected or detected presence of MEC, damaged or deteriorated explosives or munitions, an improvised explosive device, other potentially explosive material or device, or other potentially harmful military chemical munitions or device, that creates an actual or potential imminent threat to human health, including safety, or the environment, including property, as determined by an explosives or munitions emergency response specialist.

Explosives or munitions emergency response

All immediate response activities by an explosives and munitions emergency response specialist to control, mitigate, or eliminate the actual or potential threat encountered during an explosives or munitions emergency. May include in-place render-safe procedures, treatment or destruction of the explosives or munitions and/or transporting those items to another location to be rendered safe, treated, or destroyed. Any reasonable delay in the completion of an explosives or munitions emergency response caused by a necessary, unforeseen, or uncontrollable circumstance will not terminate the explosives or munitions emergency. Explosives and munitions emergency responses can occur on either public or private lands and are not limited to responses at RCRA facilities.

Explosives soil

Explosive soil refers to mixtures of explosives in soil, sand, clay, or other solid media at concentrations such that the mixture itself is explosive. The concentration of a particular explosive in soil necessary to present an explosion hazard depends on whether the particular explosive is classified as primary or secondary (see USATCES or TM 9-1300-214). Primary explosives are those extremely sensitive explosives (or mixtures thereof) that are used in primers, detonators, and blasting caps. They are easily detonated by heat, sparks, impact, or friction. Examples of primary explosives include lead azide, lead styphnate, and mercury fulminate. Secondary explosives are bursting and boosting explosives (that is, they are used as the main bursting charge or as the booster that sets off the main bursting charge). Secondary explosives are much less sensitive than primary explosives. They are less likely to detonate if struck or when exposed to friction or to electrical sparks. Examples of secondary explosives include RDX, trinitrotoluene (TNT), composition B, and ammonium picrate (explosive D). Soil containing 10 percent or more by weight of any secondary explosive or mixture of secondary explosives is considered "explosive soil." This determination was based on information provided by the USAEC as a result of studies conducted and reported in USAEC Report AMXTH-TE-CR 86096. Soil containing 2 percent or more by weight of any primary explosive or mixture of primary explosives is considered "explosive soil." This determination was based on information provided by the USAEC as a result of studies conducted and reported in USAEC Report SFIM-AEC-ET-CR-97015. Soil containing propellants or pyrotechnic compositions (as opposed to primary or secondary HE) may also present explosion hazards. However, threshold percentages have not been established.

Exposed site (ES)

A location exposed to the potential hazardous effects (blast, fragments, debris, and heat flux) from an explosion at a PES.

Explosives/chemical site plan

An explosives/toxic chemical safety site plan describes in text and graphics the relationship among proposed potential

explosive site/toxic chemical sites, related facilities, and unrelated personnel and facilities. It also contains a description of the construction specifications for the facilities and the specifications and placement of required auxiliary equipment such as dividing walls, LPS, or utility service lines or conduits. It is submitted for DDESB approval of the particulars of the plan from an explosives safety perspective as required in DOD regulations.

Explosives sited aircraft parking area

An aircraft parking area that meets both explosives safety and airfield criteria.

Field office

An office required by operational supervision; for example, foremen and line supervisors, in direct support of AE operations.

Firebrand

A projected burning or hot fragment whose thermal energy is transferred to a receptor.

Fire hazard area

A location in which the primary, but not necessarily the only, hazard is that of fire, including explosions of gas or vapor and air mixtures.

Fire-resistive

A term used to indicate the property of structures or materials to resist a fire to which they might be subjected, without themselves becoming weakened to the point of failure.

Fire retardant

A term used to designate generally combustible materials or structures which have been treated or have surface coverings designed to retard ignition or fire spread.

Firewall

A wall of fire-resistive construction designed to prevent the spread of fire from one side to the other. A firewall may also be termed a "fire division wall."

Flame-resistant

A term applied to combustible materials, such as clothing, which have been treated or coated to decrease their burning characteristics.

Flammable

A material that has the characteristic of being easily ignited or set on fire; that will burn readily or quickly.

Flightline munitions holding area

Designated location on the flightline where built up munitions is temporarily placed pending delivery to combat aircraft or return to storage.

Formerly used Defense sites

Those properties previously owned, leased, or otherwise possessed by the United States and under the jurisdiction of the Secretary of Defense; or manufacturing facilities for which real property accountability rested with DOD but operation was performed by contractors (Government-owned—contractor operated) and later the facilities were legally disposed.

Forward area rearm/refuel point (FARP)

A temporary facility, organized, equipped and deployed by an aviation commander, and normally located in the main battle area closer to the area of operation than the aviation unit's combat service area, to provide fuel and ammunition necessary for the employment of aviation maneuver units in combat. The FARP permits combat aircraft to rapidly refuel and rearm.

Fragment

A piece of an exploding or exploded munitions. Primary fragments may be complete items, subassemblies, pieces thereof, or pieces of equipment that are in immediate contact with explosives. Secondary fragments are from pieces of equipment or buildings containing the items.

Fragment distance

The limiting range, based on a specific density of hazardous fragments, expected from the type and quantity of

explosives involved. Used in establishing certain Q–D criteria. A hazardous fragment is a fragment having an impact energy of 58 foot-pound or greater. Hazardous fragment density is a density of hazardous fragments exceeding one per 600 square feet.

Fragmenting munitions

Items that have cases that are designed to fragment in a specified manner. Examples include continuous rod warheads, items with scored cases, and items that contain pre–formed fragments. Items that fit this definition are usually air-to-air missile warheads such as sparrow and sidewinder.

Garrison

A permanent military post for stationing of Soldiers.

General public

Persons not associated with a DOD installation’s mission or operations such as visitors, to include guests of personnel assigned to the garrison or installation, or persons not employed or contracted by DOD or the garrison or installation.

Hazard

Any existing or potential condition that can cause injury, illness, or death of personnel, or damage to or loss of equipment or property.

Hazard analysis

The logical, systematic examination of an item, process, condition, facility, or system to identify and analyze the probability, causes, and consequences of potential or real hazards.

Hazard class

The United Nations Organization hazardous classification system, which contains 9 hazard classes, is used by the DOD for dangerous materials to identify the hazardous characteristics of A&E. Hazard class 1 (A&E) is further divided into 7 division designators that indicate the primary characteristics and associated hazards.

Hazardous fragment

A fragment having an impact energy of 58 foot-pound or greater and/or a weight greater than 2,700 grains (6.17 ounces or 175.5 grams).

Hazardous fragment density

A density of hazardous fragments exceeding one hazardous fragment per 600 square feet.

Hazardous material

The component of, or an item of, ammunition that is inherently designed to produce the necessary energy required for ignition, propulsion, detonation, fire, or smoke, thus enabling the item to function. Also, a material (corrosive, oxidizer, and so forth) which is inherently dangerous and capable of serious damage, and therefore requires regulated handling to avoid creating accidents in connection with its existence and use.

High explosive equivalent or explosive equivalent

The amount of a standard explosive that, when detonated, will produce a blast effect comparable to that which results in the same distances from the detonation or explosion of a given amount of the material for which performance is being evaluated. For the purpose of these standards, TNT is used for comparison.

High performance magazine (HPM)

The HPM is an earth-bermed, 2–story, box-shaped structure. Story-1 contains the ammunition storage areas and loading dock. Each storage cell has earth-bermed or nonpropagation walls on all four sides and a reinforced concrete cover. Story-2 is a lightweight pre-engineered metal building that provides environmental protection for the ammunition transfer area. The nonpropagation walls and storage area covers are designed to limit the MCE in the HPM to 60,000 pounds. The MCE, rather than NEW, is used to calculate safe separation distances.

Holding yard

A location for groups of railcars, trucks, or trailers used to hold ammunition, explosives, and dangerous materials for interim periods before storage or shipment.

Industrial chemical

A nonmilitary unique chemical developed or manufactured for use in industrial operations or research by industry,

government, or academia. Examples include— Hydrogen Cyanide (AC), Cyanogen Chloride (CK), Phosgene (CG), methylphosphonic difluoride (DF), and O-ethyl (2-isopropyl aminoethyl) methylphosphonite (QL).

Inert ammunition

Ammunition containing no explosives or chemical agents.

Inert area

Any area other than an explosives or ammunition area within an establishment.

Inert components

The parts of ammunition that do not contain explosives or chemical agents.

Inhabited buildings

Buildings or structures, other than operating buildings occupied in whole or in part by human beings, both within and outside DOD installations. They include but are not limited to schools, churches, residences (quarters), Service clubs, aircraft passenger terminals, stores, shops, factories, hospitals, theaters, mess halls, post offices, and post exchanges.

Inhabited building distance (IBD)

The minimum distance permitted between an inhabited building and an ammunition or explosives location for the protection of administration, quarters, industrial and other similar areas within a garrison or installation.

Inspection station

A designated location at which trucks and railcars containing AE are inspected.

Installation

Army installations are defined as establishments used for military purposes but not primarily for the stationing of Soldiers. They include such locations as depots, activities, ports, ASPs, basic load ammunition storage areas, and ammunition plants. Installations also refer to DOD establishments in an inactive, standby, or layaway status; facilities awaiting closure under BRAC, other legislation, or under normal procedures for excess property; and other closed facilities not yet transferred from Army control. Examples of inactive, standby, or layaway installations include but are not limited to posts, camps (including National Guard camps), forts, depots, activities, ports, ASPs, basic load ammunition storage areas, and ammunition plants.

Installation related personnel

Military personnel (to include family members), DOD employees, DOD contractor personnel, or other personnel having either a direct operational (military or other Federal personnel undergoing training at an installation) or logistical support (for example, vendors) relationship with installation activities.

Interchange yard

An area set aside for the exchange of railroad cars or vehicles between the common carrier and DOD activities.

Intermagazine distance (IMD)

The minimum distance permitted between any 2 magazines depending on the type of magazine and the class/division quantity of explosives and ammunition involved; the type and quantity of explosives requiring the greater distance will govern the magazine separation. Also called “intermagazine separation.”

Intraline distance (ILD)

The distance to be maintained between any 2 operating buildings and sites within an operating line, of which at least 1 contains or is designed to contain explosives, except that the distance from a service magazine for the line to the nearest operating building may be not less than the ILD required for the quantity of explosives contained in the service magazine.

Intrusive activity

For MEC projects, an activity that involves intentional physical contact with MEC or intentional penetration of the ground surface at an area known or suspected to contain MEC. Examples include surface or subsurface MEC sampling or removal.

Joint DOD non-DOD use runway and/or taxiway

A runway/taxiway serving both DOD and commercial aircraft. A runway/taxiway serving solely DOD, DOD chartered, or non-DOD aircraft on DOD authorized business is not Joint use.

Joint-use airfield

An airfield serving both DOD and commercial aircraft. An airfield serving solely DOD, DOD chartered, or non-DOD aircraft on DOD authorized business is not Joint use.

K-factor

The factor in the formula $D = KW^{1/3}$ used in QD determinations where “D” represents distance in feet and “W” is the NEW in pounds. The K-factor is a constant and represents the degree of damage that is acceptable. Typical constants range from 1.25 to 50; the lower the factor, the greater the acceptance of damage. The K-factors also correspond with specific overpressure levels.

Land use controls

For MEC projects, LUC refers to methods of controlling MEC hazards without physically removing the MEC. Includes, without being limited to, security fencing or other measures to limit access, provision of alternate water supplies, temporary evacuation and housing of threatened individuals not otherwise provided for, post-removal site control, land repurchase, deed restrictions, zoning, building permits, and any emergency assistance that may be provided under the Disaster Relief Act of 1974.

Launch pads

The load-bearing base, apron, or platform upon which a rocket, missile, or space vehicle and its launcher rest during launching.

Loading density

Quantity of explosive per unit volume usually expressed in pounds per cubic foot (lbs/ft³). As applied to underground storage facilities, there are two types of loading densities used in QD calculations:

a. Chamber loading density is based on the NEW within an individual storage chamber and the volume of the chamber.

b. The calculation of airblast peak pressures and IBD for explosions in underground storage facilities is based on the shock-engulfed volume of the facility. This is the total volume filled by the expanding gases at the time the blast front reaches the point of interest (for example, the entrance to an adjacent chamber). It includes volumes in any direction that the gases can enter, to a distance from the explosion source that equals the distance from the source to the point of interest. For IBD, the point of interest is the tunnel opening.

Loading docks

Facilities, structures, or paved areas, designed and installed for transferring AE between any 2 modes of transportation.

Lunchroom

Facilities where food is prepared or brought for distribution by food service personnel. It may serve more than one PES. Personnel may use a breakroom in an operating building PES to eat meals. Lunchrooms generally require application of QD, breakrooms do not.

Magazine

Any building or structure, except an operating building, used for the storage of AE.

Mass-detonating ammunition/explosives

Ammunition or explosives, almost all of which can be expected to explode virtually instantaneously when a small portion is subjected to fire, to severe concussion or impact, to the impulse of an initiating agent, or to the effect of a considerable discharge of energy.

Maximum credible event (MCE)

In hazards evaluation, the MCE from a hypothesized accidental explosion, fire, or agent release is the worst single event that is likely to occur from a given quantity and disposition of AE. The event must be realistic, with a reasonable probability of occurrence considering the explosion propagation, burning rate characteristics, and physical protection given to the items involved.

Military munitions

All ammunition products and components produced or used by or for the DOD or the U.S. Armed Services for national defense and security, including military munitions under the control of the DOD, the U.S. Coast Guard, the Department of Energy, and National Guard personnel. The term military munitions includes: confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries used by DOD components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes,

depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof. Military munitions do not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices and nuclear components thereof. However, the term does include non-nuclear components of nuclear devices, managed under the Department of Energy's nuclear weapons program, after all required sanitizing operations under the Atomic Energy Act of 1954, as amended, have been completed.

Module

A barricaded area comprised of a series of connected cells with hard surface storage pads separated from each other by barricades.

Movement

Displacement of CWM from the location where the item is stored or found. This includes minimum handling to change position in preparation for treatment.

Munitions and explosives of concern (MEC)

Synonymous with ordnance and explosives. The MEC consists of military munitions that are either UXO or are abandoned or discarded; soil with a high enough concentration of explosives to present an explosive hazard; facilities, equipment, or other materials contaminated with a high enough concentration of explosives such that it presents an explosion hazard.

Munitions and explosives of concern safety specialist

DOD personnel, classified as a GS-018 Safety Specialist, and who are UXO qualified. The MEC safety specialists perform safety, QA, and MEC subject matter expert functions for the Government.

Munitions and explosives of concern scrap

Nonexplosive munitions-related material recovered during the course of an MEC removal. Examples are fragments, empty cartridge cases, expended pyrotechnics, and ammunition packing material.

Munitions constituents

Any materials originating from ordnance, unexploded ordnance, discarded military munitions, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

Munitions with greatest fragment distance (MGFD)

For MEC removal operations, the round with the greatest fragment range that can reasonably be expected to exist in any particular MEC area.

Navigable streams

Those parts of streams, channels, or canals capable of being used in their ordinary or maintained condition as highways of commerce over which trade and travel are or may be conducted in the customary modes, not including streams that are not capable of navigation by barges, tugboats, and other large vessels unless they are used extensively and regularly for the operation of pleasure boats.

Net explosives quantity (NEQ)

Net explosive quantity (expressed in kilograms)

Net explosive weight (NEW)

Net explosive weight (expressed in pounds)

Noncombustible

Not burnable in the ordinary sense of the word.

Nonessential personnel

Nonessential personnel are personnel that perform support functions and can be executed without exposure to AE hazards and risks (for example, medical support personnel, administrative personnel, stock-records clerks, and so forth) (see definition of essential personnel above).

Non-DOD component

Any entity (Government, private, or corporate) that is not a part of DOD.

Nonintrusive activity

An activity that does not involve intentional physical contact with MEC or intentional penetration of the ground surface at an area known or suspected to contain MEC. Examples are site inspections, surveying, burning or cutting vegetation, grid and lane marking, geophysical mapping, and detecting and flagging anomalies.

Nonrobust munitions

Those items that do not meet the definition of robust or fragmenting munitions. Examples include torpedo warheads, underwater mines, most cluster bomb units, and TOW and hellfire missiles.

On-site

As applied to MEC response actions, the area containing MEC and all areas in proximity to the MEC that are necessary to implement the response action.

Operating building

Any structure, except a magazine, in which operations pertaining to manufacturing, processing, handling, loading, or assembling of AE are performed.

Operating line

A group of buildings, facilities, or related work stations so arranged as to permit performance of the consecutive steps in the manufacture of an explosive or in the loading, assembly, modification, and maintenance of ammunition.

Operational necessity

A situation where the mission commander determines the amount of ammunition stored based upon careful evaluation of the mission requirements. The qualifier "operational necessity" is intended to provide commanders the flexibility to ensure mission performance, to include training, without a waste of resources, however, it is not intended to allow such storage just for convenience. In no situation can operational necessity dictate that safe storage practices or quantity distance criteria be violated without executing a Certificate of Risk Acceptance or where grandfathered by a waiver or exemption.

Operational shield

A barrier constructed at a particular location or around a particular machine or operating station to protect personnel, material, or equipment from the effects of a possible localized fire or explosion.

Operator

A person assigned to perform a specific, generally continuing function on a production, maintenance, renovation, or disposal line or operation. Typically the functions are performed at workstations or areas defined in an SOP.

Operator workstation

A specific location within a line or production area where an operator is assigned on a continuing basis to perform operations described in the relevant SOP.

Ordnance and explosives (OE)

See MEC.

Outdoor storage sites

Locations selected within the magazine area for the storage of ammunition and, in exception cases, inert items.

Personnel protection

(1) Elimination or positive control of ignition and initiation stimuli. (2) Sufficient distance or barricades to protect from blast or fragments. (3) In those areas of facilities where exposed thermally energetic materials are handled that have a high probability of ignition and a large thermal output as indicated by hazard assessments, fire detection, and extinguishing system that is sufficiently quick-acting and of adequate capacity to extinguish potential flash fires in their incipient state will protect both personnel and property. Design and installation of the system must maximize speed of detection and application of the extinguishing agent. (4) In ammunition operational areas where it is essential for personnel to be present, and the hazard assessment indicates that an in-process thermal hazard exists, use of thermal shielding between the thermal source and personnel is an acceptable means of protection. If shields are used, they shall comply with MIL STD 398. If shielding is not possible, or if that provided is inadequate for protection of exposed personnel, including their respiratory and circulatory systems, augmentation with improved facility engineering design, personnel protective clothing and equipment may be necessary. (5) Thermal protective clothing must be capable of limiting bodily injury to first degree burns (0.3 calories per square centimeter per second with personnel taking turning-evasive action) when the maximum quantity of combustible material used in the operation is ignited. (6) Protective

clothing selected must be capable of providing respiratory protection from the inhalation of hot vapors and toxicological effects when the hazard assessment indicates adverse effects would be encountered from the inhalation of combustion products. (7) Personnel hazards from glass breakage can be minimized by means such as building orientation and/or keeping the number of exposed glass panels and panel size to a minimum. When window panels are necessary and risk assessment determines a glass hazard will be present, blast resistant windows must be used. The framing and/or sash of such panels must be of sufficient strength to retain the panel in the structure.

Pier

A landing place or platform built into the water, perpendicular or oblique to the shore, for the berthing of vessels.

Positive control

At a burning site, this is a means to prevent items, energetic material, or embers from being ejected to a place where they could cause injury or damage.

Potential explosion site (PES)

The location of a quantity of explosives that will create a blast, fragment, thermal, or debris hazard in the event of an accidental explosion of its contents.

Preoperational survey

Survey to ascertain that personnel, equipment, and materiel required for work activities are on-site, that personnel are trained and qualified to perform their work assignments, and that work procedures and safety controls are appropriate for the tasks, effective in accomplishing the work objectives, and provide for an adequate level of safety. Preoperational surveys are based on the approved safety submission, incorporate personnel interviews, records reviews, equipment and material inventories and performance tests, and simulations of planned work and emergency response activities.

Primary girdle

A ground loop (counterpoise) earth electrode subsystem which is connected to the lightning protection subsystem at former U.S. Navy installations.

Prohibited area

A specifically designed area at airfields, seadromes, or heliports in which all AE facilities are prohibited.

Public traffic route (PTR)

Any public street, road, highway, navigable stream, or passenger railroad (includes roads on a military reservation that are used routinely by the general public for through traffic).

Pyrotechnic material

The explosive or chemical ingredients, including powdered metals, used in the manufacture of military pyrotechnics.

Quality assurance specialist, ammunition surveillance (QASAS)

Department of the Army civilians that function in the ammunition surveillance program at DOD installations, activities, and commands that receive, store, maintain, issue, use, and dispose of ammunition.

Quantity distance (QD)

The quantity of explosives material and distance separation relationships that provide defined types of protection.

Quay

A marginal wharf or solid fill.

Ready ammunition storage

A location where ammunition is stored for near term tactical or training use. Generally, ready ammunition storage locations will supply one or more armament pads.

Real property

Land and buildings, including buildings' installed equipment.

Recovered chemical warfare materiel (RCWM)

Chemical warfare material that was previously discarded, buried, or fired, and discovered either unexpectedly or during planned environmental restoration operations.

Remediation (remedial or remedial action)

Those actions consistent with permanent remedy taken instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health, welfare or the environment. The term includes, but is not limited to, such actions at the location of the release as storage; confinement; perimeter protection using dikes, trenches, or ditches; clay cover; neutralization; cleanup of released hazardous substances and associated contaminated materials; recycling or reuse; diversion; destruction; segregation of reactive wastes; dredging or excavations; repair or replacement of leaking containers; collection of leachate and runoff; onsite treatment or incineration; provision of alternative water supplies; and any monitoring reasonably required to assure that such actions protect the public health, welfare and the environment. The term includes the costs of permanent relocation of residents and businesses and community facilities where the President determines that, alone or in combination with other measures, such relocation is more cost-effective and environmentally preferable to the transportation, storage, treatment, destruction, or secure disposition offsite of hazardous substances, or may otherwise be necessary to protect the public health or welfare. The term includes offsite transport and offsite storage, treatment, destruction, or secure disposition of hazardous substances and associated contaminated materials (see DERP Management Guidance).

Remote operation

An operation sufficiently hazardous such that special protection to personnel is required. Protection is provided by distance, protective construction (shielding, barricades, and so forth) or both.

Removal (removal action)

The cleanup or removal of released hazardous substances from the environment. Such actions may be taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release. The term includes, in addition, without being limited to, security fencing or other measures to limit access, provision of alternative water supplies, temporary evacuation and housing of threatened individuals not otherwise provided for, action taken under section 9604(b) of this title, and any emergency assistance which may be provided under the Disaster Relief and Emergency Assistance Act (42 USC 5121). The requirements for removal actions are addressed in 40 CFR 300.410 and 330.415. The three types of removals are emergency, time-critical, and non-time-critical removals (see DERP management guidance).

Removal action

For MEC projects, removal action refers to the cleanup or removal of MEC from the environment to include the disposal of removed material. The term includes, in addition, without being limited to, security fencing or other measures to prevent, minimize, or mitigate damage to the public health or welfare or to the environment.

Renovation

That work performed on ammunition, missiles, or rockets to restore them to a completely serviceable condition; usually involves the replacement of unserviceable or outmoded parts.

Response

In relation to toxic chemical agent, the removal action or remedial action (used individually or in combination) to control the source of a release, limit exposure of humans to a release, or respond to an imminent threat.

Response action

For MEC projects, response action refers to the process of evaluating and, if appropriate, reducing the risk of exposure resulting from MEC. An action that begins with a site characterization but ends with a no further action or no DOD action indicated is a response. If further action is warranted, risk reduction actions are taken. Risk reduction actions may include removal of MEC and treatment on-site to eliminate its explosives properties; transportation off-site to a storage or treatment facility; LUC; engineering controls; public education, or other action necessary to protect the public. Explosives or munitions emergency responses, time-critical responses, non-time-critical responses, and remedial actions are all considered risk reduction measures.

Restricted area

Any area, usually fenced, at an establishment where the entrance and egress of personnel and vehicular traffic are controlled for reasons of safety.

Risk

The expected damage or consequences expressed as the product of the consequence's probability and severity.

Risk acceptance

The management process of having the proper authority to review and accept risks.

Risk assessment (RA)

The evaluation of the risk associated with an activity which may include one or more analysis methodologies.

Risk Assessment Code (RAC)

An expression of the risk associated with a hazard. In accordance with AR 385-10 and DA Pam 385-10, the RAC combines the hazard severity and accident probability into a single term.

Risk decision

The decision to accept or not accept the risks associated with an action made by an individual responsible for performing that action.

Risk management

The practice of assessing risk and thereafter accepting the risk based on a consistent logic.

Robust munitions

These are munitions that meet two of the following three criteria: (1) have a ratio of the explosive weight to empty case weight less than 1.00; (2) have a nominal wall thickness of at least 0.4 inches; and (3) have a case thickness/NEW^{1/3} greater than 0.05 inch/pound^{1/3}. The following cartridges are, by definition, robust: 20 millimeter, 25 millimeter, and 30 millimeter. Other examples of robust ammunition include MK-80 series bombs, M-107 projectiles, tomahawk and harpoon penetration warheads.

Rock strength

Strong, moderately strong, and weak rock are designators which provide a general classification of rock types for siting underground storage facilities. Classification of a rock body into one of the three rankings above involves the rock's density, unconfined compressive strength and seismic velocity as specified in the Corps of Engineers definitive design drawing number DEF 421-80-04.

Runway

Any surface on land designated for aircraft takeoff and landing operations, or a designated lane of water for takeoff and landing operations of seaplanes.

Safety and health risk assessment

The assessment of hazards to the safety and health of workers and the public associated with the accidental release of, or exposure to, CWM.

Secondary girdle

A ground loop (counterpoise) earth electrode subsystem that is connected to all grounding subsystems except the lightning protection subsystem at former U.S. Navy installations.

Secure explosives holding area

An area designated for the temporary parking of commercial carriers' motor vehicles transporting DOD arms, ammunition, and explosives (AA&E) (see DOD 4500.9-R).

Service line

Electrical lines supplying individual or unique installation locations.

Service magazine

A building of an operating line used for the intermediate storage of explosives materials.

Simultaneous detonation

Detonation of separated quantities of explosives of ammunition occurring so nearly at the same time that the effect on the surroundings is the same as if the several quantities were not separated and were detonated en masse.

Similar risk

Similar risk when applied to AE represents a condition where the risk between AE operations is of the same

magnitude. In order for the risk of AE operations to be considered of the same magnitude, the severities and probabilities of the operations being compared must produce the identical level of risk (that is, risk assessment code) in accordance with DA Pam 385–30. The risk for each operation must be independently evaluated and then compared. During the determination of risks when developing the probability, the analysis will consider the reactivity, sensitivity, ignition stimuli, and likelihood of ignition. When determining the severity, the analysis will consider fragmentation distances, overpressures, thermal flux, effects of fire, survivability of the structure, and criticality of the structures to the mission as well as political ramifications.

Single-chamber storage site

An excavated chamber with its own access to the natural ground surface not connected to any other storage chamber.

Site closure

The procedures necessary to complete actions at a site once operations are complete and a decision to take no further actions is made. Site closure is complete when all regulatory agency concurrences are gained, all reporting and document handling requirements are met, and national priorities list delisting has occurred (when applicable).

Site inspection for munitions and explosives of concern

Activities undertaken to determine whether there is known or potential presence of MEC and the nature associated threats. The purpose is to augment the data collected in prior site data gathering efforts to generate field data to determine the presence, type, distribution, density and location of MEC. The results of the site inspection are reported in an ASR. Intrusive investigation is not normally conducted during a site inspection for MEC.

Site-specific safety and health plan

Munitions and explosives of concern projects refer to a plan that defines work activities specific to the project site, the hazards associated with those activities, and the means for controlling those hazards. The elements of a site-specific safety and health plan include— a background statement, describing the uses of the site that lead to the presence of MEC; a map delineating site boundaries, details of structures, transportation routes, utilities, pertinent topographic features, and locations of MEC sampling, recovery, storage, and treatment; a listing of types and quantities of MEC anticipated onsite; a description of site activities, hazards, and the means of hazard control; and a description of site security.

Site-specific work plan

A plan that defines work activities specific to the project site and prescribes procedures to be employed in executing work activities.

Small arms ammunition (SAA)

Ammunition for small arms; for example, all ammunition up to and including 20 millimeter.

Spall

Spall refers to pieces of a material (and the process by which they are formed) that are broken loose from the surface of a parent body by tensile forces that are created when a compression shock wave travels through the body and reflects from the surface. For underground storage, spall normally refers to the rock broken loose from the wall of an acceptor chamber by the shock wave transmitted through the rock from an explosion in a nearby donor chamber.

Stakeholders

In MEC response planning, stakeholders refers to Federal, State, and local officials, federally recognized tribes, community organizations, property owners, and others having an interest or involvement, or having a monetary or commercial involvement in the real property that is to undergo a MEC response action.

Standard igloo magazine

An earth-covered, arch-type magazine with or without a separate door barricade, constructed according to an approved standard drawing identified in DDESB TP 15.

Storage compatibility

A relationship between different items of ammunition, explosives, and other dangerous materials whose characteristics are such that a quantity of two or more of the items stored or transported together is no more hazardous than a comparable quantity of any one of the items stored alone.

Substantial dividing wall (SDW)

An interior wall designed to prevent simultaneous detonation of quantities of explosives on opposite sides of the wall.

Support facilities

Ammunition and explosives storage or operations that support solely the functions of tactical or using units as distinguished from storage depots or manufacturing facilities.

Surveillance

The observation, inspection, investigation, test, study, and classification of ammunition, ammunition components, and explosives in movement, storage, and use with respect to degree of serviceability and rate of deterioration.

Surveillance workshop

A special building equipped to permit all normal ammunition surveillance inspections.

Suspect truck and car site

A designated location for placing trucks and railcars containing ammunition or explosives that are suspected of being in hazardous conditions. These sites are also used for trucks and railcars that may be in a condition that is hazardous to their contents.

Tactical facilities

Prepared locations with an assigned combat mission, such as missile launch facilities, alert aircraft parking areas, or fixed gun positions.

Taxiway or taxilane

Any surface designated as such in the basic airfield clearance criteria specified by a DOD component publication or Federal Aviation Regulation.

Transient

A person with official business on a production line or operation but who is not routinely assigned to a specific limited location.

Transmission lines

Electrical lines supplying locations outside the garrison or installation uniquely, or in common with garrison or installation locations.

Transport

Transferring an item to a location beyond the work site where found, for storage or disposal requiring packaging of the item.

Unconfined burning

The burning of energetic materials that have a means of venting without appreciable movement.

Unexploded ordnance (UXO)

Military munitions that have been primed, fused, armed, or otherwise prepared for action, and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, personnel, or material and remains unexploded either by malfunction, design, or any other cause.

Utilities

Those services required for the operation of an establishment such as water, air, steam, sewage, telephone, and electricity.

UXO personnel

Contractor personnel who have completed specialized military training in EOD methods and have satisfactorily performed the EOD function while serving in the military or who have completed a DOD certified UXO technician level 1 course. Various grades and contract positions are established based on skills and experience.

Waiver

A written authority that permits a temporary deviation from a short term (5 years or less) mandatory requirement of U. S. Army AE safety standards. Existing waivers will not be renewed and will be replaced with a Certificate of Risk Acceptance if the hazard has not been rectified. All existing waivers will be replaced by 1 October 2011.

Waste military munitions

A military munitions is a "waste" if it is either a solid or hazardous waste under regulations implementing RCRA (42 USC 9601) or defined as a waste under a DOD component's formal written policies and procedures. In general—

a. An unused military munition is a solid waste when any of the following occurs:

(1) The munition is abandoned by being disposed of, burned, detonated (except during intended use), incinerated, or treated prior to disposal.

(2) The munition is removed from storage in a military magazine or other storage area for the purpose of being disposed of, burned, or incinerated, or treated prior to disposal.

(3) The munition is deteriorated or damaged (for example, the integrity of the munition is compromised by cracks, leaks, or other damage) to the point that it cannot be put into serviceable condition and cannot reasonably be recycled or used for other purposes.

(4) An authorized military official has declared the munition a solid waste.

b. A used or fired military munition is a solid waste—

(1) When transported off range or from the site of use where the site of use is not a range for the purposes of storage, reclamation, treatment, disposal, or treatment prior to disposal.

(2) If recovered, collected, and then disposed of by burial or land-filling either on or off a range.

(3) For purposes of RCRA section 1004(27), a used or fired military munition is a solid waste, and, therefore, is potentially subject to RCRA corrective action authorities under Section 3004(u) and (v), and Section 3008(h), or imminent and substantial endangerment authorities under Section 7003, if the munition lands off-range and is not promptly rendered safe and/or retrieved. Any imminent and substantial threats associated with any remaining material must be addressed. If remedial action is not feasible, the operator of the range must maintain a record of the event for as long as any threat remains. The record must include the type of munition and its location (to the extent the location is known). For further clarification see 40 CFR 266.202 under definition of solid waste.

Weapons assembly area

An area established at an airfield ammunition storage point to facilitate assembly/disassembly of ammunition required supporting the aviation mission.

Wharf

A landing place or platform built into the water or along the shore for the berthing of vessels.

Section III

Special Abbreviations and Terms

This section contains no entries.

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