**OSP EXAMPLE**

The following document (SEAL-SSD-016) is provided as an example of possible layout for a Operations Safety Plan (OSP). Specific details on required content are included in USSFMAN 91-710 Volume 6, Section 4.3. The Range User has the flexibility to decide on document layout and format.

As described in Volume 6, Section 4.3, the OSP provides a detailed description of all hazardous operating areas including launch complexes and associated areas and facilities (e.g., booster processing, satellite processing, reusable launch vehicle (RLV) unique activities). It is developed for unique, but frequently repeated, operations that require special or detailed safety considerations not addressed in this publication, and clarifies and provides detailed safety requirements that are particular to the operating area or operation in question.

If the Range User chooses to use this template as a deliverable format, it is recommended that the Volume 6, Section 4.3 be used as a checklist for populating the existing sections and subsections, or adding new sections or subsections to the document, as needed. This OSP example is by no means complete; therefore the Range User should use the Volume 6, Section 4.3 as the driver for document completion.

[*Guidance:* C*ritical systems and processes identified in this OSP should be reviewed against information provided in both the GOP and FSDP to ensure that there is no duplication of effort. If OSP required information is already covered in another deliverables document, then only a reference to that document and section is recommended.*]

[*Guidance: USSFMAN91-710 Volume 6 also includes a subsection within Section 4.3 for a Facility Emergency Operating Plans (para 4.3.2), these items are indirectly captured within this document.*]

**<Company Name>**

DRAFT

**OPERATIONS SAFETY PLAN**

**FOR THE**

**<Title> PROGRAM**

Document Number: XXXXX

Revision X, 15 Sep 2020

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

This document is meant as an example only. Detailed requirements

are included USSFMAN 91-710 Vol 6, Section 4.3

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

<Company Name>

102 Maybury Gardens

Isle of Avalon, FL 32145

Prepared by:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

John Doe

<Company Name> System Safety Manager

Approved by:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Adam Smith Date

<Company Name> Program Manager

**Document Change History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision****Identification** | **Revision****Date** | **Pages Affected** | **Change Description** |
| Initial Release | 18 Sep 19 | N/A | N/A |
| A | 21 Feb 20 | Appendix A  |  |
|  |  |  |  |
|  |  |  |  |

[*Guidance: The “change” section contains a summary of all changes to the latest edition of the OSP. All changes shall be highlighted using change bars or similar means of identification.*]

**Preface**

This document establishes and defines the <Company Name> Corporation Operations Safety Plan (OSP) and its elements as required by USSFMAN 91-710 [T] for the <Title> Program at Cape Vandenberg AFB (VSFB).

<Company Name> Corporation, located at Isle of Avalon, Florida, has contracted with the USAF to launch <Title> launch vehicles from the Western Range. The <Title> launch vehicle consists of two stages. The first and second stage propellants are RP-1 and LOX.

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Appendix A

# Glossary of Acronyms & Definitions

1. **Introduction**

This Operations Safety Plan (OSP) supplements previously established safety rules and requirements and provides safety standards for the preparation, launch, and post launch activities of the <Company Name> Launch Operations at Vandenberg Space Force Base (VSFB), California.

* 1. **Purpose and Scope**
		1. Purpose

The purpose of this plan is to clarify and provide additional detail to the safety requirements for launch processing activities unique to all <Company Name> facilities located at VSFB.

* + 1. Scope

This plan has been developed in accordance with the requirements of USSFMAN 91-710 paragraph 4.3. The requirements and procedures of this document are to enhance, not replace, all other applicable safety rules and regulations, which remain in effect.

* 1. **Reference Documents**

[*Guidance: In this section include all <Company Name> policies incorporated or referenced in this OSP. For example: work time restriction, phone and radio use, electromagnetic compatibility, EHS, PPE, fall protection, overhead crane lift operation, suspended load, confined space entry, LOTO, welding, hot work, high pressure systems, mishap reporting, powered industrial trucks, flex hoses, earthquake, etc.*]

* 1. **Government Regulations**

29 CFR Part 1910 Safety and Health Regulations for General Industry, U.S.

Department of Labor, Occupational Safety and Health Administration.

29 CFR Part 1926 Safety and Health Regulations for the Construction Industry, U.S.

Department of Labor, Occupational Safety and Health Administration.

27 CFR Part 555 Bureau of Alcohol, Tobacco, Firearms and Explosives, U.S.

Department of Justice.

Title 8 California Code of Regulations, State of California, Division of Occupational Safety and Health (south of Honda Ridge).

49 CFR Part 71 - 171 Transportation of Hazardous Materials, U.S. Department of

Transportation

40 CFR Part 190 - 399 Environmental Regulations, U.S. Environmental Protection

Agency

* 1. **U.S. Space Force Requirements and Documents**

AFSPCMAN 91-710 Range Safety Requirements for the Eastern and Western Ranges as

tailored per launch program

30 SW Plan 32-4002-A Hazardous Materials Emergency Response Plan AFMAN 91-201 Explosive Safety Standards

AFI 32-2001 Fire Emergency Services Program

* 1. **Other Requirements**

When <Company Name>, Space Force, and other applicable documentation are in conflict on a specific issue, the more stringent requirements will apply until the conflict is resolved with <Company Name> and 30th Space Wing Safety.

* 1. **Roles and Responsibilities**
		1. Launch Sites Director

Responsibility for the safety of operations and personnel at VSFB resides with the Launch Sites Director. The Launch Sites Director reports directly to the Vice President of launch operations

* + 1. Environmental, Health and Safety (EHS) Manager

The EHS Manager is charged with the implementation and oversight of all EHS and Systems Safety Programs. The EHS Manager also serves as the liaison to the 30SW/SE and commercial customer safety offices to resolve conflicts between incompatible and/or conflicting safety requirements. The EHS Manager and the <Company Name> Safety Officer is a certified member of the EHS/ System Safety team.

* + 1. Safety Specialist

The Safety Specialist defines the minimum safety standards to be applied and is responsible for providing guidance for a comprehensive accident prevention program. In order to accomplish this task, the Safety Specialist reviews procedures to ensure compliance with applicable requirement’s, monitors operations, especially those involving known hazards; and interprets requirements so that employees may apply safety criteria as a natural function of their jobs.

* + 1. Site Operations Manager

The Site Operations Manager is responsible for ensuring safe operations through a comprehensive knowledge of the complete system and tasks to be performed, thus ensuring that planning, scheduling, and operations are coordinated to effect safe and timely completion.

During pre-launch operations the Launch Conductor (LC) coordinates with the <Company Name> Safety Officer providing notification of hazardous conditions requiring special safety surveillance.

* + 1. Task Leader

Responsibility for safe operations rests with the Task Leader. Task leader is used generically to identify the : Person in Charge; Systems Test Engineer; Engineer; Assistant Test Conductor; Launch Conductor (LC) or a trained, certified, and approved non-engineering task leader, e.g. a TSG technician. Task Leaders are required to report any mishaps or injuries to the EHS.

* + 1. Employees

Each employee is responsible for understanding and observing all safety requirements and precautions applicable to the task to be performed. It is the responsibility of each employee to warn others that they believe to be in danger from known hazards or where an individual has failed to observe safety precautions. Any unsafe conditions, acts, equipment, or material must be reported to supervision. Employees will secure/mitigate hazardous condition of an area or equipment until relieved by supervision, engineering, or EHS. All personnel have the right to stop unsafe work and have it reviewed for compliance by EHS.

* 1. **Definitions and Terms**
	2. **Abbreviations**
1. **General Safety**
	1. **Training**

[*Guidance: For the following subsections provide a detailed description of how briefings are performed, how training is executed, or qualifications met.*]

[*Guidance: Medical qualifications are required by OSHA and/or USSFMAN 91-710 for employees performing certain functions, with documented examinations and recordkeeping (i.e. respirator and self-contained breathing apparatus, material handling, commercial drivers, vision, etc.*]

* + 1. Safety Briefing and Walkdown
		2. Special Safety Training
		3. Explosive Safety Training
		4. Medical Qualifications
		5. Use of Other Facilities
		6. Safety Training
	1. **Area Warning Systems**

[*Guidance: Provide information about the visual and aural warning system, fire and chemical symbols, and public address system here.*]

* + 1. Visual and Aural Warning Signals

[*Guidance: Description may include reference table, similar to Table 2-1.*]

**Table 2-1 Area Warning Light Definitions**

|  |  |  |
| --- | --- | --- |
| Status Light | Designation | Personnel Response |
| Flashing Green | All clear. | Area is open for all authorized work. |
| Flashing Amber | A hazardous operation in progress. | No one allowed entry into the hazardous area without <Company Name> Safety and/or Task Management approval. Only task essential personnel are allowed in the hazard area. |
| Flashing Red w/ steady tone | Dangerous operation or condition is currently in progress on the pad. | DO NOT ENTER. No personnel allowed in the pad |
| Flashing Red w/intermittent tone | Emergency Condition | DO NOT ENTER. All personnel must clear the danger area and report to the EEAP. |

* + 1. Fire and Chemical Symbols
		2. Public Address (PA)

[*Guidance: Description may include reference table, similar to Table 2-2.*]

**Table 2-2 Public Address Access Table**

|  |  |  |
| --- | --- | --- |
| Location | Use | Method |
| XXX | General PA | Dial xx from phone at XXX |
| XXX1 | General PA | Dial xxx from phone at XXX1 |
|  |  |  |
|  |  |  |

* 1. **Emergency Evacuation Plans**

Emergency Evacuation Plans and Assembly Locations can be found at the Launch Complex or building specific appendix at the end of this document and are posted in each facility.

* 1. **First Aid/Emergency**

[*Guidance: Provide information about First Aid/Emergency showers and eyewashes here.*]

2.4.1 Safety Shower and Eye Wash Stations

* 1. **General Emergency Procedures**

[*Guidance: Provide information about emergency procedures here and reference any <Company Name> specific policies here.*]

* + 1. Fire
		2. Explosion
		3. Chemical
		4. Seismic Activity
	1. **Personnel Accounting**

[*Guidance: Provide information about badging, safety briefings, entering/exiting launch areas, entry acces list, and personnel controls.*]

* + 1. Badging
		2. Personnel Controls – Hazardous Operations

2.6.2.1 Entry Access List

2.6.2.2 Emergency Contacts

2.6.2.3 Visitor Access and Safety Briefings

* 1. **Designated Areas**

[*Guidance: Provide information about rules surrounding smoking, eating, and drinking.*]

* + 1. Smoking/Tobacco products
		2. Eating and Drinking
	1. **Work Hour Restrictions**

[*Guidance: Provide information on work hour restrictions. Reference* <Company Name> s*pecific policies.]*

[*Guidance: My include criteria, such as:*

1. *A maximum of 12 hours per shift.*
2. *A maximum of 60 hours per week.*
3. *A maximum of 14 consecutive days.*
4. *Adequate rest period between work shifts (10 hours minimum for <Company Name> personnel)*.]
	1. **Portable RF devices**

[*Guidance: Provide information about RF devices. Reference* <Company Name> s*pecific policies.]*

* 1. **Housekeeping**

[*Guidance: Provide information about housekeeping practices.]*

* 1. **Safety Inspection**

[*Guidance: Provide information about safety inspections. Reference* <Company Name> s*pecific policies.]*

* 1. **Unauthorized Activities**

[*Guidance: Provide information about unauthorized activities (i.e. drug and alcohol use). Reference* <Company Name> s*pecific policies.]*

1. **Operations Safety**

[*Guidance: Provide information about hazardous systems and processes. Tabular data format may be beneficial. See Table 3-1 and 3-4 as examples.]*

* 1. **Hazardous Systems List**

 [*Guidance: Include description here and identify each system in the Table. NOTE: categories may, or may not exist in the Range User’s program. Each hazardous system must be evaluated and included in Table below, if used.*]

**Table 3-1 Hazardous Systems List**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hazardous System** | **Hazard** | SLC-X | **Affected Area** | **Personnel Protective Equipment/ Hazard Mitigation** |
| Cryogenics Liquid Oxygen Liquid Hydrogen | Cryogenic, Fire | X | Launch Complex | Face shield, hazard mitigating non-porous shoes, cryo gloves, cryogenic apron/smocks |
| Cryogenics Liquid Nitrogen Liquid Helium | Cryogenic, Asphyxiates | X | Launch Complex | Face shield, hazard mitigating non-porous shoes, cryo gloves, cryogenic apron/smocks/anti- static coveralls |
| Solid Rocket Motor | Fire, Explosive | X | Public |  |
| Solid Rocket Motor, Open Grain | Fire, Explosive | X | Public | Flame retardant non- static producing coveralls, wristats |
| Ordnance | Fire, Explosive, Overpressure | X | Local clear per procedure |  |
| Ordnance, Static Sensitive | Fire, Explosive, Overpressure | X | Local clear per procedure | Flame retardant non- static producing coveralls, wristats |
| High Pressure Gas | Unexpected Noise, Asphyxiates | X | Launch Complex | Barricades, ear protection, eye protection |
| RP-1 | Fire | X | Launch Complex | Rubber apron, gloves, face shield, non-porous shoes |
| A-50 Storage and Transfer | Toxic, Fire, Auto- Ignition | X | Public | SCAPE/SCBA/ SAR |
| Hoisting | Drop, Swing, Crush | X | Launch Complex | Gloves, hard hats, safety toed shoes |
| RF (non-ionizing) | Radiation | X | Launch Complex | Barricades/clear areas |
| PowerDistribution Systems | High Voltage, High Current,Shock, Sparks | X | Launch Complex | In accordance with NFPA 70E |
| Hydraulic | Toxic, Leak, Rupture, Fire | X | Launch Complex | Safety glasses, face shield, gloves |
| Confined Spaces | Asphyxiation | X | Launch Complex | O2 monitor, forced ventilation, buddy system |

* 1. **Hazardous Operations List**

[*Guidance: Include description here and identify each system in the Table. NOTE: categories may, or may not exist in the Range User’s program. Each hazardous operation must be evaluated for its specifics (affected area/clear zone) and included in Table below, if used*]

**Table 3-2: Hazardous Operations with Associated Clear Zones**

|  |  |  |
| --- | --- | --- |
| Tasks | Affected Area | Clear Zone |
| SLC-X |
| Vehicle Erection | Launch Complex | Pad Deck |
| Solid Rocket Motor Erection | Public | XXXX ft |
| Solid Rocket Motor Grain Inspection | Launch Base | XXXX ft |
| Cryogenics Transfer-Storage Tanks | Launch Complex | XXXX ft |
| Liquid Oxygen | XXXX ft |
| Liquid Hydrogen | N/A |
| Liquid Nitrogen | XXXX ft |
| Liquid Helium | XXXX ft |
| Hypergolic Transfer | Public | Launch Pad Area and THZ |
| Battery Activation and Installation | Launch Complex | Local Area |
| Ground Pressure Systems Checkout | Launch Complex | Local Area |
| Ordnance Installation and Connection | Launch Complex | Local Area |
| RP-1 Load | Launch Complex | Per Procedure |
| Cryogenic Transfer – Flight Vehicle | Launch Base | Per Procedure |
| Spacecraft Encapsulation | Launch Complex | Local Area |
| Spacecraft Erection | Public | Per Procedure |
| Launch Countdown | Public | Flight Hazard Corridor |
| Post Launch Pad Systems Securing | Launch Complex | Per Procedure |

* 1. **Protective Clothing and Equipment (PPE)**

[*Guidance: Provide information about PPE in this section.]*

* + 1. Specific Requirements
		2. Protective Clothing
			1. SCAPE
			2. SPLASH
		3. Modified Splash
		4. Emergency Breathing Air
		5. Air-Purifying Respirators
		6. Face Shield
		7. Safety Glasses
		8. Hard Hats
		9. Flame Retardant Coveralls
		10. Proper Clothing in Launch Areas
		11. Industrial Activity Access Footwear

3.3.12 Safety Shoes (Protective Toe Cap)

**3.4 Hazard Communication and Material Safety Data Sheets/Global Harmonization System Safety Data Sheets**

[*Guidance: Provide information about material Safety Data Sheet: Material Safety Data Sheets (MSDS) / Safety Data Sheets (SDS). Also include discussion on any solvents to be used.]*

3.4.1 Solvents

* 1. **Pre-task Briefing**

[*Guidance: Provide information about pre-task briefings. Discuss details on personnel assignments, late procedure revision implementation, if problems arise during task, how they are resolved and how suggestions for improvement are evaluated and implemented. Also discuss how such things as breaks, fatigue, alcohol, medication, stress and illness are addressed.]*

* 1. **Fall Prevention and Suspended Loads**

[*Guidance: Provide information about all aspects of fall protection and suspended loads. Include references to Federal, state, military, and commercial standards, as well as <Company Name> policies.*]

* + 1. Working on Elevated Surfaces
		2. Personal Fall Arrest
			1. Anchorage requirements:
			2. Body Wear
		3. Connecting Device
			1. Fall Arrest Equipment users shall be properly trained.
		4. Tethering of Tools and Equipment
		5. Portable Stands/Ladders
		6. Lift Operations
			1. Overhead Cranes and Lift Operations
			2. Suspended Load Operations
	1. **Confined Space Entry**

[*Guidance: Provide information about confined space entries. Include discussion on types, permit process, and specific requirements. Include references to <Company Name> policies.*]

* 1. **Potentially Oxygen Deficient Area**

[*Guidance: Provide information about potentially oxygen deficient areas. Include references to <Company Name> policies.*]

* 1. **Lockout/Tagout**

[*Guidance: Provide information about lock out/tagout program. Include references to <Company Name> policies.*]

* + 1. Lockout
		2. Tagout
		3. Removal of Lockout/Tagout Devices
	1. **Pressurized Systems**

[*Guidance: Provide information about pressurized systems and flex hoses Include references to <Company Name> policies.*]

* + 1. Flex Hoses

* 1. **Laser Alignment Operations**

[*Guidance: Provide information about hazardous laser usage. Include references to <Company Name> policies and Radiation Use Authorization Permitting process requirements from Western Range Bioenvironmental Office.*]

* 1. **Welding and Cutting Operations and Other Hot Work**

[*Guidance: Provide information about hot work processes. Include references to <Company Name> policies and coordination requirements with VSFB Fire Department and issuance of* *AF Form 592 (Permit for Cutting and Welding).*]

* 1. **Vehicle safety**

[*Guidance: Provide information about vehicle safety. Include references to <Company Name> policies.*]

* + 1. Speed Limits
		2. Privately Owned Vehicles (POV’s)
		3. Company Owned, Contractor, Service Provider and Government Vehicles
		4. Vehicle Operation
		5. Explosives Transport
		6. Forklifts and Powered Industrial Trucks
		7. Personnel Lifting Equipment
	1. **ID Badges, Jewelry and other Loose Items**

[*Guidance: Provide information about ID badges, jewelry, and loose items.*]

* 1. **Fuels, Propellants, and Cryogens**

[*Guidance: Provide information about fuels, propellants, and cryogens. Include list of safeguards that are observed for each type of commodity. NOTE: categories may, or may not exist in the Range User’s program. Each hazardous commodity must be evaluated for its specifics and included below.*]

* + 1. RP-1
			1. Personal Protective Equipment
			2. RP-1 Storage Area
			3. Emergency Procedures
		2. Liquid Hydrogen
			1. Personal Protective Equipment
			2. LH2 Storage Area
			3. Emergency Procedures
		3. Liquid Oxygen
		4. Personal Protective Equipment
		5. LOX Storage Area
			1. Emergency Procedures
		6. Hydrazine/Aerozine-50
			1. Personal Protective Equipment
			2. Hydrazine/Aerozine-50 Operations Area
			3. Emergency Procedures
		7. Nitrogen Tetroxide (N2O4)
			1. Personal Protective Equipment
			2. N2O4 Operations Area

* + - 1. Emergency Procedures
		1. Ordnance and Solid Propellant
			1. Personal Protective Equipment
			2. Ordnance and Solid Propellant Operations Area
			3. Emergency Procedures
	1. **Radiation Hazard**

[*Guidance: Provide information about radiation hazards. Include references to <Company Name> policies and Radiation Use Authorization Permitting process requirements from Western Range Bioenvironmental Office.*]

* + 1. Ionizing Radiation
		2. Non-Ionizing Radiation
	1. **Ordnance Operations**

[*Guidance: Provide information about ordnance, handling, use of wrist stats, EMF exposure, etc.. Include references to Federal, State, local, and <Company Name> policies. Also include a Fire Symbol Table that shows Fire Symbol, Material Class and Division, and associated Hazard.*]

* 1. **Static-Producing Materials**

[*Guidance: Provide information about how static producing materials controlled, distance restrictions, and any controls used.*]

* 1. **Electrical**

[*Guidance: Provide information electrical equipment.*]

* + 1. Portable Electrical Tools
		2. Electrical/Electronic Work Requirements
		3. Hazard Proofing Electrical Equipment
	1. **Grounding**

[*Guidance: Provide information on grounding devices for handling electro-explosive-devices (EED), impedance requirements.*]

* 1. **Accident/Incident Reporting**

[*Guidance: Provide reference information for mishap and accident reporting including <Company Name> policies.*]

* 1. **Weather Restrictions/Guidelines**

[*Guidance: Provide information for Weather Restrictions/Guidelines.*]

* + 1. Wind
		2. Lightning

**Appendix A**

[*Guidance: Provide information for specific critical facility. Include table of hazardous operations, safety area, area warning light configuration, and any important remarks. Also provide plan view layout of emergency evacuation routes (primary and alternate) and Emergency Evacuation Assembly Point(s).*]

A.1 SLC-X

A.1.1 Unique hazards

[*Guidance: Example table of unique hazards*.]

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Safety Area | Status Light | Remarks |
| 1. RP-1 | Pad and THZ Clear | AMBER |  |
| 2. LO2 Launch Vehicle Load | Pad Clear | RED |  |
| 3. LO2 Launch Vehicle Leak Checks | Local Clear | AMBER |  |
| 4. LO2 Launch Vehicle de- tank | Pad Clear | RED |  |
| 5. Flight Pressure Leak Checks | Pad Clear | Red | Personnel may be on pad up to 25% of burst pressure. |
| 1. Cryogenic Transfer - Trailer to Storage Tank
	1. LO2
	2. LN2
 | X ft Clear X ft Clear | AMBER |  |
| 7. RP-1 Transfer to Storage Tank | Local Area Clear | AMBER |  |
| 8. RP1 Fueling Operations | Pad Clear | AMBER RED | Amber for tanking Red for de-tanking\* |
| 9. RP-1 Leak Checks on Vehicle | Local Clear | AMBER | Vehicle Pad |
| 10. Space Craft Mate | Pad Clear | AMBER |  |
| 11. Solid Motor Grain Inspection on Pad | Pad Clear | AMBER | MST back stairs can be used with elevator from MST level B only. |
| 12. Solid Motor Erection and Mate | Pad Clear | AMBER |  |
| 13. First Stage Mate | X ft Clear | AMBER |  |
| 14. Inter Stage Mate | X ft Clear | AMBER |  |
| 15. Second Stage Mate | X ft Clear | AMBER |  |

\*Red for de-tanking due to pressure in vehicle fuel tank

A.1.2 SLC-X Emergency Evacuation Routes

 [*Guidance: Include facility plan view with evacuation routes and EEAP(s).*]