



**US Army Corps  
of Engineers®**

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28 Mar 2003

**SAFETY**

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## **EXPLOSIVES SAFETY SUBMISSION**

**ENGINEER PAMPHLET**

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### AVAILABILITY

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DEPARTMENT OF THE ARMY  
U.S. Army Corps of Engineers  
Washington, DC 20314-1000

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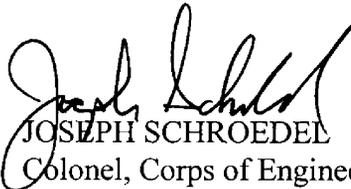
28 March 2003

Safety  
EXPLOSIVES SAFETY SUBMISSION (ESS)

1. Purpose. This pamphlet provides U.S. Army Corps of Engineers (USACE) personnel with procedural guidance for preparing Explosives Safety Submissions (ESS) for conventional ordnance and explosives (OE) response actions.
2. Applicability. This pamphlet applies to all Headquarters, U.S. Army Corps of Engineers (HQUSACE) elements and all USACE commands having responsibility for performing OE response activities.
3. Distribution Statement. Approved for public release; distribution is unlimited.
4. References. Required and related references are at Appendix A.
5. Explanation of Abbreviations and Terms. Abbreviations/acronyms and special terms used in this pamphlet are explained in the glossary.

FOR THE COMMANDER:

4 Appendices  
(See Table of Contents)

  
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TABLE OF CONTENTS

	<u>Paragraph</u>	<u>Page</u>
CHAPTER 1. GENERAL		
Introduction .....	1-1	1-1
ESS Overview .....	1-2	1-1
Regulatory Authorities .....	1-3	1-2
CHAPTER 2. REQUIREMENTS FOR SUBMISSION OF AN ESS		
Introduction .....	2-1	2-1
OE Response Action Projects Requiring an ESS .....	2-2	2-1
OE Response Action Projects Not Requiring an ESS .....	2-3	2-1
CHAPTER 3. TYPES OF ESS's		
Introduction .....	3-1	3-1
Removal Action ESS .....	3-2	3-1
Institutional/Engineering Controls ESS .....	3-3	3-2
NDAI ESS .....	3-4	3-3
TCRA ESS .....	3-5	3-3
CHAPTER 4. PREPARATION OF AN ESS		
Introduction .....	4-1	4-1
Organizational Responsibilities .....	4-2	4-1
Parties Responsible for Preparation of the ESS .....	4-3	4-2
Contents of the ESS .....	4-4	4-2
Technical References .....	4-5	4-3

TABLE OF CONTENTS

	<u>Paragraph</u>	<u>Page</u>	
CHAPTER 5. ESS APPROVAL PROCESS			
Introduction .....	5-1	5-1	
FUDS Projects Executed by the USACE Removal District.....	5-2	5-1	
FUDS Projects Executed by an OE Design Center .....	5-3	5-1	
Installation Projects.....	5-4	5-3	
TCRA ESS.....	5-5	5-4	
Addresses for Routing and Approval .....	5-6	5-6	
CHAPTER 6. CHANGES TO AN ESS			
Introduction .....	6-1	6-1	
Amendment to an ESS.....	6-2	6-1	
Correction to an ESS .....	6-3	6-2	
APPENDIX A – REFERENCES .....			A-1
APPENDIX B – EXPLOSIVES SAFETY SUBMISSION FOR INSTITUTIONAL/ENGINEERING CONTROLS (EXAMPLE FORMAT).....			B-1
APPENDIX C – EXPLOSIVES SAFETY SUBMISSION FOR NO DOD ACTION INDICATED (EXAMPLE FORMAT).....			C-1
APPENDIX D – EXPLOSIVES SAFETY SUBMISSION FOR A TIME-CRITICAL REMOVAL ACTION (EXAMPLE FORMAT).....			D-1
GLOSSARY .....			Glossary-1
TABLES			
Table 4.1 Technical References for Use in the Preparation of an ESS .....			4-4

TABLE OF CONTENTS

	<u>Page</u>
<b>FIGURES</b>	
Figure 5-1 ESS Review and Approval Process for FUDS Projects .....	5-2
Figure 5-2 ESS Review and Approval Process for BRAC Projects – ESS Prepared by OE Design Center or District .....	5-4
Figure 5-3 ESS Review and Approval Process for TCRA.....	5-5

## CHAPTER 1 GENERAL

1-1. Introduction. This Engineer Pamphlet (EP) presents requirements and procedures for preparing Explosives Safety Submissions (ESS) for conventional ordnance and explosives (OE) response actions conducted by the United States Army Corps of Engineers (USACE). This EP also delineates roles and responsibilities of various entities in the preparation, review, and approval of an ESS.

1-2. ESS Overview.

a. Description of the ESS.

(1) The ESS provides the safety specifications for execution of the selected response alternative(s).

(2) An ESS must be done for all response actions, even if the recommended response action is either No Department of Defense (DOD) Action Indicated (NDAI) or Institutional/Engineering Controls. Typically the ESS will be done during the design phase. An ESS is not required for the purpose of investigation.

(3) The ESS must be approved prior to the implementation of the recommended response alternative.

(4) The ESS will be prepared based on the anticipated worst case scenario using the Munition with the greatest fragmentation distance (MGFD) (i.e., the largest unexploded ordnance (UXO) item with the largest net explosive weight and the greatest fragmentation distance, or even multiple rounds unintentionally firing together). The MGFD will be determined based upon the UXO items that are realistically expected to be located at the site.

b. Purpose of the ESS. The purpose of the ESS is to ensure that all applicable DOD and Department of the Army (DA) explosive safety standards are applied during an OE response action. The OE project team will ensure that the ESS, Work Plan (if applicable), Scope of Work, and Action Memorandum are consistent with each other.

c. Utilization of the ESS.

(1) Intrusive operations performed for the purpose of removing OE will be executed in accordance with the ESS. Intrusive or surface removal operations may not begin, during an OE removal action, until the ESS has being approved by the appropriate authority.

EP 385-1-95b

28 Mar 03

Approved ESS changes must be incorporated into the Work Plan, and vice versa, before intrusive or surface removal operations begin.

(2) All personnel working at, or visiting, a site during an OE removal action must comply with the ESS.

(3) A copy of the approved ESS will be maintained at the project site.

(4) In the event that a more hazardous situation is encountered in the field than is identified in the approved ESS, then an amended ESS will be prepared that covers the newly identified hazard. Work may continue on site until the amended ESS has been approved; however, the more restrictive measures (e.g., increase in the exclusion zone) will be implemented immediately. See Chapter 6 for additional details on preparing changes to an approved ESS.

1-3. Regulatory Authorities. A discussion of the laws and regulations governing OE response actions is provided in EP 1110-1-18, entitled “Ordnance and Explosives Response”. This discussion provides an overview of the legal authorities for conducting an OE response action and includes the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), National Oil and Hazardous Substance Pollution Contingency Plan (NCP), Defense Environmental Restoration Program (DERP) [including the Formerly Used Defense Sites (FUDS) program and Installation Restoration Program (IRP)], Base Realignment and Closure (BRAC) program, Resource Conservation and Recovery Act (RCRA), and the Environmental Protection Agency (EPA) Military Munitions Rule.

## CHAPTER 2 REQUIREMENTS FOR SUBMISSION OF AN ESS

2-1. Introduction. This chapter discusses the applicability of the ESS process (i.e., which projects require an ESS). As previously stated, the ESS process described in this EP applies to response actions addressing conventional OE. The following sections describe the applicability of the ESS process to projects at various types of properties. General guidance for Recovered Chemical Warfare Materiel (RCWM) CSS' are found in EP 75-1-3.

2-2. OE Response Action Projects Requiring an ESS. An ESS is required for OE response actions at the following types of properties.

a. FUDS. A FUDS OE response is an action taken to reduce the risk to human health and the environment from exposure to OE resulting from past DOD operations at a site.

b. BRAC sites. OE response actions at transferring installations are conducted under the BRAC program. {Defense Base Closure and Realignment Acts of 1988 (Public Law 100-526), and 1990 (Public Law 101-510)}

c. Transferring excess property other than BRAC.

d. IRP sites.

e. Projects located in off-post areas near active installations. For example, areas that contain munitions unintentionally fired off post.

2-3. OE Response Action Projects Not Requiring an ESS.

a. An ESS is not required for emergency OE removal actions [e.g., emergency response actions conducted by military Explosive Ordnance Disposal (EOD) units].

b. An ESS is not required for range clearance operations conducted on active and inactive ranges that reside on DOD property.

c. An ESS is not required for site characterization activities conducted on OE sites. Site characterization activities will be conducted in accordance with an approved Work Plan and Site-Specific Safety and Health Plan. EP 1110-1-18 and Engineer Manual (EM) 1110-1-4009, both titled "Ordnance and Explosives Response", include details regarding the site characterization phase of an OE project.

EP 385-1-95b  
28 Mar 03

d. An ESS is not required for standby construction activities, but may be required for any removal conducted in the construction footprint prior to construction activities starting.

## CHAPTER 3 TYPES OF ESS's

### 3-1. Introduction.

a. This chapter discusses the four types of ESSs. The four types are listed below and are described in more detail in the following sections.

(1) An ESS prepared as part of a response action when the recommended response alternative in the decision document is the physical removal of conventional OE.

(2) An ESS prepared as part of a response action when the recommended response alternative in the decision document is Institutional/Engineering Controls.

(3) An ESS prepared as part of a response action when the recommended response alternative in the decision document is NDAI. Once a site has been listed on the DOD's munitions response inventory, it cannot proceed to a NDAI without an ESS, regardless of the response phase completed.

(4) An ESS prepared for a Time Critical Removal Action (TCRA).

b. Depending on the circumstances at a site, different identified OE areas may not be included in the same ESS. If this is the case, the ESS will identify the other areas and explain why they were not included (e.g., the other areas were covered in a previous ESS or will be covered in a future ESS). In the event that an ESS had been previously approved for a different OE area at a site, then the previously approved ESS will be referenced in the new ESS.

### 3-2. Removal Action ESS.

a. This type of ESS is prepared as part of the removal design phase of a response action when the recommended response alternative in the decision document involves the physical removal of conventional OE.

b. The ESS must be approved prior to the initiation of intrusive operations.

EP 385-1-95b  
28 Mar 03

c. The format for a removal action ESS is described in the Department of Defense Explosive Safety Board's (DDESB's) "Memorandum Guidance for Clearance Plans", dated January 1998. This memorandum may also be found on the U.S. Army Technical Center for Explosive Safety's (USATCES') website at <http://www.dac.army.mil/es/documents/esslist.pdf>. Additional information on this type of ESS is provided in the OE Mandatory Center of Expertise's (MCX's) Data Item Description (DID) OE-060, "Conventional Explosives Safety Submission", which is located on the OE MCX website at <http://www.hnd.usace.army.mil/oew/dids.asp>.

d. The ESS will include a description of the Recurring Review Plan as presented in the EE/CA report.

e. The ESS will describe the type of engineering controls that will be used during the removal action, if applicable. An engineering control is any process or device designed to reduce the blast or fragmentation effects of an OE detonation. Engineering controls may be used to reduce the Minimum Separation Distances (safe separation distances) for removal actions.

(1) Engineering controls may be used as needed with prior approval from DDESB at any USACE project. The OE Design Center will review any application of an approved engineering control to assure proper utilization at the specific site. This site-specific application will be described in the ESS. The technical data package and DDESB approval must be maintained on site during the application of the engineering control.

(2) An engineering control may be submitted without prior approval by DDESB as part of the ESS for DDESB approval, but will only be approved for that specific site and the specific application(s) described in the ESS.

(3) "Prior approval" as used here means a separate (not site-specific) report describing the design, testing, and capabilities of an engineering control was developed, sent through explosives safety channels for review and concurrence, and was ultimately approved by DDESB for general application. Example engineering controls applications can be found on the OE MCX website at [http://www.hnd.usace.army.mil/oew/tech/analytical\\_tools/analindx.htm](http://www.hnd.usace.army.mil/oew/tech/analytical_tools/analindx.htm).

### 3-3. Institutional/Engineering Controls ESS.

a. This type of ESS is prepared upon finalization of the decision document that identifies Institutional/Engineering Controls as the recommended response alternative for an OE site.

b. The ESS is submitted for approval after the approval of the decision document.

c. The format for an Institutional/Engineering Controls ESS is provided in Appendix B. Because UXO is not being removed, several sections required for a removal action ESS are not applicable to the Institutional/Engineering Controls ESS.

3-4. NDAI ESS.

a. This type of ESS is prepared upon finalization of a decision document that identifies NDAI as the recommended response alternative for an OE site. The ESS is prepared after the public comment period has been held on the decision document and any comments received as a result of the public comment period have been addressed in the decision document.

b. The ESS is submitted for approval after the decision document has been approved.

c. The format for a NDAI ESS is provided in Appendix C. Because UXO is not being removed, several sections required for a removal action ESS are not applicable to the NDAI ESS.

3-5. TCRA ESS.

a. A TCRA may be required to respond to an imminent danger posed by OE hazards at a site, such that cleanup or stabilization actions must be initiated within six months to reduce the risk to public health or the environment. The increased urgency of a TCRA requires an ESS process, which is described below.

b. The format for a TCRA ESS is provided in Appendix D.

c. A TCRA will not proceed to a NDAI status without a Site Specific Final Report that addresses all items required in a NTCRA ESS and justifies the NDAI. Site Specific Final Reports will be reviewed and approved in accordance with the requirements for a NTCRA ESS.

## CHAPTER 4 PREPARATION OF AN ESS

4-1. Introduction. This chapter discusses the preparation of an ESS, including a description of the roles and responsibilities of USACE organizations in the preparation of an ESS, contents of an ESS, and technical references useful in the preparation of an ESS.

a. DOD is the lead agency for all OE response actions. Responsibility for executing an OE response action, and hence approval authority for an ESS, depends on whether the site is a FUDS or an active or transferring installation. The ESS approval process is discussed in Chapter 5.

(1) OE response actions at sites that were contaminated while under the jurisdiction of DOD, but which subsequently have been transferred out of DOD control (i.e., FUDS) are conducted under the DERP-FUDS program. OE response actions at FUDS are described in EP 1110-1-18. Authority for executing OE response actions at FUDS has been delegated to USACE by DOD through HQDA.

(2) Active and Transferring Installations. USACE may or may not be involved in OE response actions at active and transferring installations.

(3) Engineer Regulation (ER) 1110-1-8153, "Ordnance and Explosives Response", provides roles and responsibilities for USACE elements in managing and executing OE response actions and authorizes and provides for the delegation of such roles and responsibilities.

b. Throughout this document, district review and approval responsibilities for project activities are discussed. These responsibilities have been delegated by the Major Subordinate Command (MSC) to the assigned district for project sites within their geographic area.

c. Districts requiring additional information beyond that discussed in this document should contact the OE MCX.

4-2. Organizational Responsibilities.

a. MSC Commanders are assigned overall responsibility for the safe and efficient execution of OE response actions for all projects for which they are the Project Manager (PM) in accordance with ER 5-1-11.

EP 385-1-95b  
28 Mar 03

b. The responsibilities of Headquarters, United States Army Corps of Engineers (HQUSACE) for planning and executing OE response actions are discussed in ER 1110-1-8153 and EP 1110-1-18.

c. USATCES is responsible for review and approval of ESSs at DA.

d. DDESB is responsible for review and approval of ESSs at DOD.

e. The responsibilities presented in this chapter are FUDS specific. For projects under the management of an active or transferring installation, the installation must retain some degree of management control. In such cases, the PM will hire the appropriate OE Design Center to provide USACE assistance in a manner that is transparent to the customer, but the PM will remain the interface with the installation.

f. It is the responsibility of all USACE personnel involved with the OE Program to safely execute OE response projects in accordance with applicable laws, regulations, and policies. All USACE organizations will ensure that all personnel involved with on-site activities at project sites are familiar with and have access to copies of the approved ESS prepared for the site-specific activities to be conducted.

g. All USACE elements will ensure that OE response actions include provisions for meaningful stakeholder involvement pursuant to all applicable laws, regulations, and policies.

#### 4-3. Parties Responsible for Preparation of the ESS.

a. The ESS will be developed with the full involvement of the OE project team.

b. Responsibilities for preparation and approval of an ESS are discussed in chapter 5.

c. The OE project team, under the direction of the district PM, will be fully involved in the preparation of the ESS. The OE project team members include the district PM; other representatives from the district, as required; the OE Design Center; the OE MCX, as required; the Hazardous, Toxic, and Radioactive Waste (HTRW) MCX and/or HTRW Design Center, as required; federal land managers; the prime contractor PM; state and federal regulators; the Native American Tribal Government point of contact, if applicable; and other key technical and non-technical individuals, as appropriate.

4-4. Contents of the ESS. As described in Chapter 3, the four types of ESSs will contain varying types of information depending on the type of response action discussed in the ESS. Preliminary studies, OE sampling reports, and the Work Plan for the response action provide much of the required information.

a. The format for a NTCRA ESS is described in the DDESB Memorandum, “Guidance for Clearance Plans”, dated January 1998. This memorandum may be found on the USATCES website at <http://www.dac.army.mil/es/documents/esslist.pdf>. Additional information on this type of ESS is provided in the OE MCX DID OE-060, “Conventional Explosives Safety Submission”, which is located on the OE MCX website at <http://www.hnd.usace.army.mil/oew/dids.asp>.

b. Appendices B and C, respectively, contain example formats for the NTCRA ESS for Institutional/Engineering Controls and NTCRA ESS for a NDAI recommendation.

c. Appendix D contains an example format for a TCRA ESS.

4-5. Technical References. Table 4.1 presents a summary of technical references that may be applicable to the preparation of an ESS. These documents can be found on the OE MCX website at <http://www.hnd.usace.army.mil/oew> or the HQUSACE website at <http://www.usace.army.mil>.

Table 4.1  
Technical References for Use in the Preparation of an ESS

Directive/Regulation	Title Reference	Contents
DOD 6055.9-STD, DOD Ammunition and Explosives Safety Standards, July 1999	Facilities Construction and Siting	Chapter 5 indicates that construction features and location are important safety considerations in planning facilities that are to be a potential explosive source (PES) or exposed to the damaging effects of potential explosions. The effects of potential explosions may be altered significantly by construction features that limit the amount of explosives involved, attenuate resultant blast overpressure or thermal radiation, and reduce the quantity and range of hazardous fragments and debris. Proper location of exposed sites in relations to PESs ensures against unacceptable damage and injuries in the event of an incident. This chapter contains siting and construction standards to be used within the DOD.
DOD 6055.9-STD, DOD Ammunition and Explosives Safety Standards, July 1999	Lightning Protection	Chapter 7 defines minimum explosive safety criteria for the design, maintenance, testing and inspection of lightning protection systems. Properly maintained lightning protection is required (with exceptions) for ammunition and explosives facilities. If other lightning protection systems for these facilities are used, they shall offer equivalent protection of the types prescribed in Chapter 7.
DOD 6055.9-STD, DOD Ammunition and Explosives Safety Standards, July 1999	Hazard Identification for Fire Fighting and Emergency Planning	Chapter 8 establishes standard fire fighting hazard identification measures to ensure a minimum practicable risk in fighting fires of ammunition and explosives. These identification measures are based on the classification of fires into four fire divisions according to the hazard they present. Chapter 8 establishes minimum guidelines for the development of emergency plans, including safety, security, and environmental protection, which have been coordinated with local authorities.

Table 4.1 (continued)  
Technical References for Use in the Preparation of an ESS

Directive/Regulation	Title Reference	Contents
DOD 6055.9-STD, DOD Ammunition and Explosives Safety Standards, July 1999	Quantity-Distance (Q-D)	Chapter 9 indicates the damage or injury potential of explosions is normally determined by the prevailing distance between the PES and the exposed site (ES); the ability of the PES to suppress blast overpressure, primary and secondary fragments, and debris; and the ability of the ES to resist explosion effects. Chapter 9 sets minimum standards for separating a PES from an ES that takes into account anticipated explosion effects suppression and resistance. Q-D relationships are established for related and unrelated PES's and explosives and non-explosives ES's.
DDESB-KO Memorandum, 27 Oct 98	Procedures for Demolition of Multiple Rounds (Consolidated Shots) on Ordnance and Explosives (OE) Sites, (Terminology Updated March 2000)	Indicates the Minimum Separation Distance (MSD) for all personnel will be the greater of the overpressure distance based on total net explosive weight (NEW) or the appropriate fragment range as determined by the maximum fragment range or the mitigated fragment range.
HNC-ED-CS-S-98-1	Methods for Predicting Primary Fragmentation Characteristics of Cased Explosives, January 1998	This document details the methods used to determine fragmentation characteristics of cased explosives. An example and uses of fragmentation characteristics are discussed. Blast overpressure, thermal effects, ground shock and noise from an accidental explosion are not addressed in this document.
HNC-ED-CS-S-98-2	Method for Calculating Range to No More Than One Hazardous Fragment per 600 Square Feet, January 1998	This document details the theory and method used to determine the range to no-more-than one hazardous fragment per 600 square feet. Software has been developed using the theory described in HNC-ED-CS-S-98-2. The use of this software is described and an example detailed in this document.

Table 4.1 (continued)  
Technical References for Use in the Preparation of an ESS

Directive/Regulation	Title Reference	Contents
EM 1110-1-4009	Blast and Fragment Protection in Ordnance and Explosives Response, 23 June 2000	Chapter 11 of this document describes the blast and fragment protection requirements for unintentional and intentional detonation to include a planning checklist and MSD requirements.
<b>ENGINEERING CONTROLS</b>		
HNC-ED-CS-S-96-8	Guide for Selection and Siting of Barricades for Selected Unexploded Ordnance, Revision 1, September 1997	This document provides information on selection and siting of barricades to defeat primary fragments from selected ordnance items. This document does not address effects from blast overpressure and noise.
HNC-ED-CS-S-97-7	Buried Explosion Module (BEM): A Method for Determining the Effects of Detonation of a Buried Munition, Revision 1, January 1998	The BEM is a software program designed to calculate the residual velocity of fragments produced by a buried munition and the maximum ejecta radius of large soil fragments produced by the buried explosion. The document discusses the theory used in BEM and the input required. Example problems are also provided in the document.
HNC-ED-CS-S-98-7	Use of Sandbags for Mitigation of Fragmentation and Blast Effects Due to Intentional Detonation of Munitions, August 1998	This document provides a summary of the test results and guidelines developed for the use of sandbag enclosures for fragments and blast mitigation due to intentional detonations at OE sites. The guidelines include required sandbag thicknesses, configuration and construction of the sandbag enclosures, and exclusion zone based on sandbag throw distances.

Table 4.1 (continued)  
Technical References for Use in the Preparation of an ESS

Directive/Regulation	Title Reference	Contents
ENGINEERING CONTROLS (continued)		
HNC-ED-CS-S-98-8	Miniature Open Front Barricade, November 1998	Provides guidance information on miniature open front barricades (MOFB) designed to defeat the primary fragments due to an accidental/unintentional detonation of selected ordnance during intrusive operation. The document indicates that the MOFB is not designed to mitigate the effects from blast overpressure and noise and are not intended for reuse after an incident. Guidelines include barricade design, required aluminum and sandbag thicknesses, and the required exclusion zone.
HNC-ED-CS-S-99-1	Open Front and Enclosed Barricades, March 1999 (Terminology Updated March 2000)	Provides guidance information on open front barricades (OFB) and enclosed barricades (EB) designed to defeat the primary fragments due to an accidental/unintentional detonation of selected ordnance during intrusive operations. The document indicates that OFBs and EBs are not designed to mitigate the effects from blast overpressure and noise and are not intended for reuse after an incident. Guidelines include barricade design, required aluminum and sandbag thicknesses, and the required exclusion zone.
HNC-ED-CS-S-00-3	Use of Water for Mitigation of Fragmentation and Blast Effects Due to Intentional Detonation of Munitions	This document provides a summary of the test results and guidelines developed for the use of water for fragments and blast mitigation due to intentional detonations at OE sites.

## CHAPTER 5 ESS APPROVAL PROCESS

5-1. Introduction. This chapter presents the ESS review and approval process for projects involving USACE initiatives. A period of 60 to 90 days should be provided for the review and approval of an ESS. The ESS will be routed and approved in accordance with DOD 6055.9-STD as implemented by DA and HQUSACE. HQUSACE delegated Major Command (MACOM) review and approval of ESSs to the Commander, U. S. Army Engineering and Support Center, Huntsville (USAESCH). HQUSACE and CESO retained the authority to review and approve ESSs for certain high risk or high visibility projects and to provide dispute resolution with respect to issues that cannot be resolved between USAESCH and the concerned party.

### 5-2. FUDS Projects Executed by the USACE Removal District.

a. The following process will be used in the preparation and review of an ESS for FUDS projects executed by the USACE removal district:

(1) The USACE Removal District will prepare the ESS and forward 4 copies to the OE Design Center.

(2) The OE Design Center forwards three copies of the ESS to the OE MCX for review and MACOM approval.

(3) The OE MCX reviews and provides MACOM approval and forwards two copies to USATCES for review and Army approval.

(4) USATCES will forward one copy to DDESB for final approval.

b. Figure 5-1 illustrates the ESS review and approval process for FUDS projects executed by the USACE removal district.

### 5-3. FUDS Projects Executed by an OE Design Center.

a. The following process will be used in the preparation and review of an ESS for FUDS projects executed by the OE Design Center:

(1) The OE Design Center is responsible for preparing the ESS.

(2) The OE Design Center forwards four copies to the USACE removal district and three copies to the OE MCX for review and MACOM approval.

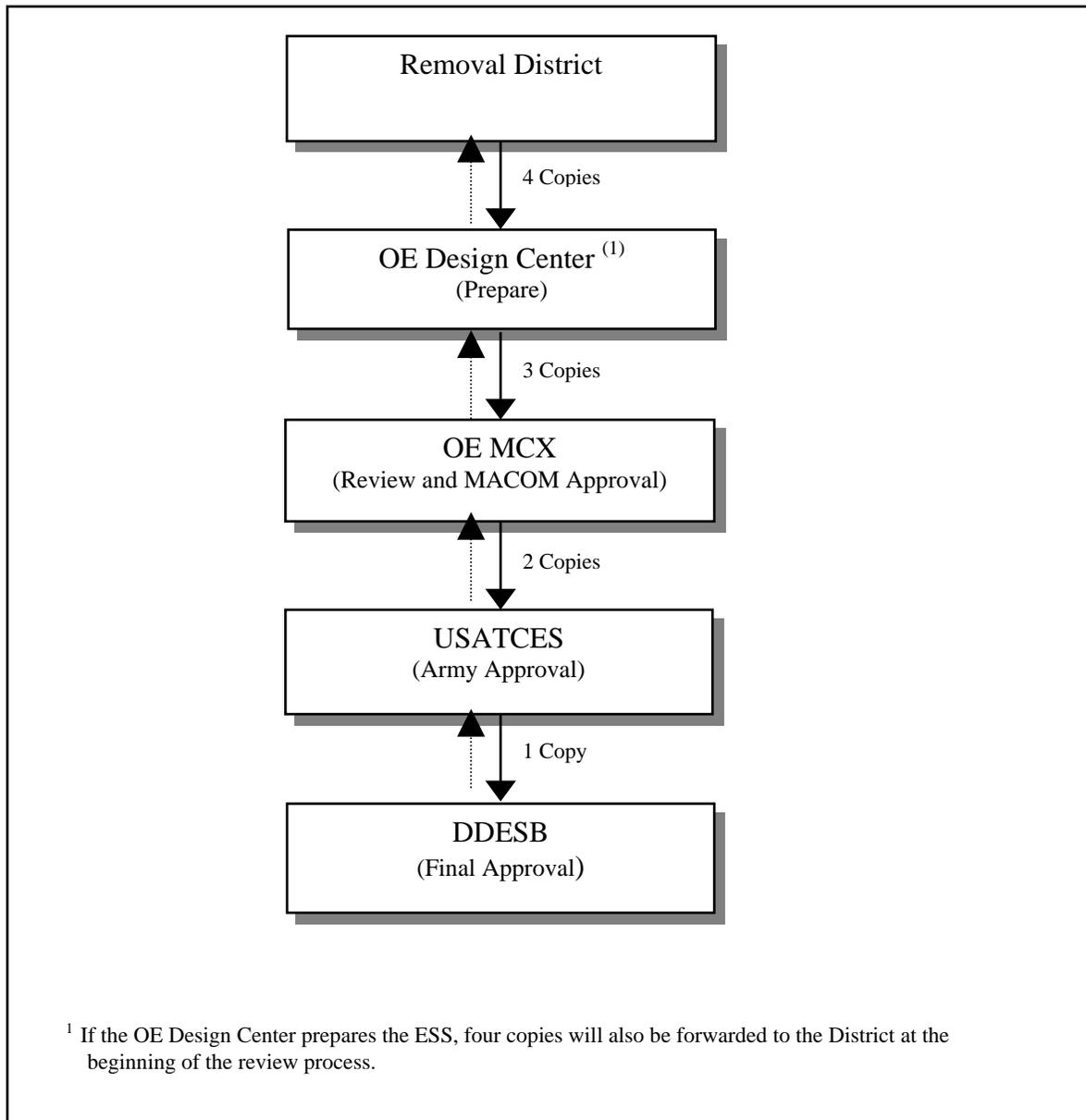


Figure 5-1. ESS Review and Approval Process for FUDS Projects

(3) The OE MCX reviews and provides MACOM approval and forwards two copies to USATCES for review and Army approval.

(4) USATCES will forward one copy to DDESB for final approval.

b. Figure 5-1 illustrates the ESS review and approval process for FUDS projects executed by the OE Design Center.

5-4. Installation Projects. The ESS may be prepared by the installation (active, BRAC, Excess and/or off-post (other than FUDS)) or the installation may request that the district or the OE Design Center prepare the ESS.

a. ESS prepared by the District or OE Design Center for an Installation Project.

(1) If the ESS is prepared by the USACE removal district or the OE Design Center, the following review and approval process will be followed:

(a) The OE MCX will conduct concurrent reviews of ESS prior to submittal to the installation.

(b) The installation will then gain approval in accordance with current service requirements.

(2) Figure 5-2 illustrates this ESS review and approval process.

b. ESS Prepared by the Installation for Installation Project to be executed by USACE. If the ESS is prepared by the installation, the following review and approval process will be followed:

(1) The installation provides two copies to the USACE removal district.

(2) The USACE removal district provides a copy to the OE MCX. Concurrently, the removal district coordinates comments with the OE MCX.

(3) The removal district forwards coordinated comments to the installation.

(4) The removal district needs to be in close coordination with the installation to ensure knowledge of any changes to the plan (changes to the plan will be coordinated with the OE MCX).

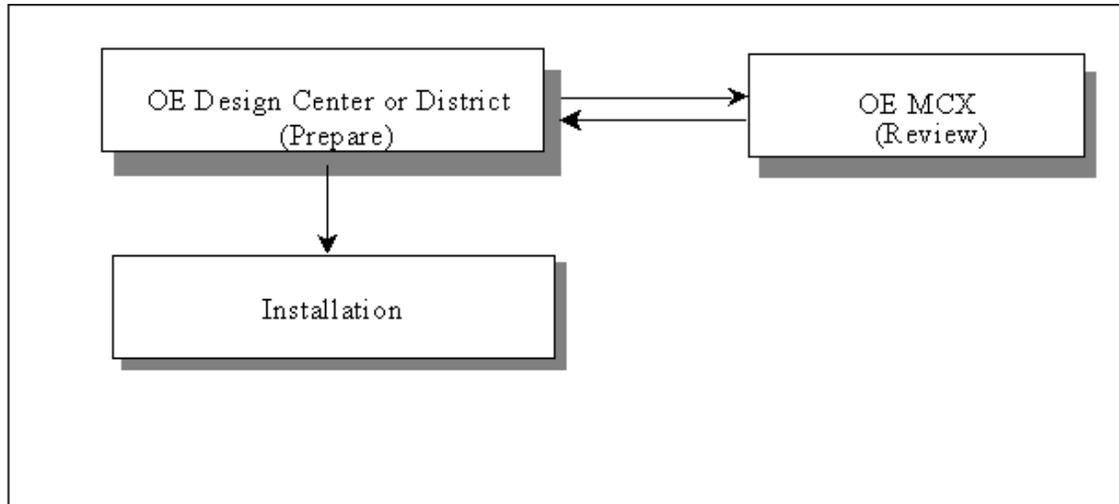


Figure 5-2. ESS Review and Approval Process for Installation Projects –  
ESS Prepared by OE Design Center or District

5-5. TCRA ESS.

a. The following process will be used in the preparation, review, and approval of a TCRA ESS:

(1) FUDS: The USACE removal district is responsible for preparation of the ESS. If the TCRA will be performed by the OE Design Center, the ESS will be prepared by the OE Design Center.

(2) Other: The ESS will be submitted to the OE MCX for review and MACOM approval.

(3) The OE MCX will forward the ESS to USATCES for review and Army approval.

(4) USATCES will forward to DDESB for final approval.

b. Figure 5-3 illustrates this review and approval process.

c. A TCRA will not proceed to a NDAI status without an After Action Report that addresses all items required in a NTCRA ESS and justifies the NDAI. After Action Reports will be reviewed and approved in accordance with the requirements for a NTCRA ESS

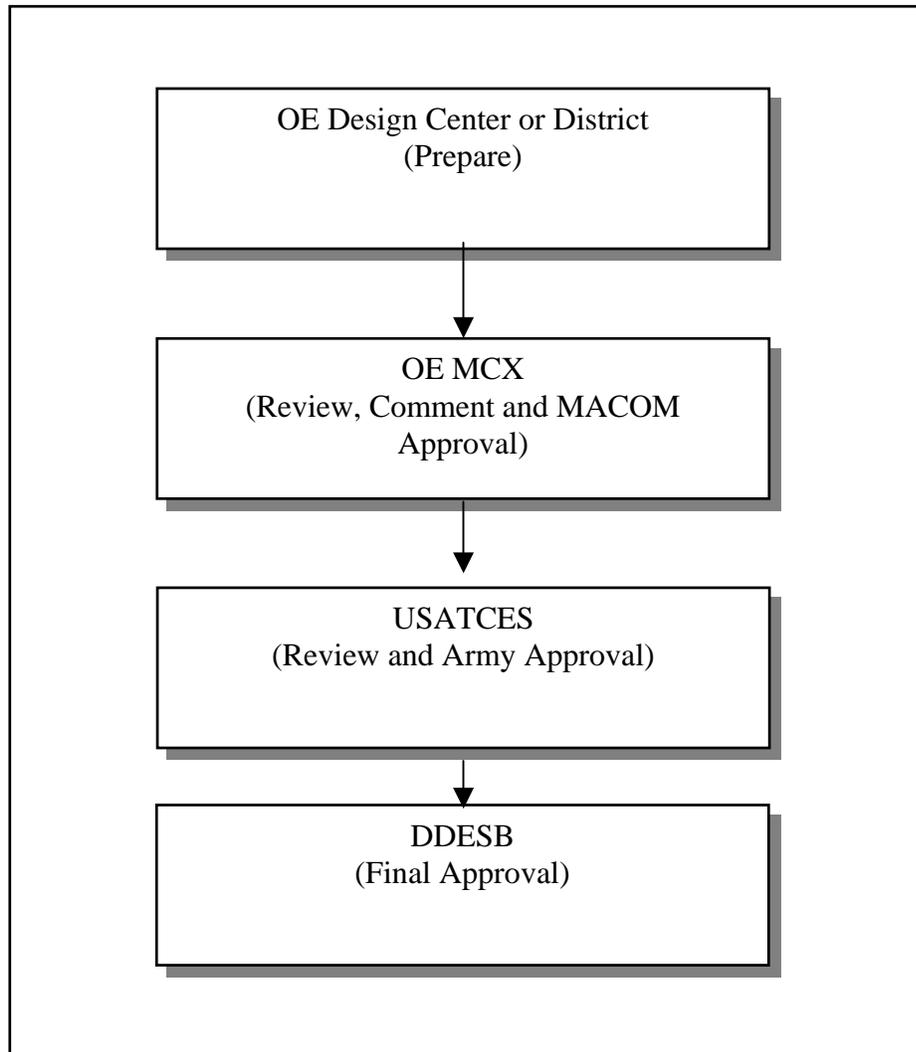


Figure 5-3. ESS Review and Approval Process for TCRA

EP 385-1-95b  
28 Mar 03

5-6. Addresses for Routing and Approval.

(1) DDESB: Chairman, Department of Defense Explosives Safety Board (DDESB-KO), 2461 Eisenhower Avenue, Alexandria, VA 22331-0600.

(2) DA Safety: Chief of Staff (DACS-SF), 200 Army Pentagon, Washington, DC 20310-0200.

(3) CESO: USACE Headquarters, ATTN: CESO, 441 G Street, NW, Washington, DC 20314-1000.

(4) OE MCX: Commander, U.S. Army Engineering and Support Center (Huntsville), ATTN: CEHNC-OE-CX, P.O. Box 1600, Huntsville, AL 35807-4301.

(5) USATCES: Director, Defense Ammunition Center, ATTN: SOSAC-ESL, Building 35, 1 C Tree Road, McAlester, OK, 74501-9053.

## CHAPTER 6 CHANGES TO AN ESS

6-1. Introduction. This chapter discusses requirements for modifying an approved ESS.

During the course of an OE response action, the hazards, risks, or explosives safety controls may change based on the actual conditions encountered. Depending on the type of change, either an amendment or a correction to the ESS is required.

6-2. Amendment to an ESS.

a. An amendment is required for changes regarding the assumed or known explosives hazards or any proposed changes in work activities or safety controls that can potentially affect worker or public safety.

b. An amendment requires approval through the same process followed for the original ESS (see Chapter 5).

(1) For a change that specifies less restrictive requirements (e.g., reduction in exclusion zone), the requirements of the approved ESS will not be implemented until the amendment is approved.

(2) When changes would be more restrictive than the requirements specified in the approved ESS (e.g., increase in the exclusion zone), the more restrictive measures will be implemented until the ESS amendment is approved.

(3) In some instances work will cease at a site until the ESS amendment has been approved. These situations will be on a case-by-case basis. Contact the OE MCX for specific guidance on when work will need to stop pending approval of the ESS amendment.

c. Example changes that require an amendment to the ESS.

(1) A change in the planned reuse of the property changes the clearance depth.

(2) A change in the clearance depth changes the planned reuse. For example, the ESS states that OE will be removed to a depth of four feet. However, circumstances are such that a clearance can only be performed to a depth of one foot. As a result, the reuse of the land must be further restricted.

(3) A change in the land use restrictions. For example, the ESS states that the property will be cleared to a depth of four feet and the land use will be restricted to surface

EP 385-1-95b  
28 Mar 03

recreation, surface storage, and vehicle parking after the removal action. During the removal action, all of the OE is found at shallow depths and there is no reason to believe OE exists deeper than four feet. Therefore, it may be appropriate to change the land use restrictions. An amendment to the ESS must be prepared, providing the results of the removal action and explaining why it is highly unlikely that OE would be found deeper.

(4) The estimated OE depth changes, causing a change in the clearance depth (e.g., OE is consistently found at less than the estimated depths and a reduced clearance depth is desired).

(5) The clearance depth changes from below the frost line to above the frost line. The amendment should give: the frost line depth, state what the old clearance depth was, what the new clearance depth is, an explanation for the change, and what the follow-on monitoring procedures will be for upward migration due to frost heave.

(6) Property owners or stakeholders cause a decrease in the area to be cleared at a FUDS (e.g., right of entry denied).

(7) Incorporation of new or modified engineering controls not included in the approved ESS.

(8) Change in Q-D arcs.

(9) A new magazine storage area or demolition ground is established.

### 6-3. Correction to an ESS.

a. Corrections are changes that do not have the potential to affect worker or public safety. Corrections are typically administrative changes.

b. Corrections do not require approval through the process described in Chapter 5. Once the OE MCX concurs with a correction for a FUDS project, routing to higher-level offices is for information only.

c. The project team should use their best judgement in deciding whether such a change is significant enough to make a correction to the ESS. For example, a correction should be submitted if the area to be cleared is substantially increased (e.g., increase from 200 acres to 300 acres) with no other changes, however a correction would not be necessary if the change is minimal (e.g., increase from 200 acres to 203 acres).

- d. When in doubt about whether an amendment or correction is required, call the OE MCX.