



National Aeronautics and  
Space Administration

**John C. Stennis Space Center**  
Stennis Space Center, MS 39529-6000

**SPR 6330.1 Rev B**  
**October 2022**

## **COMPLIANCE IS MANDATORY**

### **John C. Stennis Space Center Explosive Safety Program**

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 2 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

## Document History Log

Status/Change/ Revision	Change Date	Originator /Phone	Description
Basic	November 2013	R. Gargiulo 8-3842	Initial Release
Basic-1	December 2015	R. Gargiulo 8-3842	Administration Changes
Basic 2	September 2016	R. Gargiulo 8-3842	Change references to Facility Operating Services Contract (FOSC) to Synergy Achieving Consolidated Operations and Maintenance (SACOM); Added SACOM to acronyms list
Rev A	September 2017	R. Gargiulo 8-3842	Changes to reflect NASA-STD-8719.12 flow down requirements. In paragraph 1.2.7, changed bi-monthly to quarterly inventories. In paragraphs 1.2.6 & 1.2.8 added requirement to verify explosive handlers have annual physical exams per NPR 8715.3 and NPR 1800.1. In section 2.1 added requirements for material handling equipment; fire extinguishers; marshalling areas in the event of fires; housekeeping; and electrical testing of explosives. In section 2.2, added requirements for vegetation control around explosive facilities; GOV and POV parking near explosive storage and operations; signage prohibiting flames, sparks, and RF/EMF equipment near explosive storage and operations; hot work controls; procedures for controlling RF/EMF during explosive operations; and ensuring new, modified or repaired facility equipment is safe for explosive operations. Added section 2.3 to address explosive safety in site plans when necessary. This was pulled out of SSP-8715-0001, Safety and Health Handbook, Appendix B.
Rev A-1	September 2018	R. Gargiulo 8-3842	Administrative Changes in Paragraph 1.2.6 e and 2.1 d – change bi-monthly to quarterly.

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 3 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

Rev B	October 2022	R Simmers 8-1877	<p>Performed changes to reflect movement of requirements from NPR 8715.3 to NPR 8715.1.</p> <p>Added requirement for key control review and tenant Quantity Distance Analysis review by ESO 1.2.6 &amp; 1.2.7.</p> <p>Modified quarterly/annual inventory requirement based on explosives storage owner and purpose in 1.2.7.</p> <p>Added ATF License exception to address lessons learned in 1.2.7.</p> <p>Added Requirement for creation/maintaining of explosive operational/facility design drawings in 2.2.</p> <p>Incorporated updated Explosive Handler Physical Schedule and associated requirements from NPR 1800.1 in Figure 1.</p> <p>Added requirement for ESO concurrence and evaluation for mixed compatibility group storage as stated in NASA-STD-8719.12 in section 2.2.</p> <p>Additional Administrative changes.</p>
-------	--------------	---------------------	--

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 4 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

## Table of Contents

<b>Preface .....</b>	<b>5</b>
<b>P.1 Purpose .....</b>	<b>5</b>
<b>P.2 Applicability .....</b>	<b>5</b>
<b>P.3 Authority .....</b>	<b>5</b>
<b>P.4 Applicable Documents and Forms .....</b>	<b>6</b>
<b>P.5 Measurement/Verification .....</b>	<b>6</b>
<b>P.6 Cancellation.....</b>	<b>6</b>
<b>Chapter 1. Policy, Roles and Responsibilities .....</b>	<b>7</b>
1.1 SSC Explosive Safety Policy .....	7
1.2 Roles and Responsibilities .....	7
<b>Chapter 2.0 Instructions.....</b>	<b>14</b>
2.1 General Instructions .....	14
2.2 Safety Requirements for Explosives, Pyrotechnics and Ammunition .....	15
2.3 Site Plans For Explosive Operations/Facilities .....	17
<b>Appendix A. Acronyms .....</b>	<b>20</b>
<b>Appendix B. NASA Form 1791 – Explosive Facility License (Notional) .....</b>	<b>21</b>
<b>Appendix C. Quarterly Inventory (Notional).....</b>	<b>22</b>
<b>Appendix D. Explosive Transport Vehicle Inspection .....</b>	<b>23</b>

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 5 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

## Preface

### P.1 Purpose

a. This National Aeronautics and Space Administration (NASA) Stennis Space Center (SSC) Procedural Requirements (SPR) document defines the Center's Explosive Safety Program. NASA programs and SSC tenants may conduct activities on NASA property requiring the implementation of explosive safety policies, principles and techniques to protect the public, workforce and/or property from associated hazards. The management, storage and use of explosives, munitions and pyrotechnics are referenced throughout this SPR as "explosive operations". This SPR outlines the SSC safety policies, requirements and processes applicable to the Department of Defense (DoD), commercial, and NASA direct activities using explosives, munitions and pyrotechnics and provides safety assurance requirements for the use of propellants in rocket engine testing.

*Note: With respect to the DoD explosive operations, the DoD organization shall adhere to the standards and requirements of their branch of service and the DoD Explosive Safety Board. NASA/SSC's oversight of the DoD operations is to ensure their operations do not adversely affect NASA personnel, facilities and mission, as well as to ensure NASA's operations do not adversely affect the DoD operations.*

b. This document implements the NASA safety standards/procedures for operations involving explosives handling and processing. Safety of all explosive operations associated with NASA programs is an ongoing, primary concern and must continually be given high priority in all program direction and management. This document implements NASA's safety standards for explosives' storage, handling, and processing.

### P.2 Applicability

a. This SPR is applicable to NASA SSC personnel, all programs/projects and activities, including contractors and resident agencies to the extent specified in their respective contracts or agreements. "Contractors," for the purposes of this paragraph include contractors, grantees, Space Act Agreement partners, host tenant support agreement parties, Enhanced Use Lease partners, etc.

b. In this directive all citations are assumed to be the latest version unless otherwise specified.

### P.3 Authority

a. Occupational Safety and Health Standards, 29 Code of Federal Regulations (CFR) pt. 1910.

b. Safety and Health Regulations for Construction, 29 CFR pt. 1926.

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 6 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

- c. Hazardous Materials Regulations, 49 CFR Subchapter C.
- d. NPD 8700.1, NASA Policy for Safety and Mission Success.
- e. SPD 8715.4, SSC Safety and Health Policy.
- f. SPR 8715.1, SSC Safety and Health Procedural Requirement.

#### **P.4 Applicable Documents and Forms**

- a. NPR 1800.1, NASA Occupational Health Program Procedure.
- b. NPR 8715.1, NASA Safety and Health Programs.
- c. NASA-STD-8719.12, Safety Standard for Explosives, Propellants, and Pyrotechnics.
- d. DoD 6055.9-STD, DoD Ammunition and Explosives Safety Standards.

#### **P.5 Measurement/Verification**

Compliance with the requirements contained in this SPR will be verified through processes contained in NPR 8705.6, Safety and Mission Assurance (SMA) Audits, Reviews, and Assessments.

#### **P.6 Cancellation**

SPR 6330.1, Explosive Safety Program, Rev. A-1, dated September 2018.

---

Richard J. Gilbrech, Ph.D.  
Director

#### **DISTRIBUTION**

Approved for public release via NODIS and TechDoc; distribution is unlimited.

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 7 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

## Chapter 1. Policy, Roles and Responsibilities

### 1.1 SSC Explosive Safety Policy

- a. It is SSC policy to mitigate and control hazards and risks associated with explosive operations in accordance with Federal, NASA and state requirements.
- b. The SSC explosive safety standards for the storage, handling and/or use of explosives shall follow the cardinal principle for explosive safety: expose the minimum number of people to the smallest quantity of explosives for the shortest period consistent with the operation being conducted.

### 1.2 Roles and Responsibilities

#### 1.2.1 Center Director

The SSC Center Director (or NASA designee) shall:

- a. Establish an SSC Explosive Safety Program within SMA.
- b. Appoint in writing an SSC Explosive Safety Officer (ESO) in accordance with NPR 8715.1.

#### 1.2.2 Director, SMA

The Director of SMA, shall:

- a. Ensure an operational Explosive Safety program is established and executed to support NASA and tenant missions.
- b. Ensure SMA identifies program/project data requirements, performs and evaluates explosive safety analyses in support of the SSC mission, and provides oversight of tenant explosive operations.
- c. Establish processes and requirements for qualifying NASA personnel and NASA contractors to perform safety critical functions for explosive operations at SSC.

#### 1.2.3 Director, Center Operations Directorate

The Director of the Center Operations Directorate shall:

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 8 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

- a. Ensure new host tenant support agreements with tenant organizations involving explosives are coordinated through SMA and the SSC ESO.
- b. Ensure safety controls, security and infrastructure for facilities used to store, manage and/or use explosives are maintained and inspected per the requirements of NASA-STD-8719.12.

#### 1.2.4 Director, Engineering and Test Directorate

The Director of the Engineering and Test Directorate shall:

- a. Ensure test project design and operations that use explosives, pyrotechnics and propellants include proper structural, thermal, mechanical, and electrical considerations and incorporate safety factors to protect the personnel, facilities and environment. Explosive design and operations shall be coordinated through SMA and the SSC ESO.
- b. Ensure safety controls, security and infrastructure for facilities used to store, manage and/or use explosives are maintained and inspected per the requirements of NASA-STD-8719.12.

#### 1.2.5 Synergy Achieving Consolidated Operations and Maintenance (SACOM)

In support of the Explosive Safety Program, the SACOM Contractor shall:

- a. Inspect the ground, surge and lightning protection system of explosive storage facilities semiannually.

*Note: Tenant organizations have the option of performing this function in lieu of using SACOM.*

- b. Verify and test the continuity and adequacy of the lightning/surge protection system annually in accordance with NASA-STD-8719.12.

*Note: Tenant organizations have the option of performing this function in lieu of using SACOM.*

- c. Provide the facility manager and the SSC ESO copies of the preventative maintenance and inspection results. Records shall be maintained for a minimum of three (3) years in the center's maintenance database.
- d. The SSC Fire Department shall coordinate on the facility explosive licenses (NASA Form 1791) and review/maintain the explosive inventories to ensure they are postured to correctly respond to an incident at an explosive storage site or an explosive operation.

#### 1.2.6 SSC ESO



Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 9 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

The SSC ESO shall:

- a. Develop, coordinate, and update SSC explosive safety policy, requirements, and procedures, including this SSC Procedural Requirement in compliance with NASA-STD-8719.12.
- b. Serve as the Center's Authority Having Jurisdiction (AHJ) for all matters involving explosive safety.
- c. Perform an annual inspection of the SSC Explosive Safety Program to include facilities, inventories, operations and procedures. The annual inventory inspection shall be an eyes/hands-on inventory of all assets for NASA, NASA direct contractors and tenant organizations (excluding the DoD tenants).
- d. Issue site and facility explosive licenses (NASA Form 1791) after reviewing the safety assessment of facilities, operations and documented operation procedures/processes. See Appendix B for a representative copy of the site/facility license.
- e. Maintain a master file of the licenses, inventories, explosive safety assessments/analyses, annual inspections, and all other related explosive safety data.
- f. Ensure new programs/projects or initiatives intending to use propellants, explosives, pyrotechnics and/or ammunitions prepare a safety assessment of the operations, facilities and safe distances. The safety assessment shall evaluate the potential for adverse effects on the NASA missions, site personnel, facilities, the general public and environment.
- g. Review and provide concurrence/approval of SSC operations involving explosives. This includes the use of explosives/pyrotechnics and propellants for rocket engine testing, the use of explosives/pyrotechnics for studies or analyses, the use of ammunitions for security operations, and the use of pyrotechnics for SSC educational and outreach activities.
- h. Verify NASA, NASA direct contractors, contractors, and tenant organization explosive handlers are properly trained/certified by their employers to include physical examinations requirements outlined in paragraph 1.2.8 below.
- i. Ensure appropriate Security and Fire Department personnel are aware of all active storage sites, test articles.
- j. Ensure all Quantity Distance Calculation for test articles at SSC test stands meet the requirements of NASA-STD-8719.12.
- k. Review access control processes, especially access key storage and checkout, for compliance with NASA-STD-8719.12 prior to issuing the SSC Explosives Storage permit for Explosive Magazine Storage Locations.

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 10 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

### 1.2.7 Explosive Safety Managers (ESMs)

“Explosive Safety Manager” is the collective term referring to the NASA, NASA direct contractor and tenant organization personnel responsible for adhering to the Federal, NASA, DoD, state and company explosive safety requirements, as well as, complying with the execution of this SSC Procedural Requirement within their organizations/functional area. “Explosive Safety Manager” refers to explosive custodians, munitions supervisors, organizational explosive safety officers, etc.

The ESMs shall:

- a. Be trained on the responsibilities of their assigned duties.
- b. Coordinate any changes in their explosive operations, storage and handling with the SSC ESO.
- c. Request a facility/site license (NASA Form 1791) for the storage of explosives, pyrotechnics and/or ammunitions.
  - (1). For NASA and NASA direct contractors, the facility/site license is also the NASA permit for explosive operations at SSC.
  - (2). For commercial tenants, the tenant must have a Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) license to have/possess explosives, pyrotechnics and/or ammunition on SSC. In addition, the commercial tenant shall have an SSC explosive site license.
    - (a). Exceptions: For explosives and pyrotechnics not regulated by the ATF or specified in the NASA Explosive Standard (such as ammunition), and therefore not requiring an ATF license, the ESO shall, upon request, determine on a case-by-case basis if SSC shall require an ATF license based on the amount and type of explosive/pyrotechnic being used/stored at SSC. Exceptions shall be documented in writing and records maintained by the ESO for a minimum of three (3) years.
  - (3). For Federal and DoD tenants, the Federal agency license/permit is the applicable site license. DoD tenants shall have a license coordinated through their parent service and approved by the DoD Explosive Safety Board.
- d. Ensure their organizations and areas of responsibility adhere to the processes, procedures and guidelines established for their explosive operations.
- e. Shall create and submit to the ESO, an access control procedure prior to obtaining a facility license.

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 11 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

f. Perform an assessment on the operations, facilities and safe distances associated with the handling, storage and management of explosives, pyrotechnics, and/or ammunitions for their organizations.

(1). The safety assessment shall assess the processes/procedures for the safe handling, transportation, storage and use of the explosives; assess the adequacy of the facilities and controls; ensure facility/system design and/or drawings are current and accurate; evaluate the potential for adverse effects on the NASA mission, people, facilities, public and environment; and determine the Inhabited Building Distance (IBD), Public Traffic Route (PTR), and Hazardous Fragmentation safe distances for the explosive operations.

(2). The NASA, NASA direct contractor or tenant organization safety office shall be an integral party in completing the safety assessment.

g. Ensure accountability for all explosives, pyrotechnics, and/or ammunitions received and issued/used. The inventory log of explosives, pyrotechnics, and/or ammunitions shall include (if applicable/available):

(1). Date of receipt and issue/use

(2). Manufacturer date

(3). Department of Transportation (DOT) nomenclature/hazard classification

(4). Lot number

(5). Part/Model/Serial number and National Stock Number (NSN)

(6). Gross weight and Net Explosive Weight (NEW)

(7). Date of expiration (if applicable)

h. Submit a cumulative inventory of explosives, pyrotechnics, and/or ammunition to the SSC ESO and the SSC Fire Department. Non-security personnel, agencies, and tenants shall submit quarterly (March, June, September, and December) inventories to the ESO regardless of the type of explosive/pyrotechnic material stored. Inventory submissions are not required by the DoD tenants as inventory levels can be correlated to training and operations tempo. For ammunition storage areas only, Site Security Storage, NASA Security Specialists, and NASA IG Personnel shall only be required to submit an annual inventory, prior to the annual in-person inventory and audit conducted by the ESO. The inventory shall include the following information (see Appendix C):

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 12 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

(1). Organization (including program/project if applicable)

(2). Building/facility

(3). Type of explosive, pyrotechnic and/or ammunition and the DOT explosive class

(4). NEW for each type

(5). The cumulative NEW for the storage site/magazine

i. Document grounding checks on Electrostatic Discharge (ESD) wrist/leg straps prior to handling, inspecting or working with ESD sensitive explosives/pyrotechnics. Maintain the grounding check documentation for one (1) year.

j. Ensure vehicle inspections are performed and documented prior to transporting any explosives and/or pyrotechnics. Maintain the vehicle inspections documentation for one (1) year.

#### 1.2.8 Explosive Handlers

a. NASA, NASA direct contractors, contractors, and tenant organization personnel who handle explosives, pyrotechnics and/or ammunition shall be trained/certified by their employer on the specific tasks, procedures, processes, safety controls and precautions for handling energetic/explosive materials. The employer shall ensure the employees are proficient in the explosive operations. If an employee requests additional training or is observed to be deficient in training on the proper handling of energetic materials/explosives, the employer shall remove the employee from the explosive operations until the employee is retrained and proficient.

b. Explosive handler certification shall include a physical examination per NPR 1800.1, NASA Occupational Health Program Procedure, as provided below in Figure 1.

Ordinance Handler	
Frequency	1. Baseline Examination 2. Every 2 years
Laboratory	1. Audiogram 2. Visual Acuity 3. Depth Perception 4. Color Perception (as related to specific job requirements) 5. Urinalysis (dipstick) 6. Discretionary Tests:

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 13 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

	a. Electrocardiogram (ECG) b. Complete Blood Count (CBC) c. Blood Chemistry Profile d. Chest X-ray e. Pulmonary Function
Physical Exam	1. Any sudden incapacitation or inability to perform duties, tendencies to seizures, dizziness, claustrophobia, loss of physical control, or similar undesirable conditions 2. Physical Examination focusing on strength, endurance, agility, coordination, adequate visual acuity and hearing, and emotional stability
Written Opinion	Job Certification with any limitations
Employee Counseling	Counseling on exam results and conditions of increased risk.

**Figure 1. Ordnance Handler Certification Examination Requirements**

c. The ESO shall ensure offsite contractors who perform temporary explosives operations at SSC are properly trained. Offsite contractors shall provide a list of training classes and on-the-job-training for their employees.

d. With the exception of ammunition, handling energetic/explosive materials is considered a safety critical task and shall utilize the buddy system.

e. For the issue and return of ammunition, standard security and accountability controls shall be in place to include having the employee and shift supervisor signing for the ammunition.

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 14 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

## Chapter 2.0 Instructions

### 2.1 General Instructions

- a. Explosives operations shall be performed in accordance with the applicable requirements of NASA-STD-8719.12 and SSC operational and safety standards.
- b. All explosive operations shall be coordinated with the SSC ESO for review and approval.
- c. Only the minimum quantities of explosives, pyrotechnics and ammunition shall be on hand in support of approved projects or activities.
- d. Accountability of explosives, pyrotechnics and/or ammunition shall be maintained until they are expended in use, turned in as excess, or properly disposed of. Quarterly inventories shall be submitted to the SSC ESO and SSC Fire Department.
- e. Explosive site plans/licenses shall be developed/obtained and approved by the SSC ESO. Guidance for the development of explosive site plans can be obtained from the ESO and NASA-STD-8719.12.
- f. Explosive facility licenses shall be requested and obtained from the ESO through NASA Form 1791.
- g. The SSC ESO shall perform an audit of the Explosive Safety Program and an inspection of all explosive operations and facilities annually. The audit shall include a complete inventory and accountability review of the explosives, pyrotechnics and ammunition. The audit shall also assess explosive compatibility of stored materials, the storage area safety assessment, and key control utilization.
- h. Storage facilities for explosives, pyrotechnics and ammunition shall be properly placarded with the classification of highest hazard material, the maximum amount of explosives permitted and maximum occupancy per NASA-STD-8719.12. A copy of the Explosive Facility License shall also be posted or available at the storage facility or location.
- i. Vehicles used to transport explosives from the area of storage to the area of use shall be inspected prior to use. The inspection shall be documented on the form in Appendix D or comparable. Inspection documentation shall be kept for one (1) year. (See Appendix D)
- j. When transporting explosives on SSC, communication shall be maintained to ensure the destination site is ready and prepared for receipt of the explosives. When transferring explosives to/from the transport vehicle, ensure the vehicle is properly grounded.

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 15 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

k. All material handling operations and equipment for explosives shall meet the requirements of NASA-STD-8719.12.

l. A minimum of two (2) serviceable fire extinguishers, suitable for the hazards involved, shall be provided for immediate use at any location where explosives are being handled.

m. In the event of a fire, the fire alarm shall be activated and all personnel shall terminate explosive operations and evacuate to the marshalling area. For remote storage areas, notify the fire department via the emergency number 228-688-3636. Marshalling areas shall be located outside safety/quantity distance area. A head count and accountability shall be reported to the on-scene fire department and/or incident commander.

n. Explosive storage facilities and operation areas shall follow the housekeeping requirements of NASA-STD-8719.12.

o. Explosive operations shall follow the electrical testing required of NASA-STD-8719.12 with respect to the power source, use and layout of test equipment.

p. All inert explosives (used for training or display) shall be marked, labeled, stenciled, or tagged as to their status as defined by NASA-STD-8719.12.

## **2.2 Safety Requirements for Explosives, Pyrotechnics and Ammunition**

a. Explosives, pyrotechnics and ammunition shall be stored in compliance with the material compatibility requirements of NASA-STD-8719.12. For mixed compatibility group storage permitted by ESO concurrence, a written rationale shall be required and reviewed annually by the ESO for continued applicability.

b. Detailed procedures, plans, drawings and other documentation to safely perform explosive operations shall be developed in accordance with NASA-STD-8719.12. At a minimum, the assessment shall assess the processes/procedures for the safe handling, transportation, storage and use of the explosives; assess the adequacy of the facilities and controls; evaluate the potential for adverse effects on the NASA mission, people, facilities, public and environment; and determine the IBD, PTR and hazardous fragmentation safe/quantity distances for the explosive and propellant operations. Drawings of explosive facilities and checkout location shall be maintained, and configuration controlled.

c. User organizations shall provide explosive operations documentation to the SSC ESO for review and approval prior to commencing explosive operations.

d. NASA and NASA direct contractor personnel involved in transporting, storing, handling, using and inspecting explosives, propellants, and pyrotechnics shall be qualified/certified in

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 16 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

accordance with the requirements established by the HQ-NASA Explosive Safety Working Group and NASA-STD-8719.12. Commercial tenants shall adhere to their company training requirements.

e. Control of ESD for explosive, propellant and pyrotechnics operations shall be in accordance with NASA-STD-8719.12.

f. Relative humidity (RH) in the operational area shall be determined and recorded prior to the start and every four (4) hours during operations involving open rocket propellant grains, rocket motors with nonconductive cases, open flammable/combustible fluid systems, and explosives trains.

(1). When the RH falls below 50%, the ESD potential shall be measured within ten (10) feet of ESD sensitive explosives, pyrotechnics and propellants operations per NASA-STD-8719.12. Bonding, grounding, nonconductive materials, and personnel grounding devices shall be verified at less than 350-volts potential.

(2). When the RH is below 30%, and the SSC ESO approves ESD sensitive explosive operations, the ESD potential shall be monitored every ten (10) minutes.

g. Explosive operations shall stop and personnel shall evacuate to the safe distances when an electrical storm is within ten (10) miles (or greater depending on the electrical sensitivity of the explosive/pyrotechnic). Tasks shall be completed to put the explosive operation in a safe status prior to terminating/halting the operation. The first priority shall be the safety of personnel.

h. Explosive storage facilities shall be protected from lightning and electrical surge. The grounding system shall be inspected semiannually and tested at least annually per NASA-STD-8719.12. For storage facilities without a lightning protection system, the center shall provide a sitewide lightning warning system capable of annunciating lightning watches (10 miles) and warnings (5 miles) to alert personnel to the incoming hazard per NASA-STD-8719.12.

i. Explosive storage facilities shall be secured. Access shall be limited to authorized and trained personnel only. Escorts shall be provided for personnel on non-routine business (inspections, maintenance). The organization shall account for all personnel who enter an explosive storage facility. Access control to the facility shall be established in conformance with applicable standards and laws and shall be provided to the ESO during the licensing process.

j. Contractors/commercial tenants who perform explosive operations shall provide SSC a list of their employees who are trained/qualified to perform explosive operations.

k. Vegetation around storage magazines and explosives operating facilities should be controlled to minimize potential damage to the magazine or facility from grass, brush, or forest fires, or



Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 17 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

from erosion. A firebreak at least 50 feet wide and free from combustible material should be maintained around each aboveground magazine or facility processing or containing explosives. If the aboveground magazine or explosives facility exterior is fire resistant, the firebreak need not be devoid of vegetation, but growth shall be controlled by mowing to prevent rapid transmission of fire to the magazine or facility.

l. Government Owned Vehicles (GOV) and Privately Owned Vehicles (POV) parking around explosive storage and operations shall follow NASA-STD-8719.12.

m. A sign shall be posted at each entrance to an explosives facility or storage area prohibiting smoking, flame/spark producing, and Electromagnetic Frequency (EMF) emitting equipment. Such devices shall be greater than 25 feet from the explosives facility or operation. Smoking (including e-cigarettes) shall be prohibited in, on, or within 50 feet of any explosive facility/operations or motor vehicle, trailer, rail car, or material handling equipment loaded with explosives.

n. For hot work near explosive storage and operating locations, the SSC ESO and organization safety representative shall coordinate on the proper controls and procedures.

o. For explosives and pyrotechnics which are susceptible to Radiofrequency (RF) and EMF, the explosive storage facility and explosive operations/area shall be protected from RF/EMF by placarding, notifications, detailed operational procedures and/or faraday shielding/caps/techniques.

p. For facilities with explosive operations or storage, new/modified/repared facility or explosive operation equipment shall be examined and tested by competent designated operating personnel prior to use to assure safe working conditions. Explosive storage and operation facility additions and/or changes shall be properly documented and brought to the ESO for final approval prior to explosive storage occurring at the addition to the location. No exposed explosives shall be permitted during maintenance or repair activities.

q. Siting for explosive storage and for explosive operations shall adhere to the quantity distance (QD) principles and requirements of NASA-STD-8719.12, specifically with respect to the IBD and PTR distance. Siting shall consider at a minimum the protective distances for hazardous fragments and overpressure hazards.

### 2.3 Site Plans for Explosive Operations/Facilities

The following provides guidance for determining when explosive safety needs to be addressed in a site plan/planning document and generally what data/documentation is expected in the package for facility modifications/construction.

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 18 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

a. Safety approval of site plans and general construction plans must be obtained from the cognizant safety engineer and NASA/SSC SMA for the following types of facilities and operations:

- (1). Facilities used for handling, transporting, storing, testing, or maintaining explosives, liquid propellants, solid propellants, pyrotechnics, and ammunition.
- (2). Facility operations that increase exposure of personnel, equipment, or resources to explosives.
- (3). Operations that increase the NEW of storage or operating location above the permitted/licensed limits.
- (4). Operations that alter an explosive facility major support structures, such as beams or girders, or reduce the blast or fragment suppression capability of walls, doors, etc. of an explosives location.
- (5). Operations that result in permanent reduction in the effectiveness of explosion protection systems, such as explosion-proof lighting, wiring, or motors, barricades, etc., where such protection systems are required.

b. Site plans need not be submitted for approval when increased storage capacity results from changes in storage criteria and has no effect on the established QD.

c. Initial submission of site plans will be concurrent with the conceptual design review. Final safety approval can be obtained no later than the 60% design review process.

d. A site plan requirements package must contain the following basic information:

- (1). Distances between the facility to be constructed/modified and other facilities within the inhabited building and hazardous fragment distances; the installation boundaries; underground pipelines; public traffic routes; and power transmission/utility lines. The distances may be listed in narrative form or reference may be made to the scaled drawing/facility map on which the specific distances are designated or clearly shown.
- (2). Identification and brief description of the mission of all facilities within inhabited building distance of the facilities to be constructed/modified.
- (3). General description of the components, items, and hazardous materials to be handled or stored in the new/modified facilities, to include explosives limits and hazard classifications.
- (4). Anticipated personnel capacity of the facilities to be constructed/modified.

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 19 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

(5). Data pertaining to walls, roofs, shields, barricades, windows, exits, floors, explosives operating equipment, fire protection systems, lightning protection and static electricity grounding systems, electrical installations, ventilation systems and equipment, hazardous waste disposal systems, auxiliary support structures, monitoring equipment, general materials, and construction.

(6). Explanation and rationale or justification for any deviation from the requirements in NASA-STD-8719.12 and this document.


Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 20 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

## Appendix A. Acronyms

AHJ	Authority Having Jurisdiction
ATF	Bureau of Alcohol, Tobacco, Firearms and Explosives
CBC	Complete Blood Count
CFR	Code of Federal Regulations
DoD	Department of Defense
DOT	Department of Transportation
ECG	Electrocardiogram
EMF	Electromagnetic Frequency
ESD	Electrostatic Discharge
ESO	Explosive Safety Officer
ESM	Explosive Safety Manager
GOV	Government Owned Vehicle
IBD	Inhabited Building Distance
IG	Inspector General
NASA	National Aeronautics and Space Administration
NASA STD	NASA Technical Standard
NEW	Net Equivalent Weight
NEW	Net Explosive Weight
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
NSN	National Stock Number
POV	Privately Owned Vehicle
PTR	Public Traffic Route
QD	Quantity Distance
RF	Radiofrequency
RH	Relative Humidity
SACOM	Synergy Achieving Consolidated Operations and Maintenance
SMA	Safety and Mission Assurance Directorate
SSC	John C. Stennis Space Center
SPR	Stennis Space Center Procedural Requirements

Stennis Procedural Requirements	SPR 6330.1	Rev B
	Number	Rev.
	Effective Date: October 1, 2022	
	Expiration Date: October 1, 2027	
Page 21 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

## Appendix B. NASA Form 1791 – Explosive Facility License (Notional)

 National Aeronautics and Space Administration		<h1>Explosive Facility License</h1>			
1. CENTER		2. ORGANIZATION		3. LICENSE NO.	
Stennis Space Center		Engineering and Test Directorate		3300-YY-##	
I. FACILITY DATA					
4. FACILITY IDENTIFICATION					
Building 3300					
5. PRIMARY USE				6. APPLICABLE EOIs	
Storage of E-Test Complex Ordnance/explosives					
7. ROOM NUMBER	8. ROOM USE		9. CONSTRUCTION		
Room 105	Storage of E-Complex Ordnance/Explosives in Type II magazines		Concrete		
II. EXPLOSIVE LIMITS REQUESTED (If more space is needed, use second page.)					
CLASS/ DIVISION A	COMPATIBILITY GROUP(S) B	NOMENCLATURE C	QUANTITY D	EXPLOSIVE WEIGHT E	FIRE SYMBOL F
1.1	E	Combustion Stability Bomb (6 grains/0.508 grams each)	36	18.3 grams	1
1.1	E	Combustion Stability Bomb (13 grains/0.966 grams each)	36	35.9 grams	1
		TOTAL NEW = ~54.2 grams = ~.12 lbs			
III. CERTIFICATION					
DATE		TYPED NAME, GRADE, AND TITLE OF CERTIFYING OFFICIAL		SIGNATURE	
07/26/2017		T. N. Turner, E-Complex Explosive Custodian			
IV. APPROVING OFFICIAL					
DATE		TYPED NAME, GRADE, AND TITLE OF APPROVING OFFICIAL		SIGNATURE	
07/26/2017		Ita Blast, SSC Explosive Safety Officer			
V. COORDINATION					
NASA SECURITY	FIRE PROTECTION	NASA CENTER ESO			

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date:	October 1, 2022
	Expiration Date:	October 1, 2027
Page 22 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

## Appendix C. Explosive Inventory (Notional)

### STENNIS SPACE CENTER EXPLOSIVE INVENTORY WORKSHEET

Company/Agency: NASA/Stennis	Program: BIG ROCKET, E Test Complex Magazine
Date: 01-02-13	Duty Phone: 228-688-2XXX
Printed Name: Robin Rocket	Signature: on file

The inventory shall be prepared on a Bi-Monthly basis. A copy will be maintained at the site for two years, and copies of the inventory shall be delivered to the NASA Safety Office and the SSC Fire Chief.

Explosive Material Name	Quantity of Explosive Material	N.E.W. Each	Total N.E.W.	Explosive Storage Compatibility Group Identification	Storage Location
Start Cartridge Initiators P/N 12409018-001	1	0.18 grams	0.18 grams	1.4C	E-Test Complex Bldg. 3300
Pyrovalve Initiators P/N 12409017-001	6	0.45 grams	2.7 grams	1.4C	E-Test Complex Bldg. 3300
Main Chamber Igniters P/N 1241049-001-Test	3	29.0 grams	87.0 grams	1.3G	E-Test Complex Bldg. 3300
Start Cartridge Assembly Kits P/N 1239480-004	1	6 kg	6 kg	1.3C	E-Test Complex Bldg. 3300
Igniter Assembly P/N 829945-01	46	21.0 grams	966.0 grams	1.4C	E-Test Complex Bldg. 3300
Detonators/Blast Caps/Pulse Gun	50	0.744 grams	37.2 grams	1.4B	E-Test Complex Bldg. 3300
#8 caps	25	0.956 grams	23.9 grams		
#12 caps					
Estes E or Larger Rocket Motor P/Ns				1.4C	E-Test Complex Bldg. 3300
AT10-0	157	35.8 grams	5,620.6 grams		
E9-4	6	35.8 grams	214.8 grams		
E9-6	3	35.8 grams	107.4 grams		
TOTAL 1.3/1.4 N.E.W. IN MAGAZINE AS OF 01-02-13			13,059.78 grams (28.79 lbs)		
TEAL/TEB Ampoule P/N 1218916-003	1	0.31 L	0.31 L	4.2 (4.3)	E-Test Complex Bldg. 3300 Outdoor Magazine

Stennis Procedural Requirements	SPR 6330.1	Rev B
	<i>Number</i>	<i>Rev.</i>
	Effective Date: October 1, 2022	
	Expiration Date: October 1, 2027	
Page 23 of 23		
Responsible Office: Safety & Mission Assurance Directorate		
<b>SUBJECT: Explosive Safety Program</b>		

## Appendix D. Explosive Transport Vehicle Inspection

Explosive Transport Vehicle Inspection		
Date/Time of Inspection: _____		
Operator(s) Name(s): _____ _____		
Type of Vehicle: _____		
Vehicle Number: _____		
TPS/DOP/Test Request #: _____		
Inspected Item	Satisfactory	Unsatisfactory
Spare Electrical Fuses		
Horn Operative		
Vehicle fluids (steering, brake, oil)		
Windshield/Wipers (no cracks and functional)		
Mirrors (rear view and side mirrors)		
Warning Equipment (placards)		
Fire Extinguisher		
Lights and Reflectors (turn signals, hazards, head lights)		
Nonconductive material in cargo space/bed		
Tires/Wheels (pressure and condition)		
Tailgate/Doors (proper function and lockable)		
Verification of no electro emitting devices		
Inspection Results: Accepted _____ Rejected _____		
Inspector Signature: _____		