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**DOE-STD-8002-2023
December 2023**

DOE STANDARD

EXPLOSIVES SAFETY FUNCTIONAL AREA QUALIFICATION STANDARD

DOE Defense Nuclear Facilities Technical Personnel



**U.S. Department of Energy
Washington, D.C. 20585**

AREA TRNG

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DOE-STD-8002-2023

APPROVAL

The Federal Technical Capabilities Panel is responsible for reviewing and approving Functional Area Qualification Standards (FAQS) for Department-wide application. Approval of this FAQS by the Federal Technical Capabilities Panel is indicated by signature below.

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TABLE OF CONTENTS

APPROVAL	iii
ACKNOWLEDGMENT	v
ACRONYM LIST	vi
PURPOSE.....	1
APPLICABILITY	1
IMPLEMENTATION.....	1
EVALUATION CRITERIA	3
INITIAL QUALIFICATION AND CONTINUING TRAINING	3
DUTIES AND RESPONSIBILITIES	3
BACKGROUND AND EXPERIENCE	4
REQUIRED PERFORMANCE COMPETENCIES.....	4
APPENDIX A	10
INITIAL QUALIFICATION TRAINING RECOMMENDATIONS	10
APPENDIX B	16
CONTINUING TRAINING RECOMMENDATIONS	16
CONCLUDING MATERIAL.....	17

DOE-STD-8002-2023

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DOE-STD-8002-2023

ACRONYM LIST

ANSI	American National Standards Institute
AS	acquisition strategy
BDBA	beyond design basis accident
BEBA	beyond evaluation basis accident
CD	critical decision
CDNS	Chief, Defense Nuclear Safety
CNS	Chief of Nuclear Safety
COA	conditions of approval
CRAD	criteria and review approach document
CSE	cognizant system engineer
CSP	criticality safety program
CTA	central technical authority
DOE	U.S. Department of Energy
DOT	Department of Transportation
DSA	documented safety analysis
EFCOG	energy facilities contractor operated group
EG	evaluation guideline
EO	Executive Order
FAQS	functional area qualification standard
FEM	field element manager
FPD	Federal project director
HE	High explosives
HDBK	(DOE) handbook
IPT	integrated project team
IVR	independent verification review
JCO	justification for continued operation
KSA	knowledge, skill, and ability
LCO	limiting conditions for operation
LCS	limiting control settings
MPAs	mandatory performance activities
NCS	nuclear criticality safety
NNSA	National Nuclear Security Administration
NRC	Nuclear Regulatory Commission
ORPS	Occurrence Reporting and Processing System
QAP	quality assurance program
SBAA	safety basis approval authority
SBRT	safety basis review team
SME	subject matter expert
SMP	safety management program
STD	standard
TQP	Technical Qualification Program
TSR	technical safety requirement
USQ	unreviewed safety question
USQD	unreviewed safety question determination

DOE-STD-8002-2023

U.S. DEPARTMENT OF ENERGY FUNCTIONAL AREA QUALIFICATION STANDARD

Explosives Safety

PURPOSE

Functional area qualification standards (FAQS) establish common performance competencies in nuclear or high hazard facility's functional areas for personnel in the Department of Energy (DOE) Technical Qualification Program (TQP). This FAQS establishes a common set of performance competencies to ensure designated personnel have the technical competency to perform the duties and responsibilities of an explosives safety oversight professional.

This FAQS should be referenced and used to develop vacancy announcements, interview questions, and other criteria associated with the recruitment, selection, and internal placement of personnel who are assigned this FAQS.

APPLICABILITY

The DOE Order (O) 426.1, Department of Energy Federal Technical Capabilities, requires FAQS to be developed in specific areas as a tool. FAQS documents assist DOE Program and Field Offices with implementation of their organization specific TQP. The Explosives Safety FAQS establishes common performance competencies for all DOE personnel who perform explosives safety oversight duties and responsibilities.

Program and Field Offices must use this FAQS without modification or addition to the performance competency knowledge requirements. Consistently using FAQS allows DOE elements to easily transfer the qualifications listed here. Personnel who complete the competencies in this FAQS demonstrate that they possess the minimum knowledge and skills for DOE's explosive safety duties. The FAQS list serves as documentation of their skill.

DOE O 426.1 requires organization-specific qualification standards to supplement this FAQS and establish unique performance competencies at the organization (headquarters, field element, site, or facility) level.

IMPLEMENTATION

This FAQS is derived from an Explosives Safety Job Task Analysis (JTA). It is comprised of performance competencies based on task performance. Each performance competency includes knowledge requirements and any mandatory performance activities (MPAs) that need to be completed in order to demonstrate the performance competency has been met. Evaluation guides have been developed that provide the expected level of knowledge that personnel assigned this FAQS must obtain for each related knowledge requirement and for designated qualifying officials (QOs), who are responsible for verifying the attainment of these

DOE-STD-8002-2023

knowledge requirements. The evaluation guides for this FAQS are available through the National Training Center (NTC) TQP support site at: <https://ntc.doe.gov/sites/tqp/tqpportal/TechnicalQualificationResources/Forms/Resources.aspx>.

Equivalencies should be used sparingly and with the utmost scrutiny to maintain the intent of the TQP. Equivalencies *may* be granted for individual competencies based on objective evidence of previous education, training, certification, or experience. Objective evidence includes a combination of transcripts, certifications, and (in some cases) a knowledge sampling through a written and/or oral examination. Equivalencies shall be granted in accordance with the TQP plan of the site/office/Headquarters organization qualifying the individual.

When competencies are evaluated by a QO or immediate supervisor who is not qualified in this FAQS, an individual who is qualified in the FAQS should be consulted before equivalencies are granted.

For all equivalencies, the supporting knowledge and/or skill statements and mandatory performance activities should be considered before granting equivalency for a competency.

The performance competencies in this FAQS include DOE-unique knowledge requirements. The participant must obtain and then apply these requirements to specific job tasks that are identified as MPAs in this FAQS. The overall objective of the MPAs is to determine whether an explosives safety subject matter expert (SME) can apply the knowledge to satisfactorily perform the associated job task.

This FAQS is comprised of required common explosives safety SME knowledge competencies with topical area performance competencies. For initial qualification, all Federal explosives safety SMEs assigned this FAQS must demonstrate attainment of the knowledge in the "Required Performance Competencies" section. If any duties change, supervisors should follow the requirements in DOE Order 426.1 to determine if the participant may be assigned any other applicable technical qualification standards.

The MPAs listed in this FAQS must be satisfactorily performed only once. If any of the evaluation criteria are not satisfactorily met during a performance of the MPA, the designated QO may require the participant to perform the MPA again. In these cases, satisfactory completion of the MPA only needs to be documented once. Some of the MPAs in this FAQS may already be included in organization-specific qualification standards. In these cases, the designated QO needs to verify the documentation prepared by the participant then document the accommodation as a part of this FAQS or during completion of the organization-specific qualification standard.

Participants should perform the MPAs listed in the FAQS in their normal work environment. In cases where participants cannot perform the MPAs exactly as written in their normal work environment, supervisors may use other options to facilitate completion of the MPA requirements within the required timeframe. This could include performance of the MPA in a simulated environment or minor accommodations to the MPA or MPA evaluation criteria to fit local conditions and limitations as agreed upon by the QO. The reason for any accommodations in the MPA must be documented by the designated QO with approval of the supervisor and local Federal Technical Capabilities Panel (FTCP) agent.

EVALUATION CRITERIA

Attainment of the performance competency knowledge requirements and MPAs listed in this FAQS must be documented per the TQP plan or policy of the specific organization qualifying the individual and the requirements in DOE O 426.1, DOE Federal Technical Capabilities.

Each performance competency includes knowledge requirements or MPAs that need to be completed in order to demonstrate the performance competency has been met. Attainment of the performance competency knowledge requirements or MPAs listed in this FAQS must be verified by a designated QO using one or a combination of the following methods listed in DOE O 426.1:

- Documented evaluation of equivalencies
- Completion of approved training courses (see Appendix A) that confirm attainment of specific knowledge requirements

A designated QO must also verify successful completion of the MPAs in this FAQS. The QO must verify that the evaluation criteria, including any organization-specific requirements, were satisfactorily met during observation of the MPA and/or review of the results of the MPA. Satisfactory attainment of the performance competency knowledge requirements and MPAs contained in this FAQS must be documented using the explosives safety SME FAQS qualification card in the electronic Technical Qualification Program (eTQP) at <https://etqp.ntc.doe.gov>.

After verification that all the performance competency knowledge requirements and the MPAs in this FAQS have been attained, an explosives safety SME participant must satisfactorily complete the final qualification activity requirements identified in DOE O 426.1 and any other applicable organization-specific requirements before being designated as a qualified explosives safety SME.

INITIAL QUALIFICATION AND CONTINUING TRAINING

Appendix A, Initial Qualification Training Recommendations, includes a list of National Training Center (NTC) and other training courses that support attainment of the required performance competencies for explosives safety SME and specialist participants.

Appendix B, Continuing Training Recommendations, states that explosives safety SME personnel shall participate in a continuing training and qualification program.

DUTIES AND RESPONSIBILITIES

Position-specific duties and responsibilities for the explosives safety SME are contained in organization-specific qualification standards and position descriptions.

The following are typical duties and responsibilities expected of the explosives safety SME:

- Analyze documents related to explosives safety;

DOE-STD-8002-2023

- Monitor day-to-day program activities;
- Support DOE/National Nuclear Security Administration Explosives Safety Committee (NNSA ESC) responsibilities;
- Conduct oversight activities to support periodic contractor performance evaluations;
- Provide subject-matter expertise as requested.

BACKGROUND AND EXPERIENCE

The knowledge requirements and MPAs identified in the FAQs were based on the assumption that participants have the preferred education and experience level identified below. Based on input from the supervisor and QO, personnel assigned to complete this FAQs may need additional developmental assignments and training.

The preferred education and experience for an explosives safety SME are as follows:

1. **Education:** Bachelor's degree in engineering or a science-related field. An advanced technical degree and/or a specialization in energetics is considered an advantage.

And/or

2. **Experience:** Industrial, military, Federal, state, or other directly related background that has provided specialized experience in explosives safety or operations. Specialized experience can be demonstrated through possession of the competencies outlined in this standard.

REQUIRED PERFORMANCE COMPETENCIES

The performance competencies contained in this FAQs include knowledge requirements that are in addition to (and distinct from) the knowledge requirements contained in the General Technical Base (GTB) Part A and B Qualification Standard (QS). All explosives safety SME personnel completing initial qualifications must satisfy the knowledge requirements of the GTB Part A QS and the knowledge requirements and MPAs in the GTB Part B QS prior to (or parallel with) attaining the knowledge requirements for the performance competencies in this FAQs. Each performance competency defines the expected level of knowledge and performance an individual must attain to meet the intent of this standard. Each performance competency is broken into knowledge requirements and, if necessary, MPAs that describe the task(s) that must be demonstrated to meet the intent of the related performance competency.

Note 1: When regulations, DOE directives, or other industry standards are referenced in this FAQs, use the most recent revision. However, explosives safety SME FAQs participants and QOs should also refer to the versions of requirements included in the local contract during the attainment and verification of related knowledge requirements. Any applicable knowledge requirements in predecessor documents that are not included in this FAQs should be included in the organization-specific QS or continuing training program.

DOE-STD-8002-2023

Note 2: If specific evaluation criteria are not identified for any of the MPAs in this FAQS, the following generic evaluation criteria should be used together with any local expectations to verify acceptable completion of the particular MPA.

Generic MPA Evaluation Criteria

- Identify expectations (i.e., criteria) for the specific activity
- Compare results to expectations (criteria) and document conclusions
- Document the basis for any identified issues or recommendations
- Discuss, if applicable, how you would communicate results to appropriate Federal and/or contractor personnel

Explosives and Explosives Safety Fundamentals

1. An explosives safety SME shall demonstrate knowledge of explosives and explosives safety fundamentals.

Knowledge Requirements:

- A. Demonstrate a working level knowledge of energetics.
 1. Define the following and describe possible applications:
 - A: General terms
 1. High explosive
 2. Pyrotechnic
 3. Propellant
 - B: Detonation train
 1. Primary explosive
 2. Detonation train
 - C: Specific applications
 1. Shaped charge
 2. Improvised explosive device (IED)
 3. Homemade explosive (HME)
 4. Mock/inert explosive
 5. Unexploded ordnance (UXO)
 2. Discuss the difference between insensitive high explosives (IHEs) and conventional high explosives (CHEs).
 3. Discuss and compare the effects of the following interrelated high explosive terms:
 - A: General terms
 1. Detonations
 2. Deflagration
 3. Combustion
 - B: Detonation parameters
 1. Deflagration to detonation transition (DDT)
 2. Critical temperature
 3. Critical diameter
 4. Detonation velocity
 - C: Fragmentation
 1. Primary and secondary fragmentation
 4. Describe the response of explosives to the following external stimuli:
 - A. Mechanical and thermal
 - B. Electrical and chemical compatible
 - C. Natural phenomena and confinement

DOE-STD-8002-2023

5. Discuss the effects of aging on explosive materials.
6. Describe different methods of explosives waste disposal.
7. Describe the composition, properties, and applicability of each of the following at your site:
 - TNT, Trinitrotoluene
 - RDX, Hexahydrotrinitrotriazine, or hexogen
 - HMX, Octahydrotetranitrotetrazine, or octogen
 - PETN, Pentaerythritol tetranitrate
 - TATB, Triaminotrinitrobenzene
 - Black powder / smokeless powder
 - Plastic bonded explosives
8. Describe initiators used with explosives (for example, exploding bridge wire, hot wire, commercial blasting caps).
9. Describe the electrical sensitivity of different initiator types, including electrostatic discharge (ESD) and ESD control measures.
10. Describe the explosives safety cardinal principle.
11. Discuss *de minimus* quantities requirements and applications.
12. Describe different methods of explosives hazard analysis.
13. Explain and give an example of hazard classifications, divisions, and compatibilities.
14. Discuss contact and remote operations and describe when each is required.
15. Identify and provide examples of levels of protection.
16. Discuss the concept of personnel limits as it relates to operations.

DOE Directives Program

2. An explosives safety SME shall demonstrate knowledge of the requirements for implementing the Explosives Safety Program (ESP) in DOE-STD-1212, *Explosives Safety*.

Knowledge Requirements:

- A. For DOE Standard 1212, provide an overview and discuss the following chapters and references and their applicability at your site:
 1. Scope/purpose
 2. Applicability
 3. Administration and management
 4. ESP requirements
 5. Roles and responsibilities
 6. General operational safety
 7. Explosives facility design/site criteria
 8. Hazard analysis
 9. Operating procedures
 10. Training
 11. Quantity-distance
 12. Level-of-protection criteria
 13. Remote operations
 14. Limits and controls
 15. Personal protective equipment
 16. Insensitive high explosives qualification
 17. Laboratory operations
 18. Inspection
 19. Explosives development and formulation scaleup
 20. Synthesis and formulation

DOE-STD-8002-2023

21. Heating, drying, and thermal conditioning
 22. Dry screening, blending, and melting
 23. Pressing and extruding
 24. Machining
 25. Low pressure fluids
 26. Laser ablation
 27. Hand cutting and finishing
 28. Assembly and disassembly
 29. Testing
 30. Test firing
 31. Test failures and misfires
 32. Explosives storage
 33. Transportation
 34. Materials receipt
 35. Materials handling
 36. Electrical
 37. Electrical test instruments
 38. Electro-explosive devices
 39. Static electricity
 40. Fire protection
 41. Facility egress
 42. Lightning protection
 43. Building and equipment maintenance
 44. Decontamination and cleaning
 45. Collection systems
 46. Drains and sumps
 47. Waste collection
 48. Waste disposal
 49. Emergency control
 50. Security response force ammunition
- B. Discuss the purpose, scope, and applicability of the following regulations and directives with respect to explosives safety:
1. Defense Explosives Safety Regulation (DESR) 6055.09
 2. 10 CFR 851, Worker Safety and Health Program (Appendix A.3A-C, Explosives Safety)
 3. 27 CFR 555 (applicable portions such as 203, 207-211)

Reviewing and Approving Plan Documents

3. An explosives safety SME shall evaluate and recommend approval of required Explosives Safety Site Plan (ESSP) documents per DOE-STD-1212, Explosives Safety and Defense Explosives Safety Regulation (DESR) 6055.09.

Knowledge Requirements:

- A. Explain the following concepts and their relationships in ESSP development:
1. General terms
 - A. Quantity Distance (QD) calculations
 - B. K-factor selection
 - C. Barriers
 - D. Potential explosion site (PES)
 - E. Exposed site (ES)
 - F. Maximum credible event (MCE)

DOE-STD-8002-2023

- G. Net explosive weight (NEW)
- 2. Related distances
 - A. Intra-line distance (ILD)
 - B. Inhabited building distance (IBD)
 - C. Intermagazine distance (IMD)
 - D. Maximum fragment distance (MFD)
 - E. Minimum separation distance (MSD)
 - F. Public traffic route distance (PTRD)
- 3. Related magazines
 - A. Earth covered magazine (ECM)
 - B. Above ground magazine (AGM)

Mandatory Performance Activity (MPA)

MPA 3.1: Locate, review, analyze, confirm, and discuss approval of site ESSP, including the following:

- DOE-STD-1212, ESSP package requirements
- Quantity Distance (QD) calculations
- Selection of K-factor(s)
- Distance measurements
- Any applicable compensatory measures

Contractor Implementation

4. Evaluate the site contractor's implementation of applicable elements of the Explosives Safety program.

Knowledge Requirements:

- A. Discuss your site's processes for exemptions, equivalencies, and waivers.
- B. Discuss your site's explosive facilities/areas and associated processes to include access control.
- C. Discuss data collection methods for the explosives safety program, the program health assessment, and impact on oversight activities (for example: issues management, contractor assurance system [CAS], metrics).
- D. Describe the stop work authority procedure for your site.
- E. Discuss site qualifications and certification processes for explosives contractor personnel.

Mandatory Performance Activities (MPAs)

MPA 4.1: Conduct operational awareness activities for ESP, including each of the following:

- Signage/placarding
- Plan of the day/pre-job briefing
- Walkdowns of sites/areas and associated explosive operations
- Work control document review
- Access control
- Safety features
- Movement of material
- Inventory of explosive material

DOE-STD-8002-2023

MPA 4.2: Perform a walkdown of a representative number of explosive areas, including firing sites, storage sites, manufacturing/formulation sites, waste disposal, and operations areas.

MPA 4.3: Perform an operational awareness activity (OAA) of site on-the-job training (OJT) or other training course(s) related to explosives safety.

MPA 4.4: Conduct a case study on a past explosives fatality, focused on lessons learned and applicability to DOE-STD-1212, Explosives Safety.

Program Integration

5. Evaluate the integration of the ESP with other programs and processes to ensure safe operations.

Knowledge Requirements:

- A. Describe the function of the explosives safety SME in support of Strategic Partnership Projects (SPPs).
- B. Discuss 10 CFR 851, Worker Safety and Health, functional area(s) at your site, including contractor counterparts and Federal functional area leads.
- C. Describe the integration of the ESP with 10 CFR 830, Nuclear Safety Management, at your site, as applicable.
- D. Describe the work planning and control process at your site.
- E. Describe how the explosives safety SME supports the Safety Basis Review Team (SBRT) and/or Integrated Project Team (IPT).
- F. Discuss coordinated explosives safety oversight efforts with the contractor.
- G. Discuss site explosives safety committees.
- H. Describe the role of a voting member in DOE/NNSA Explosives Safety Committee (ESC), including:
 - Charter
 - Protocol:
 - Preparing for meetings
 - Taking on an appropriate role in meetings
 - Reporting back to site
 - Supporting the task group
 - Hosting responsibilities
 - Advocating for site needs
- I. Describe the configuration management program at your site and how modifications to a building for explosives or equipment must be approved.
- J. Describe the transportation requirements for explosives, including the interim hazard classification (IHC) process.

Mandatory Performance Activities (MPAs)

MPA 5.1: Participate in a site explosives safety committee meeting.

MPA 5.2: Participate in a DOE/NNSA ESC meeting.

APPENDIX A

INITIAL QUALIFICATION TRAINING RECOMMENDATIONS

Technical education and/or training may include courses/training provided by DOE, other government agencies, outside vendors, or local educational institutions. Training topics should also address identified weaknesses in the knowledge and/or skills of the individual personnel, and current technical issues related to the associated FAQs.

Performance Competency	Outside Training Courses
Explosives and Explosives Safety Fundamentals 1. An Explosives Safety Subject Matter Expert shall demonstrate knowledge of explosives and explosives safety fundamentals.	<u>Energetic Materials Research and Testing Center (EMRTC)</u> For questions or inquiries, email us at respond@emrtc.nmt.edu or review their catalog. • <u>High Explosives Principles and Applications Course*</u> [PC-1] • <u>Incident Response to Terrorist Bombings (IRTB)</u> [PC-1] • <u>Prevention of and Response to Suicide Bombing Incidents (PRSBI)</u> [PC-1] • <u>Initial Law Enforcement Response to Suicide Bombing Attacks (ILERSBA)</u> [PC-1] • <u>Homemade Explosives: Awareness, Recognition, and Response (HME)</u> [PC-1] • <u>Understanding and Planning for School Bombing Incidents (UPSBI)</u> [PC-1] • <u>Medical Preparedness and Response to Bombing Incidents (MPRBI)</u> [PC-1] Training & Consulting, LLC (TCI)/Safety Management Services • <u>Safety Management Services Trainings</u> • <u>Training & Consulting, LLC Explosives Safety Trainings</u>

DOE-STD-8002-2023

	• <u>2018-SMS-TCI-Training-Brochure.pdf</u> <u>(firebasestorage.googleapis.com)</u> • <u>Explosives Shipping Classification DOT Ex-Number Training & Workshop</u> [PC-1], [PC-4] • <u>Ammunition & Explosives Safety Training for Defense Contractors</u> [PC-1], [PC-2] • <u>Testing for DOT, ATF, and In-Process Classification Testing</u> [PC-1], [PC-4] <u>Defense Ammunition Center</u> For all other Defense Ammunition Courses contact 1-800-275-2872 or 1-757-878-4745 • <u>[AMMO-12] U.S. Army Explosives Ammunition Storage</u> [PC-1], [PC-4] • <u>[AMMO-14] Ammunition Surveillance</u> [PC-1], [PC-4] • <u>[AMMO-60] Technical Ammunition</u> [PC-1], [PC-4] • <u>[AMMO-62] Technical Transportation of Hazardous Materials</u> [PC-1], [PC-4] • <u>[AMMO-74] Explosives Safety Officer Orientation Course</u> [PC-1], [PC-4] • Ammo-45-DL, Intro to Ammunition • Ammo-10-DL, Ammunition Quality Assurance • Ammo-31-DL, Environmental Considerations for Ammo • Ammo-54-DL, Risk Management and Preparation of SOPs for Ammunition and Explosive Operations • Ammo-67-DL, Hazmat Familiarization/ Safety in Trans • Ammo-75-DL, Identification of Ammunition • Ammo-107-DL, Introductions to Explosive Safety Management for Safety Professionals • Ammo-112-DL, Ammunition and Explosive Storage SAF • <u>Texas A&M Engineering Extension Service (TEEX)</u> eLearning: <u>EOT500 Explosives Safety</u>
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DOE-STD-8002-2023

	<u>Awareness at Lawrence Livermore National Laboratory</u> [PC-1], [PC-2], [PC-4] • <u>In-Resident: EOT501 Explosives Safety Applications for National Laboratories – In-resident portion of TEEX</u> [PC-1], [PC-2], [PC-4] Idaho National Laboratory Course POC: James.Schondel@inl.gov • <u>INL Applications of Explosives Course</u> [PC-1] <u>Missouri Science and Technology Explosives Engineering</u> • <u>Explosives Engineering Certificate Program</u> [PC-1] • <u>Explosives Technology Certificate Program</u> [PC-1] <u>A-P-T Research Inc.</u> • <u>Explosives Safety</u> [PC-1] • <u>Institute of Makers of Explosives Safety Analysis for Risk (IMESA FR) Training</u> [PC-1], [PC-4] • <u>Safety Assessment for Explosives Risk (SAFER) Software Training</u> [PC-1],[PC-4] US Army • <u>TP 16 Tools Class</u> [PC-1],[PC-4]
DOE Directives Program 2. An Explosives Safety Subject Matter Expert shall demonstrate knowledge of the requirements for implementing the Explosives Safety Program (ESP) in DOE-STD-1212, Explosives Safety.	Training & Consulting, LLC (TCI)/Safety Management Services • Safety Management Services Trainings • Training & Consulting, LLC Explosives Safety Trainings • 2018-SMS-TCI-Training-Brochure.pdf (firebasestorage.googleapis.com) • <u>Ammunition & Explosives Safety Training for Defense Contractors</u> [PC-1], [PC-2] <u>Texas A&M Engineering Extension Service (TEEX)</u>

DOE-STD-8002-2023

	• <u>eLearning: EOT500 Explosives Safety Awareness at Lawrence Livermore National Laboratory</u> [PC-1], [PC-2], [PC-4] • <u>In-Resident: EOT501 Explosives Safety Applications for National Laboratories – In-resident portion of TEEX</u> [PC-1], [PC-2], [PC-4] Pantex Course • POC: John H. Taylor Consolidated Nuclear Security Nuclear & Explosives Surety Department John.Taylor@pxy12.doe.gov (806) 573-6392 Office • <u>CR 400.38 - DOE Explosives Safety</u> [PC-2]
Reviewing and Approving Plan Documents 3. An explosives safety SME shall evaluate and recommend approval of required Explosives Safety Site Plan (ESSP) documents per DOE-STD-1212, Explosives Safety and Defense Explosives Safety Regulation (DESR) 6055.09.	Training & Consulting, LLC (TCI) / Safety Management Services • https://smsenergetics.com/training • https://www.tci-training.com/ • 2018-SMS-TCI-Training-Brochure.pdf (firebasestorage.googleapis.com) • <u>Advanced Explosives Site Plan Training*</u> [PC-3] <u>Defense Ammunition Center</u> For all other Defense Ammunition Courses contact 1-800-275-2872 or 1-757-878-4745 • <u>[AMMO-82] U.S. Army Explosives Safety Quantity Distance and Site Planning</u> [PC-3] <u>A-P-T Research Inc.</u> • <u>Risk Management for Safety Engineers</u> [PC-3]
Contractor Implementation 4. An explosives safety SME shall evaluate the site contractor's implementation of applicable elements of the Explosives Safety program.	Training & Consulting, LLC (TCI) / Safety Management Services • Safety Management Services Trainings • Training & Consulting, LLC Explosives Safety Trainings • 2018-SMS-TCI-Training-Brochure.pdf (firebasestorage.googleapis.com) • <u>Process Safety Management and Classification Testing & Process Hazard Analysis Training</u> [PC-4]

DOE-STD-8002-2023

	• <u>Explosives Shipping Classification DOT Ex-Number Training & Workshop</u> [PC-1], [PC-4] • <u>Testing for DOT, ATF, and In-Process Classification Testing</u> [PC-1], [PC-4] • <u>Electrical classification, hazard recognition, and protection</u> [PC-4] <u>Defense Ammunition Center</u> For all other Defense Ammunition Courses contact 1-800-275-2872 or 1-757-878-4745 • <u>[AMMO-12] U.S. Army Explosives Ammunition Storage</u> [PC-1], [PC-4] • <u>[AMMO-14] Ammunition Surveillance</u> [PC-1], [PC-4] • <u>[AMMO-60] Technical Ammunition</u> [PC-1], [PC-4] • <u>[AMMO-62] Technical Transportation of Hazardous Materials</u> [PC-1], [PC-4] • <u>[AMMO-74] Explosives Safety Officer Orientation Course</u> [PC-1], [PC-4] Texas A&M Engineering Extension Service (TEEX) https://teex.org/ • <u>eLearning: EOT500 Explosives Safety Awareness at Lawrence Livermore National Laboratory</u> [PC-1], [PC-2], [PC-4] • <u>In-Resident: EOT501 Explosives Safety Applications for National Laboratories – In-resident portion of TEEX</u> [PC-1], [PC-2], [PC-4] <u>A-P-T Research Inc.</u> • <u>Institute of Makers of Explosives Safety Analysis for Risk (IMESA FR) Training</u> [PC-1], [PC-4] • <u>Safety Assessment for Explosives Risk (SAFER) Software Training</u> [PC-1], [PC-4] US Army • <u>TP 16 Tools Class</u> [PC-1], [PC-4]
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DOE-STD-8002-2023

Program Integration 5. An Explosives Safety Subject Matter Expert must evaluate the integration of the ESP with other programs and processes to ensure safe operations.	
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APPENDIX B

CONTINUING TRAINING RECOMMENDATIONS

Explosives safety SME personnel shall participate in a continuing training and qualification program that includes the following elements:

1. Continuing technical education and/or training covering topics directly related to the explosives safety oversight as determined appropriate by management. This may include courses/training provided by DOE, other government agencies, outside vendors, or local educational institutions. Continuing training topics should also address identified weaknesses in the knowledge or skills of the individual personnel.
2. Specific continuing training requirements or needs shall be documented in Individual Development Plans.

DOE-STD-8002-2023

CONCLUDING MATERIAL

Review Activity:

EM

NA

NE

SC

EA

Preparing Activity:

EA-50

Project Number:

TRNG: DOE-STD-1260-20XX

Field and Operations Offices:

CBFO

CH

ID

OH

OR

ORP

RL

SR

Field or Site Offices:

Argonne Site Office

Brookhaven Site Office

Fermi Site Office

Kansas City Field Office

Livermore Field Office

Los Alamos Field Office

Nevada Field Office

NNSA Production Office

Pacific Northwest Site Office

Princeton Area Office

Savannah River Field Office

Sandia Field Office