Kennedy NASA Procedural Requirements

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Expiration Date: **September 14, 2025**

Responsible Office: **Safety and Mission Assurance**

KSC Construction Contractor Safety and Health Practices Procedural Requirements

National Aeronautics and Space Administration

John F. Kennedy Space Center

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Change Log

Date	Revision	Description
11/24/09	Basic	The primary purpose of this document is to make available to NASA/KSC construction contractors requirements regarding Safety, Health, and Fire Prevention including project Safety and Health Plans, workplace safety compliance to 29 CFR 1926 (Safety and Health Regulations for the Construction Industry) and 29 CFR 1910 (Safety and Health Regulations for General Industry), National Consensus Standards, and NASA/KSC Safety Program and Policies. Some of the requirements presented herein are repeated in this KNPR for convenience and appear in other requirements documents. Revisions of this KNPR will reflect changes to these requirements in other documents.
8/12/10	A	The primary goals for Revision A are to: a. Address comments requesting additional clarification on some of the requirements from the Basic revision of the document (changed throughout document). b. Ensure the information contained in this document, KNPR 8715.3, and KSC-UG-2814 (KSC Construction Contractor Safety and Health Practices User Guide) correspond with each other (changed throughout document). c. Made grammatical changes/corrections, updated formatting and numbering of some sections and forms, and corrected / inserted hyperlinks throughout. Where content was not changed, this process was not noted in this Revision History (changed throughout document). Section P.1 Purpose: Clarified purpose by removing summary of safety information and provided for reference purposes only. Performed re-write of paragraph “b” and clarified paragraph “c”. Section P.4 Applicable Documents: Added: l. KNPR 8500.1, KSC Environmental Requirements; m. KNPR 8715.2, Comprehensive Emergency Management Plan (CEMP); updated r. IEEE C2 National Electrical Safety Code Section 1.3 Responsibilities: Added paragraph “b & c” identifying the expectations of KSC contractor employees to comply with KSC safety and health policies / requirements / procedures, and to perform all work in a safe and healthful manner. Section 2.1.e. NOTE: Changed supervisor to contractor’s authorized representative.

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		Section 2.2 Contractor Employee Training: Clarified information to allow updates without having go through the full plan update approval process. Section 2.3 Accident / Incident (Mishap / Close Call) Reporting: added new paragraph “b” about having means to initiate emergency notification; updated paragraph “e” to change property damage amount to $500,000; added two notes after paragraph “j” clarifying investigation authority for mishaps; added new paragraph “k” identifying contractor responsibility to cooperate with any Government mishap / close call investigation. Section 2.4.2 Wind Policy: Established method for an Alternate Wind Advisory Plan. Section 2.6 Construction Site Safety: Updated paragraph “i and j” clarifying use of cell phones and texting devices on work sites. Section 2.8 Drinking Water: Clarified requirements. Section 2.10 First Aid and Medical: Removed requirement to comply with physician direction. Not an enforceable item per contract. Section 2.11 Hazard Communications: Modified paragraph “a” to remove redundant information with paragraph “b”. Section 2.16 Job Hazard Analysis (JHA): Added NOTE covering review and updating process for JHAs. Section 3.1 Confined Space Entry: Modified paragraph “b” to add information on electrical power systems in enclosed spaces. Section 3.2 Cranes and Lifting Operations: Paragraph “a” added 29 CFR 1926 (OSHA) requirements; paragraph “w” added Reference to UG-2814 and KSC Form 50-101 for lift planning; paragraph “x” added refer to 29 CFR 1926.550(g) for requirements; added NOTE to reference OSHA regulations and requirements for hoisting of personnel by crane; paragraph “y(2) added reference to FAA Advisory Circular AC 70/7460-1K. Section 3.3.6 Additional Demolition Requirements: Added paragraph “d” requirement for Florida Department of Environmental Protection (FDEP) a “Notice of Asbestos Renovation and Demolition Form” [DEP Form 62-257.900(1)]. Section 3.5 Electrical Safety: Reorganized sections to better clarify requirements; added new 3.5.1 Electrical JHAs; added new note after paragraph “c(3)” systems de-energized by personnel

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		other than from the contractor; updated 3.5.1.d. Elements (of JHA) to add as applicable to paragraph “(9) and (10)”; updated 3.5.4b to include employees crossing the NFPA 70E prohibited approach boundary; updated paragraph “d” to clarify exceptions for energized work; 3.5.5.1a added in close proximity to the work. Section 3.11.1 Asbestos Containing Material (ACM): Added NOTE after 3.11.1e.(2) to clarify that the information provided are estimated values and provided for operations and maintenance (O&M) planning purposes only; added NOTE after 3.11.2a. to clarify requirement for toxic metals plan; Section 3.12: Changed section title to Hearing Loss Prevention and Hazardous Noise. Section 3.14 Industrial Hygiene: Removed paragraph for written procedures. Actions needed are covered in JHAs. Section 3.20.2 Respirator Selection and Exposure Monitoring: updated section title; updated paragraph “a” and added “b” to clarify exposure pre-assessment and monitoring. Section 3.22 Scaffolding: Added new paragraph “a” to reference requirements of Subpart L of 29 CFR 1926. Section 3.24.1 General Requirements for Elevating Work Platforms (EWP): Updated paragraph “g” and added “h” to correspond with the fall protection requirements of KNPR 8715.3. Section 3.24.3 Work Practices: Clarified section on requirements for fall protection when moving from or to an aerial work platform. Appendix A Definitions: Added numbering; clarified definitions for Hazardous Chemical or Material and Hazardous Operation/Work Activity. Appendix B Acronyms: Added PAWS (Pager and Area Warning System) and TAWS (Tornado Area Warning System).
12/7/11	A-1	An Interim Change Policy was signed by the Safety and Mission Assurance Director on December 7, 2011. The Interim Policy provides a change to Section 2.16, which required that all Job Hazard Analyses (JHAs) be provided to the project contracting officer for review and acceptance as appendices to the Site-Specific Safety and Health Plan. This change rescinds this requirement and instead places the JHA development, content review, and approval responsibility on the employer and jobsite controlling authority.
7/28/15	A-2	This document has been administratively changed to extend expiration date pending review and rewrite. A Change Log was added to capture all changes.
10/6/15	A-3	Additional extension to allow for Center-wide review and finalization of the document.

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12/17/15	A-4	Extension processed due to extensive rewrite, internal S&MA reorganization, and key personnel shifts. Revised KNPR will need coordination with Engineering and Spaceport Integration and Services.
4/14/16	A-5	Due to a SA realignment and a change in management, there has been a refocus to rewrite this KNPR. This document is going through a major overhaul and requirements scrub. Also, in an effort to reduce our document footprint we intend to incorporate KSC-UG-2814, KSC Construction Contractor Safety and Health Practices User Guide into the KNPR 8715.7 rewrite. Once a draft is completed there are several review/comment cycles prior to finalizing.
08/29/2016	B	Kennedy NASA Procedural Requirements (KNPR) 8715.7 went through a major rewrite. Improvements include: KSC-UG-2814 was incorporated into the rewrite, KSC forms and permits have been updated. KSC-UG-2814 will be retired. Construction contractors must comply with the Occupational Safety and Health Administration (OSHA) 29 CFR 1926, therefore specific OSHA 1926 requirements has been removed. The Lifting section has been aligned with the NASA Lifting Standard.
9/14/2020	C	Kennedy NASA Procedural Requirements (KNPR) 8715.7 went through a major rewrite. Improvements include; adding clarifying language, revisions, and requirements to several sections within the KNPR, KSC Forms and Permits have been updated. Hyperlinks have also been updated. The requirements set forth by the NASA Lifting Standard were identified as too restrictive on construction contractors and several requirements were removed or altered.

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PREFACE

P.1 Purpose

a. The safety and health of all persons involved in any type of work at the National Aeronautics and Space Administration's (NASA) John F. Kennedy Space Center (KSC) is paramount. Safety is the freedom from conditions that can cause death, injury, occupational illness, damage to or loss of equipment or property, or harm to the environment. NASA's safety priority is to protect the public, NASA workforce, high-value equipment and property, and the environment.

b. This document establishes safety and health procedural requirements that serve as a framework to define the parameters for performing construction work at KSC in a safe and healthful manner. It is a living document subject to change. It should be emphasized, however, that all contractor employees have the responsibility to ensure their safety and that of others who may be impacted by their actions.

c. This document is a compilation of safety information, requirements, and regulations that NASA construction contractors shall follow when conducting work on NASA property located on KSC and Cape Canaveral Air Force Station (CCAFS). Information and requirements identified within are not intended to cover all the safety requirements of the Occupational Safety and Health Administration (OSHA) and other consensus standards and regulations. The references to OSHA herein have been provided for convenience and do not constitute a complete list of all applicable OSHA regulations. This KNPR does not relieve contractors of their obligations under OSHA regulations or any other applicable local, State, or Federal laws and regulations.

P.2 Applicability

a. This Kennedy NASA Procedural Requirements (KNPR) document is applicable to NASA KSC Civil Servants and to NASA KSC contractors (including subcontractors, service providers, and construction contractors) as specified in their contracts.

b. In this directive, mandatory actions (i.e., requirements) are denoted by statements containing the term "shall." The terms "may" or "can" denote discretionary privilege or permission, "should" denotes a good practice and is recommended, but not required, "will" denotes expected outcome, and "are/is" denotes descriptive material.

c. In this directive, all document citations are assumed to be the latest version unless otherwise noted.

P.3 Authority

a. 29 CFR Part 1910, Occupational Safety and Health Standards for General Industry

b. 29 CFR Part 1926, Occupational Safety and Health Standards for Construction Industry

c. KNPD 8700.1, Safety and Mission Assurance Policy Directive

P.4 Applicable Documents and Forms

a. NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping

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b. KNPR 1600.1, KSC SECURITY PROCEDURAL REQUIREMENTS

c. KNPR 1860.1, KSC Ionizing Radiation Protection Program

d. KNPR 1860.2, KSC Non-Ionizing Radiation Protection Program

e. KNPR 8500.1, KSC Environmental Requirements

f. KNPR 8715.3-1, KSC Safety Procedural Requirements, Volume 1: Safety Procedural Requirements for Civil Servants/NASA Contractors

g NASA-STD-8719.11, Safety Standard for Fire Protection

h. KSC-STD-S-0033, KSC Fall Protection Standard

i. KSC-STD-Z-0008C, Standard for Design of Ground Life Support Systems and Equipment

j. KDP-F-3645, NASA Direct Construction Contractor Mishap Report

k. KDP-KSC-P-3006, Tropical Storm and Hurricane Preparation, Response, and Recovery

l. KSC-PLN-1904, Trailer/Equipment Tiedown Plan for the Kennedy Space Center

m. KSC FORM 2-271, HOT WORK PERMIT

n. KSC FORM 2-272, TAR KETTLE/TORCHDOWN HOT WORK PERMIT

o. KSC FORM 8-313NS, CHEMICAL INVENTORY FOR CONSTRUCTION PROJECTS AT KENNEDY SPACE CENTER

p. KSC FORM 20-165, TAG, DANGER – DO NOT USE OR OPERATE

q. KSC FORM 20-195, LOCKOUT/TAGOUT TAG

r. KSC FORM 20-195A, LOCKOUT/TAGOUT TAG IDENTIFIER

s. KSC FORM 26-311, REQUEST FOR UTILITY OUTAGE

t. KSC FORM 26-312, SAMPLE UTILITY LOCATE/EXCAVATION PERMIT REQUEST

u. KSC FORM 26-400NS, WORK PERMIT

v. KSC FORM 28-750NS, CONFINED SPACE HAZARD EVALUATION REQUEST

w. KSC FORM 28-915, LOCKOUT LOCK AND LOCKOUT TAG INVENTORY RECORD

x. KSC FORM 28-1230A, ASBESTOS ABATEMENT PRE-WORK INSPECTION CHECKLIST

y. KSC FORM 28-1231A, ASBESTOS ABATEMENT CLEARANCE INSPECTION CHECKLIST

z. KSC FORM 50-101, LIFT PLAN FOR CONSTRUCTION CONTRACTORS

aa. KSC FORM 50-103, ENERGIZED ELECTRICAL WORK ANALYSIS & AUTHORIZATION PERMIT

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bb. ANSI/SAIA A92-2, A92.3, A92.5, and A92.6: Elevating Work Platform Standards

cc. IEEE C2 National Electrical Safety Code

dd. NFPA 70, National Electric Code

ee. NFPA 70E, Standard for Electrical Safety in the Workplace

P.5 Measurement/Verification

Compliance with the requirements contained in this KNPR will be verified through normal surveillance, audit, and assessment activities performed by the NASA S&MA organization. NASA safety personnel or their designees have the right to enter any NASA/KSC-controlled facility to monitor operations in order to accomplish this verification. These safety personnel are subject to safety practices and reasonable security requirements.

P.6 Cancellation

This document cancels KNPR 8715.7, Rev. B, KSC Construction Contractors Safety and Health Practices Procedural Requirements.

original digitally signed by Ms. Kunz 7/23/2020

Jennifer C. Kunz
Director, Safety and Mission Assurance

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CHAPTER 1: GENERAL INFORMATION

1.1 Goals

This requirements document assists NASA/KSC construction contractors in providing their employees and associate subcontractors with a safe and healthful work environment while not introducing hazards that may adversely affect personnel and property.

1.2 Objective

This requirement document contains safety and health information and requirements applicable to construction contractors performing work under construction contracts awarded and administered by the NASA/KSC Procurement Office. Environmental issues and regulatory requirements are referenced in KNPR 8500.1, KSC Environmental Requirements.

1.3 Responsibilities

a. Contractors shall ensure the safety and health requirements identified in this document and their Site-Specific Safety and Health Plan (SSSP) are observed by all contractor and subcontractor employees on the job site.

b. KSC contractor employees shall comply with KSC safety and health policies, requirements, and procedures and perform all work in a safe and healthful manner. When unsafe or unhealthful conditions or acts pose a danger to personnel or property, all employees have the right and obligation to stop work or refuse to perform work they feel is unsafe or unhealthful. Employees will work with their supervision to determine how the work can be performed in a safe and healthful manner.

c. Open, non-retaliatory communications are essential to improving and maintaining KSC's safety and health program. Reprisal or disciplinary action against an employee who initiates a safety concern will not be tolerated.

d. Violations of KSC safety and health policies, requirements or procedures by construction contractor employees could result in being barred from the Center.

1.4 Terminology

Throughout this document, the terms “contractor” and “construction contractor” are used synonymously and denote the responsible organization for identifying and performing safety and health requirements. These terms include all prime and subcontractor employees.

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CHAPTER 2: SITE-SPECIFIC SAFETY AND HEALTH (GENERAL REQUIREMENTS)

2.1 General Requirements

a. The contractor shall develop a Site-Specific Safety and Health Plan (SSSP) which addresses the policies, procedures, and techniques that will be used to ensure the safety and occupational health of the contractor's workforce on the awarded contract.

b. Contractor SSSP shall address all sections of this KNPR applicable to their construction site.

Note: The preferred SSSP Template is available in Appendix C, and an SSSP Requirements Checklist is available in Appendix D. While the requirements listed in Appendix D must be addressed, the template in Appendix C is an example. Strict adherence to this format and style is not mandatory.

c. The contractor shall address how they will protect their employees, KSC employees, the public, and NASA equipment and property, and the environment.

Note: Corporate safety and health plans (program) can be used in the development of the SSSP, but as standalone documents, they may not fulfill the requirements of a site-specific plan.

d. The contractor's site supervisor shall be responsible for ensuring employees abide by all applicable regulatory and NASA/KSC safety and health requirements identified in the accepted SSSP and best practices as defined by national consensus standards.

e. The contractor's authorized representative shall inform and request approval from the Contracting Officer (CO) for any proposed updates or changes to the contractor's approved SSSP.

f. The contractor shall provide the proposed SSSP to the NASA CO for acceptance prior to commencement of any site work. The CO will review SSSP in consultation with Institutional Safety, Environmental Office, Industrial Hygiene Office, and KSC Fire Services.

g. NASA Safety shall be given at least ten business days to complete the initial review of SSSPs and any alterations.

h. The SSSP shall include an appendix identifying site-specific hazards and the appropriate mitigations (e.g., confined space, maintenance of traffic, fall protection).

Note: The areas contained in Chapter 3, Site-Specific Safety and Health Plan (Project-Specific Requirements) are additional areas that will be addressed as required based on the specifics and applicability to the work to be performed by the contract.

i. NASA Safety shall monitor and evaluate the safety of the contractor's construction operations and advise the project CO and Contracting Officer's Representative (COR).

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j. Any recommendations provided to the contractor by NASA Safety shall be considered advisory only and do not relieve the contractor from any safety, liability, or contract compliance obligations.

k. The contractor shall permit NASA Safety to inspect job sites to verify compliance to safety and health requirements.

Note: Noncompliance to safety and health requirements uncovered by the NASA Safety are identified to the contractor's site supervisor, documented, and provided to the project CO and the COR, as needed.

l. Contractors shall verify existing configurations to identify areas posing hazards to personnel or property prior to the start of work.

m. The CO may issue a "Stop Work Order" when a contractor fails to follow safety procedures, creates or allows imminent danger situations to occur, or accumulates multiple safety noncompliances.

Note: A "stop work order" differs from "stop work authority" which can be invoked by any employee on KSC when any activity poses an imminent danger to personnel. See definitions in Appendix A for additional clarification.

n. NASA Safety shall hold a Nuts and Bolts after the SSSP has been accepted by the CO but prior to the start of work.

2.2 Contractor Employee Safety and Health Training

a. All contractor personnel engaged in job site activities shall receive the required safety and health training prior to initiation of the respective work activities.

b. All construction contractors shall watch the KSC's Construction Contractor General Hazards Familiarization safety video (KSC-QF111KSC) and submit a record verifying employee completion to the CO and NASA Safety prior to the initiation of the respective work activities.

c. The contractor shall identify in their SSSP employees who will serve in special roles such as site supervisor, competent person, qualified person, and heavy equipment operator.

d. The contractor shall ensure, prior to starting work, that all employee safety & health training required by the SSSP, NASA, and OSHA standards has been accomplished, is current, and proper documentation has been provided to the CO and NASA Safety.

e. Contractors shall ensure that the safety and health trainer is knowledgeable through relevant education and experience to conduct training in the area(s) being taught.

f. Employee Training records and certifications shall include the employee name, date of training, type of training received, expiration dates of training and be signed by a company official (manager) and provided as an appendix to the SSSP.

2.3 Accident/Incident (Mishap/Close Call) Reporting

a. In the event of a mishap, the contractor shall take immediate action to prevent further injury to personnel and damage to any property.

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b. The contractor shall maintain the capability to initiate emergency notification from each job location.

Note 1: This requirement may be met by providing a phone, cell phone, or hand-held radio to another location where phone notification can be initiated. Use of a runner for emergency notification from a job location does not meet this requirement.

Note 2: In the event of a serious accident/incident, immediately call 911, (321) 867-7911 (cell phone on KSC), or (321) 853-0911 (cell phone on CCAFS). Ambulances are on call 24 hours/day; 7 days/week on KSC and CCAFS.

Note 3: It is recommended that a 911 call be made for any mishap, even when there is no apparent injury (e.g., a piece of heavy equipment is damaged but the operator appears uninjured). The 911 call begins the notification process and minimizes the potential risk of further incidents or injury.

c. After initiating emergency notification, the contractor site supervisor shall take action (or give support to NASA response personnel) to secure the site, limit unnecessary access, and preserve evidence until the site is released by the Incident Commander, KSC Security, NASA Safety, or the mishap board chairperson.

d. The contractor shall ensure all potential incident witnesses and equipment involved remain at the worksite until released by the NASA Safety Investigator.

e. The contractor shall submit a KDP-F-3645, Direct Construction Contractor Mishap Report (Appendix R) by e-mail to NASA Safety, COR and CO within 4 hours of a Type C or Type D Mishap/Close Call and within 1 hour of a Type A Mishap, Type B Mishap, High-Visibility Mishap, or High-Visibility Close Call.

Note: Initial notification/report for mishaps and close calls should, at a minimum, include all available information relating to the time of the incident, the location, a description of the event, the organization(s) involved in the event, and a preliminary worst case estimate of the injuries/illness or the direct cost estimate of the damage resulting from the event.

f. The contractor shall cooperate with any Government mishap/close call investigations.

g. Contractors shall provide NASA Safety the company's Safety Statistic Record (SSR).

2.4 Weather Policy

2.4.1 General

a. Weather warnings are announced over the KSC Center-wide Paging and Area Warning System (PAWS). For tornado sightings, KSC will activate the Center-wide Tornado Area Warning System (TAWS) and make announcements over the public address system.

b. Contractors performing work outdoors shall have a means of receiving the KSC weather alerts. The following website may be used to register for KSC weather alerts from the 45th Space Wing. https://nasaksc.onthealert.com/Terms/Index/?ReturnUrl=%2f

Note: Contractors can receive these alerts by email or text message received on a cell phone.

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2.4.2 Wind Policy

a. The contractor shall comply with wind advisories and warnings issued by the 45th Space Wing Weather Office unless an Alternate Wind Advisory Plan is approved as part of the contractor's SSSP.

b. Contractors performing outdoor work shall adhere to the wind restrictions stated in Table A or manufacturer requirements, whichever are more restrictive.

Table A: WIND LIMITATIONS TABLE

Steady State	Gusts	Limitations
18 knots (20.7 mph)	22 knots (25 mph)	No erection of, or work on floats, spiders, and/or scaffolding. Adhere to Original Equipment Manufacturer's requirements regarding aerial lifts and scissor lifts.
30 knots (34.5 mph)	35 knots (40.3 mph)	No work on facility roofs, structure tops, unprotected areas, or outside hand rails (materials on roofs are secured or removed).
35 knots (40.3 mph)	40 knots (46 mph)	Contractor Supervisors will immediately conduct a walk down of their area for unsecured items.
40 knots (46 mph) and above	45 knots (51.7 mph) and above	Immediate actions will be taken to secure at ground level all loose or unanchored items, equipment, supplies, and materials.

Note: The 45th Space Wing Weather Office issues advisories for winds less than 35 knots, warnings for winds equal to or greater than 35 knots, and watches and warnings for winds equal to or greater than 50 knots.

d. An Alternate Wind Advisory plan shall include:

(1) An on-site weather team that includes the contractor's on-site supervisor, the project construction inspector, and the project CO or COR.

(2) Methods (minimum of two to corroborate wind readings) used to accurately determine wind speeds in the vicinity of the construction worksite in lieu of the Center wind advisories and warnings.

(3) Method and source used to record wind readings every 15 minutes.

Note: Wind readings should be performed during a Center-designated wind advisory or warning.

2.4.3 Lightning Restrictions

a. A Phase I Lightning Watch indicates that conditions are favorable for lightning to occur in an Lightning Hazard Notification Area (LHNA) within 30 minutes. A Phase I Lightning Watch is intended to provide personnel sufficient lead-time to secure their operations before the forecasted lightning begins.

Note: KSC has four LHNAs: Haulover (0.75 nautical mile radius), Shuttle Landing Facility (1.75 nmi radius), Launch Complex 39 Area (1.75 nmi radius), and Industrial Area (1.75 nmi radius). Outside of these areas, lightning announcements may not be received in time to

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take appropriate action. In this case, the SSSP lightning safety plan should include more detailed information regarding the detection and communication of the lightning hazard.

b. Phase II Lightning Warning indicates that lightning was observed or is forecasted to occur within 5 nautical miles of an LHNA.

c. The SSSP shall address the following lightning safety provisions, at minimum:

(1) Determination that the construction site is within an LHNA.

(2) Lightning safety plans for operations that occur outside of the LHNA.

(3) Lightning safety plans for operations that require more lead time than Phase II Lightning Warning provides.

Note: These are operations in which personnel may require additional time to secure equipment or to seek shelter before the lightning hazard is present. In these cases, consideration should be given to seeking shelter upon notification of a Phase I Lightning Watch.

d. Upon notification of a Phase I Lightning Watch, task leaders and personnel shall prepare to safely halt any operations that may be affected if a Phase II Lightning Warning is announced (i.e., be prepared to safely halt operations that expose personnel to lightning hazards or that are required to be halted if a Phase II Lightning Warning is announced).

e. Upon notification of a Phase II Lightning Warning, personnel shall:

(1) Safely halt and secure ongoing operations which could expose equipment or personnel to the lightning hazard.

(2) Seek shelter to protect themselves from the dangers of lightning.

Note: Appropriate lightning shelters include buildings that are protected against lightning, large unprotected buildings, and fully enclosed metal vehicles. Trees, open structures such as picnic pavilions, or small buildings/structures are not an appropriate shelter.

(3) Not remain on or access roofs or open top levels of structures.

(4) Cease electrical systems work and maintenance which could pose a risk to personnel due to the lightning hazard.

(5) Safely halt or do not commence crane operations for the duration of the Phase II Lightning Warning.

f. During Phase I Lightning Watch, it shall be permissible for outdoor and all electrical system work to continue provided the operations can be terminated immediately upon notification of Phase II Lightning Warning.

g. During Phase I Lightning Watch, task leaders and personnel shall prepare to safely halt any operations that may be affected if a Phase II Lightning Warning is announced (i.e., be prepared to halt safely operations that expose personnel to lightning hazards or that are required to be halted if a Phase II Lightning Warning is announced).

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h. During Phase II Lightning Warning:

(1) Employees shall act to protect themselves from the dangers of lightning upon being notified of a Phase II Lightning Warning

(2) Personnel access to roofs or open top levels of structures shall be prohibited.

(3) Electrical systems work and maintenance (indoors and outdoors) and any other operation requiring personnel to put themselves at risk of lightning exposure shall be prohibited.

2.4.4 Tornado Notification

a. During a Tornado Watch, the contractor's site supervisor shall ensure all construction site workers have a plan to protect their employees when a Tornado Warning is issued.

Note: Tornado Watches are issued as an alert that conditions are favorable for the development of tornadoes in and close to the watch area. These watches are issued with information concerning the watch area and the length of time they are in effect.

b. During a Tornado Warning, personnel shall take cover immediately in approved structures.

Note: Tornado Warnings are issued to warn that a tornado has been sighted by storm spotters or has been indicated by radar. These warnings are issued with information concerning where the tornado is presently located and what communities are in the anticipated path of the tornado.

2.4.5 Hurricane Condition (HURCON) Policy

During the Atlantic Hurricane Season (June 1 through November 30), Florida is subject to extreme destruction associated with hurricanes. During the Atlantic Hurricane Season, contractors shall:

a. Prepare their site by securing structures and loose objects, performing the necessary housekeeping, and preparing for evacuation when Hurricane Condition IV is declared (arrival of sustained winds of 50 knots/58 mph or greater within 72 hours).

b. Evacuate the worksite when directed by the CO and leave KSC when Hurricane Condition III is declared (arrival of sustained winds of 50 knots/58 mph or greater within 48 hours).

c. Tie down trailers and equipment with anchorage that complies with KSC-PLN-1904, Trailer/Equipment Tiedown Plan for the Kennedy Space Center.

d. Follow KDP-KSC-P-3006, Tropical Storm and Hurricane Preparation, Response, and Recovery

2.5 Clothing

a. Contractor employees conducting work on NASA construction contracts shall wear proper clothing suitable for the task and hazard level of work, including, at a minimum, long pants, shirt with sleeves (no tank tops), and shoes appropriate for the type of work to be performed. Overly loose fitting, torn, or ragged clothing is not acceptable.

b. Safety shoes or boots that comply with 29 CFR 1910.136 shall be worn when there is a potential for injury to the feet.

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Note: It is a recommendation on all construction sites that all employees wear safety toe shoes or boots. See also section 3.17, Personal Protective Equipment (PPE).

c. Arc rated/flame resistant shall be worn by employees performing tasks that have the potential to expose the employee to arc flash, flash fires, or burns (see also section 3.5 concerning electrical work PPE).

2.6 Construction Site Safety

a. The contractor shall ensure the safety of all personnel, regardless of organization, while within the boundaries of the worksite, including:

(1) Control of personnel on site.

(2) Ensuring the use of required PPE.

(3) Ensuring the observation of any special conditions and restrictions while on site.

(4) Establishing when and to whom the site is off limits.

b. The contractor shall ensure a site supervisor or alternate site supervisor is onsite at all times during construction.

c. The site supervisor or alternate site supervisor while performing supervisory tasks shall not perform other labor type duties unless the position is designated in the contract as a “Working Superintendent.”

d. The contractor shall permit only designated employees who are qualified by training or experience to operate equipment and machinery.

e. The site supervisor shall develop means of communication to disseminate safety related information throughout the worksite (e.g., handheld radios, bulletin boards).

f. The site supervisor shall have a means of communication to contact emergency services at all times.

g. Emergency numbers shall be posted at the worksite in a location where all employees have access.

h. Personnel shall not use cell phones/texting devices while operating equipment (to include tools, machinery, and heavy equipment) or driving vehicles (hands free only in vehicles).

i. Necessary business calls or replying to pages or telephone calls shall be accomplished only from a safe location (designated break area or area free from hazards) while at the jobsite.

j. The contractor shall implement policies to encourage employees to submit suggestions or report issues regarding site and facility safety and health to the project assigned safety specialist or by calling the Center Safety Office at (321) 867-SAFE (7233).

k. All contractors shall instruct employees that safety suggestions, violations, or issues can be reported anonymously to their employer or the Center Safety Office without fear of retaliation or retribution.

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l. Contractor employees who are performing work in or transitioning through a construction site controlled by another contractor shall comply with the safety and health requirements of that worksite.

m. Contractor employees working in the vicinity of or transitioning through an area where KSC operations are in progress shall comply with the safety and health requirements and direction of the NASA controlling authority of the area.

Note: Workers should be alert to walking surface conditions and immediately inform the appropriate personnel when a hazard is observed.

n. Contractor site supervisors shall:

(1) Ensure employees are aware of their responsibility to report any injury to their supervisor immediately.

(2) Follow the requirements for Accident/Incident (Mishap/Close Call) Reporting by submitting KDP-F-3645.

2.7 Controlled Areas

Posted or controlled areas shall not be entered, nor will the integrity of any installed protective system (e.g., guardrails, safety signs, warning lights) be rendered inoperable, without proper written approval from the CO and agreement by the facility manager and the Center Safety Office.

2.8 Evacuation (Facility or Area)

a. The contractor shall assign a point-of-contact (POC) for work conducted inside a facility prior to starting work.

b. The contractor shall obtain a copy of the facility emergency evacuation procedures from the facility manager, CO, or NASA Safety representative.

c. The POC shall ensure all contractor employees are briefed on evacuation and marshalling areas the first day of work.

d. Should evacuation of any area be necessary for reasons other than tornadoes, contractor employees shall follow the facility evacuation procedures and meet the POC at the marshalling area or at least 200 feet from the hazard.

e. The POC shall account for all employees and report the head count to the on-scene commander as soon as possible.

f. POCs shall notify the on-scene commander immediately if any employee is not accounted for.

g. Contractor Employees shall not return to work inside or within 200 feet of the facility until the on-scene commander gives the “ALL CLEAR.”

2.9 First Aid and Medical

a. The contractor shall make provisions for prompt medical attention in case of employee injury prior to starting work.

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(1) Personnel should report an emergency by dialing 911, (321) 867-7911 (cell phone on KSC) or (321) 853-0911 (cell phone on CCAFS).

(2) For non-emergency, walk-in medical care, personnel should report to the KSC Occupational Health Facility (OHF) located at the corner of 2nd St. SE and C Ave. SE during normal office hours. After hours or on weekends, call (321) 867-7911 (the KSC 911 Number). Emergency Medical Services (EMS) personnel will evaluate for first aid or transport to nearest medical facility.

b. All emergency contact telephone numbers shall be posted at the job site in an area accessible and conspicuous to all personnel.

c. First Aid Program

(1) The contractor's first aid program shall be designed to reflect the known and anticipated risks of the specific work environment.

(2) The contractor shall have a person(s) adequately trained to render first aid.

(3) A contractor employee, trained in first aid, shall be present at the worksite any time work is being performed.

(4) First aid supplies shall be readily available and in sufficient quantities at the job site.

2.10 Hazard Communications

a. External Reference: 29 CFR 1926.59 provides OSHA regulations concerning Hazard Communications.

b. The SSSP shall describe the contractor's approach to provide training to workers regarding the details of the hazard communication program, the labeling system used at the worksite, and the location of and access to Safety Data Sheets (SDS).

Note: OSHA requires that if employees receive job instructions in a language other than English, then the training and information to be conveyed under the Hazard Communications standard will also need to be conducted in the applicable foreign language.

c. The contractor shall ensure that each container of hazardous materials or chemicals and any secondary container (e.g., bottle, tank, vessel) in the workplace is properly labeled [i.e., Hazardous Materials Identification System (HMIS)], tagged, or marked with the appropriate hazard warnings.

Note: Labeling and SDSs provide employees with the specific information regarding the physical and health hazards of the hazardous chemical.

d. The contractor shall ensure the labels or other forms of warning are legible, in English, and prominently displayed on the container or readily available in the work area throughout each work shift.

e. The contractor shall not remove or deface existing labels on incoming hazardous material and chemical containers unless the container is immediately relabeled with the required information.

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f. The contractor shall submit to the CO a copy of every SDS for any potentially hazardous material or chemical brought on-site for use on this contract.

g. Prior to the time of delivery of the materials and chemicals to the site, the contractor shall provide to the CO a complete and accurate list accompanied by the applicable SDS of all materials and chemicals listed on the Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-To-Know Act (EPCRA) and Section 112(r) of the Clean Air Act that are stored on-site or used in the execution of this contract, regardless of the quantity.

h. The list accompanied by the applicable SDS of all materials and chemicals listed on the Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-To-Know Act (EPCRA) and Section 112(r) of the Clean Air Act stored on-site or used in the execution of this contract, regardless of the quantity, shall be updated and resubmitted to the CO on a monthly basis.

i. All inventory reporting shall be completed on the Chemical Inventory for Construction Projects at Kennedy Space Center, KSC Form 8-313NS.

j. Appropriate labels and SDS shall be provided for all chemical shipments.

2.11 Heat Stress

a. If applicable, the contractor's SSSP shall address how to protect employees from heat stress, heat exhaustion, and heat stroke. The contractor may reference the KSC Environmental Health Services – Heat Stress Index.

Note: Heat advisory warnings are issued through the KSC Duty Office in the same manner as other weather watches and warnings.

b. The contractor shall ensure employees are trained on the signs and symptoms of heat stress injuries and appropriate actions to take in the case of a heat stress injury.

c. The site supervisor should ensure all contractor employees on site take breaks as necessary to prevent heat-related illnesses.

2.12 Housekeeping

a. External Reference: 29 CFR 1926.25 provides OSHA regulations concerning Housekeeping.

b. Good housekeeping practices shall be observed at all times.

c. Only approved, marked containers shall be used for disposal of wastes in accordance with applicable regulations.

d. The work area shall be maintained in a manner that minimizes hazards and allows employees to safely work.

e. Routine clean-up of the jobsite shall be done daily at the end of each shift.

f. During the course of construction, any and all impalement hazards onto and into which employees could fall shall be guarded to eliminate the hazard.

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g. Combustible scrap and debris shall be removed from work areas at least daily during the course of construction.

h. At the completion of construction, the contractor shall clean up the construction area of all excess construction debris and return to grade level all above surface protrusions which are not permanent fixtures.

2.13 Inspections (Contractor Worksite)

a. The contractor shall perform a daily inspection of the job site, materials, and equipment to identify existing or potential hazards.

b. The inspection shall be accomplished by a competent person (General) (see definition in Appendix A) designated by the contractor.

c. The contractor shall document the completion of the worksite inspection at least weekly.

2.14 Inspections (KSC Safety Representatives)

The job site shall be subject to inspection by KSC Safety and Health personnel at any time. KSC construction safety specialists perform site visits of all NASA/KSC Construction project sites.

Note: KSC construction safety specialists document site inspections and safety and health violations/noncompliances in the construction safety database. The contractor's site supervisor works with the KSC construction safety specialists, the COR, or CO (depending on severity) to implement corrective action(s). For serious, willful, or repeat findings, a Notice of Safety Violation (NOSV) may be issued. The NOSV requires a formal response from the contractor.

2.15 Job Hazard Analysis (JHA)

The JHA is a technique that focuses on job tasks as a way to identify and mitigate hazards before they result in injury to personnel or damage to property. The JHA process focuses on the relationship between the worker, the task, the tools, and the work environment. The goal is to identify all uncontrolled hazards, then take the steps/actions to eliminate or reduce the hazards to an acceptable risk level. The terms "Job Hazard Analysis (JHA)," "Job Safety Analysis (JSA)," and Activity Hazard Analysis (AHA)," are synonymous.

a. Prior to the start of work, the contractor Site Supervisor shall verify that each job hazard analysis is complete and effectively eliminates or mitigates known job hazards.

b. A copy of all JHAs for the work being performed shall be available at the job site for NASA CO and Safety review.

c. A signature page with signatures of all employees performing the applicable work acknowledging that they have reviewed the JHA and will adhere to all stipulated hazard mitigations shall be maintained with the corresponding JHA.

Note: JHAs are living documents and should be reviewed, updated, and discussed with employees when changes occur in work tasks, alternate equipment is being used, or when alternate methods of performing the task are being considered, such as using aerial lifts in place of scaffolding.

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d. The JHA shall include the following elements:

(1) Task (Activity) Description: Specify the work to be performed such as operating machinery, equipment, and powered hand tools.

(2) Hazard Description: Using the listed tasks, identify the hazards from the work to be performed (e.g., flying debris, dust, wood chips, or metal shaving getting into the eyes).

(3) Hazard Controls: The preventative measures taken to eliminate or mitigate the hazard to an acceptable risk level [e.g., know and utilize the manufacturer's operating, maintenance, and safety procedures and use personal protective equipment (PPE) as required].

e. Reference section 3.5, Electrical Safety, for additional requirements regarding JHAs for energized electrical work.

2.16 Pre-task Meetings

a. Prior to the start of each work day or when a task changes during hazardous operations (e.g., confined space entry, dive operations, lifting operations), the contractor shall conduct a pre-task meeting and communicate all job related safety issues with all employees involved.

b. Where a task involves a confined space entry, completion of the required pre-task meeting shall be noted on the confined space entry permit.

c. At a minimum, the following topics shall be covered in the pre-task meeting:

(1) Work tasks planned for the day to include sequence and hazard management.

(2) Weather issues that could affect work.

(3) PPE required for the work tasks.

(4) Safety hazard awareness (from JHA).

2.17 Safety Meetings

a. The contractor shall conduct and document weekly safety meetings for all employees.

b. The weekly safety meeting shall discuss safety and health related issues as well as any incidents (and subsequent corrective actions taken) that have occurred at the site.

c. The first weekly safety meeting shall occur the first work day prior to the start of work.

d. If during performance of the contract, a break of more than five work days occurs, the site supervisor shall conduct a safety meeting the first day back to work.

e. Documentation of safety meetings shall include a short summary of the items covered, the date and location of the meeting, the name and signature of the person conducting the meeting, and a roster of attendees.

f. Documentation of these safety meetings shall be kept at the construction site for review.

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2.18 Safety Systems – (Permanently Installed)

a. The contractor shall protect and not invalidate the integrity of any installed safety systems or personnel safety devices (e.g., firefighting equipment and sensing devices, fire alarm centers, fire water supply, guardrails, safety chains, warning lights, safety signs) without prior approval from the CO.

b. Prior to temporarily removing or invalidating any permanently installed safety devices or equipment, the contractor shall obtain CO approval and implement a CO-approved alternate means of protection.

2.19 Sanitary Conditions and Facilities

a. External Reference: 29 CFR Part 1926.51 provides OSHA regulations concerning Sanitary Conditions and Facilities.

2.20 Temporary Structures, Trailers, and Work Areas

a. All temporary structures and trailers shall be clearly marked with the contractor's name and an emergency phone number.

b. Trailers parking locations shall be pre-approved by the CO and the facility manager.

c. Trailers shall be tied down when stationary for a period in excess of two weeks.

d. A Utility Locate/Excavation Permit Request, (KSC Form 26-312) shall be submitted through the project CO and approved prior to tying down any trailer or temporary structure.

Note: A sample Locate/Excavation Permit Request form is available in Appendix H.

e. All NASA Construction sites with or without temporary structures shall be marked by clear and visible signage with the following information:

(1) Company name of the contractor (XXXXXX Construction, Inc).

(2) Contractor Site Supervisor’s name and contact phone number.

(3) Contractor Safety Supervisor’s name and contact phone number.

(4) NASA/KSC Project CO name and contact phone number.

(5) NASA/KSC COR name and phone number.

(6) NASA/KSC Safety (321) 867-SAFE (7233).

(7) Contract Number.

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2.21 Vehicle Operations

The contractor shall adhere to permit requirements, restrictions, and conditions for overweight, oversized, or slow moving vehicles as identified in the traffic restrictions section of their contract and KNPR 1600.1, KSC Security Procedural Requirements.

Note: Movement of oversized or slow moving vehicles is prohibited on KSC roadways between the hours of 0600-0900 and 1500-1800 unless coordinated with the Protective Services Office.

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CHAPTER 3: SITE SPECIFIC SAFETY AND HEALTH PLAN (PROJECT-SPECIFIC REQUIREMENTS)

The SSSP should only contain the sections in Chapter 3 necessary to perform the awarded construction project.

3.1 Confined Space Entry

a. External Reference: 29 CFR 1926 Subpart AA provides OSHA regulations concerning Confined Space.

b. The SSSP for each contractor required to work in a confined space shall include an OSHA-compliant Confined Space Entry Program (Plan) that implements 29 CFR 1926 Subpart AA Confined Spaces in Construction.

c. The SSSP for each contractor required to work in telecommunications manholes or on electrical power systems in enclosed spaces shall include the process they will use to meet the provisions of CFR 1910.268(o) and 1910.269(e).

d. Contractor's qualified safety professional shall coordinate with the CO to complete a confined space hazard evaluation request KSC Form 28-750NS (see Appendix E) in accordance with KNPR 1840.19 that identifies hazardous conditions (present or introduced) and entry requirements for all confined spaces for each task requiring a confined space entry permit.

e. The contractor shall notify and obtain approval from the Power Coordinator (321-867-7300) and from Communications Control (321-867-4141) prior to performing any work in electrical or communications manholes.

f. The contractor shall coordinate all confined space entry work with KSC Environmental Health, KSC Fire Services, and any resident government or contractor organization whose employees have access to the worksite, as identified by the CO or COR.

g. External References: In accordance with 29 CFR Part 1926.1203(h) and 1926.1204(k), where the contractor acts as a controlling employer with operational control over the permit space during multiple employer entry, the SSSP shall incorporate procedures to coordinate entry operations (e.g., hazardous operation/work activity, required PPE, employee training, rescue, emergency services, all other aspects of the entry) with each entrant's employer.

> *Note: The contractor may perform atmospheric testing or use the government-provided services including environmental health monitoring and consultation support for the testing of atmospheres in confined spaces. To request government-provided atmospheric testing for confined space entry, a minimum 24 hour advance scheduling is required through the Medical and Environmental Health Services duty office at 867-2400.*

h. Standing water shall be pumped out of the confined space prior to any entry evaluation.

i. 29 CFR Part 1926.1205(c), provides OSHA regulations concerning the confined space permit being maintained on site and be available to contractor and government personnel, and the pre-task meeting required by section 2.18, Pre-task Meetings, and shall be noted on the approved confined space entry permit.

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3.2 Cranes and Lifting Operations

a. External References: 29 CFR Part 1926 Subpart CC provides the OSHA regulatory requirements, and the ASME B30 series provides the standards, for all crane and lifting equipment operations.

b. Daily and periodic formal (monthly and annually) equipment inspection shall be conducted, the results documented and made available on the job site.

c. Cranes shall be inspected by a competent person (cranes)

d. The following documentation shall be available at the job site when lifting equipment is operational:

(1) Operator certification

(2) Inspection documentation

Note: A load test may be requested if the annual inspection shows a discrepancy that could affect the lifting capacity of the crane.

e. A Pre-Task Briefing shall be performed and documented prior to commencing crane operations that includes, at a minimum:

(1) What task is to be performed.

(2) How (the methods) the task will be performed.

(3) Where each crew member will be positioned.

(4) What task each crew member will perform.

(5) The site supervisor in charge of the operation.

f. The working area around any lifting operation shall be controlled to limit personnel to include only those persons considered essential to the lifting operation.

g. If the controlled area cannot be maintained, the lifting operation shall be stopped immediately.

h. The site supervisor shall ensure:

(1) All personnel involved are instructed in the proper positioning, rigging, and moving to be done.

(2) The crane has met all its maintenance, test, and inspection requirements, is to be operated within its rated capacity, and the operator is properly certified.

(3) The vicinity of the lift is controlled, and the operator remains at the controls the entire time the load is suspended.

(4) The crane operator and signalmen have communications with each other, and if communications are lost, the lifting operation is immediately stopped.

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(5) All personnel within the controlled lifting area are wearing the appropriate personal protective equipment (e.g., hardhat, safety shoes, gloves).

(6) A pre-task briefing is performed, and all personnel are knowledgeable of the operation to be performed, tasks to be done, route to be traveled, and safety considerations.

(7) No part of the crane or load passes within the designated minimum safe approach distance of an electrical power line unless the line is de-energized and visibly grounded on both sides of the area of possible contact.

(8) The effects of weather conditions, including wind, on lift safety are addressed.

i. All crane operations shall comply with the NASA/KSC Weather Policy requirements in this document, in addition to the crane manufacturer's requirements.

j. A lift plan (KSC Form 50-101) (see Appendix F) shall be submitted for review and acceptance to the CO in consultation with the KSC Lifting Devices and Equipment Manager (LDEM) and Center Safety Office for all crane operations involving critical lifts (as defined in Appendix A of this document).

k. Cranes shall not be used to hoist employees on a personnel platform unless approved in advance by the CO in consultation with the KSC LDEM and NASA Safety. Refer to 29 CFR 1926 for specific requirements.

l. Cranes left outdoors shall be secured by the operator when operations are complete.

m. External References: 14 CFR Part 77 and FAA Advisory Circular 70/7460-1 provides the requirements for Crane operations and the appropriate marking and lighting of crane structures within navigable airspace.

3.3 Demolition

External Reference: 29 CFR 1926 Subpart T provides OSHA regulations concerning Demolition.

3.3.1 Engineering Survey

a. The contractor shall submit an engineering survey to the CO for review.

b. 29 CFR 1926 Subpart T provides details on what an engineering survey entails.

3.3.2 Demolitions Involving Hazardous Materials

a. External References: 29 CFR 1926.62 and 29 CFR 1926 Subpart Z, provides OSHA regulations concerning demolition activities involving hazardous materials (e.g. silica, mold, or toxic).

b. An approved plan for the safe handling and containment of hazardous materials shall be in place prior to the start of demolition (see section 3.11, Hazardous Substances, for additional plan requirements).

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c. The hazardous materials plan shall be submitted to the CO, COR, NASA Safety, Industrial Hygiene, and Environmental Office for approval prior to the initiation of the respective work activities.

d. The plan for handling/containment of all hazardous materials shall be fully compliant with applicable Federal, State of Florida, NASA, and other authorized regulatory agencies' current standards.

3.3.3 Continuing Site Inspections

a. Inspections by the contractor's designated competent person (general) shall be made as the work progresses to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material.

b. No employee shall be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.

3.3.4 Additional Demolition Requirements

a. Any structural member being dismembered shall not be overstressed.

b. No workers shall be permitted in any area which can be adversely affected by demolition operations when balling or clamming is being performed.

c. Only those workers required for the performance of the operation shall be permitted in this area.

d. If any load-bearing structure is to be demolished, regardless of whether or not asbestos is present, the contractor shall submit to the Florida Department of Environmental Protection (FDEP) a "Notice of Asbestos Renovation or Demolition Form" [DEP Form 62-257.900(1)].

3.4 Dive Operations (Commercial)

This section applies to diving and related support operations conducted in connection with all types of work and employment.

a. External References: 29 CFR 1910 Subpart T and 29 CFR 1926 Subpart Y provides OSHA regulations concerning Dive Operations (Commercial).

b. Each dive team member shall have the experience or training necessary to perform assigned tasks in a safe and healthy manner, including sufficient expertise with applicable tools, knowledge of equipment, and systems relevant to assigned tasks and techniques pertaining to the assigned diving mode, diving operations, and emergency procedures.

c. The site superintendent or designated person-in-charge shall be at the dive location in charge of all aspects of the diving operation affecting the safety and health of dive team members.

d. Use of electrical tools, equipment, or explosives shall be done in accordance with all applicable Federal, state, and local regulations.

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3.5 Electrical Safety

a. External References: 29 CFR 1926, Subpart K, provides the OSHA regulatory requirements and National Fire Protection NFPA 70, National Electric Code (NEC), NFPA 70E, Standard for Electrical Safety in the Workplace, and contract referenced documents provides the standards, for electrical safety.

b. Contractors performing work on or near any electrical system shall provide a written program for such work as part of its SSSP.

c. Training certifications and other relevant documentation shall be submitted for review and approval by the CO and NASA Safety.

d. Designated qualified electrical persons shall be identified as part of the SSSP prior to the initiation of the respective work activities.

e. The written program shall be consistent with the requirements of 29 CFR 1910 Subpart S and 1926 Subpart K.

f. The program shall include applicable hazard analyses/risk assessments and associated approach boundaries and spaces (e.g., arc flash, limited, restricted) and PPE.

g. Contractors performing work on or near Electric Power Generation, Transmission, and Distribution [such as Orsino Substation, C-5 Substation, the Emergency Power Plant, and overhead and underground 15 kilovolt (kV) power distribution systems] shall provide a written program for such work as part of their SSSP that is compliant with the requirements of 29 CFR 1910.269; 29 CFR 1910.332 through 29 CFR 1910.334; and IEEE C2 (National Electrical Safety Code).

h. Circuits shall be placed in an electrically safe condition by de-energizing, applying lockout/tagout, and verifying lack of voltage using suitable test equipment prior to grounding or performing any work on electrical conductors or electrical circuits.

Note: Exceptions to this requirement are covered in section 3.5.4 Exposure to Energized Parts.

3.5.1 Electrical JHAs

a. The contractor's written electrical safety program shall include JHAs covering all anticipated or known work to be performed in hazardous locations or on or near energized parts including "routine" tasks not requiring an energized work permit by NFPA 70E.

b. Additional JHAs shall be submitted during the course of the work as required by the CO or COR.

c. Each JHA shall be specific to a particular task and its associated hazards, taking into account at a minimum the following areas:

(1) Power switching or operating electrical equipment.

(2) Means and methods of controlling hazardous energy.

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(3) Voltage checks to determine equipment is de-energized (usually associated with an outage).

(5) Where systems are de-energized by personnel other than those employed by the contractor, the contractor is responsible for application of individual lockout/tag-out and verifying lack of voltage while wearing the proper PPE and utilizing proper instruments.

(6) Voltage/current checks or troubleshooting.

(7) Energized equipment access.

(8) Hot work (e.g., breaker racking, fuse replacement).

(9) Manhole, vault, or equipment entry with energized cables present. Approximately 10-weeks prior to planned manhole entries, the contractor's qualified safety professional shall coordinate with the CO to complete a confined space hazard evaluation request KSC Form 28-750NS in accordance with KNPR 1840.19 for each task requiring a confined space entry permit.

(10) Means employed to restrict the access of unqualified persons from the work area.

d. Each JHA shall contain the following elements:

(1) Date of the analysis.

(2) Description of the activity.

(3) General work steps (in sequence).

(4) Potential hazards for each step.

(5) Controls for each hazard (such as PPE, lockout/tag-out, administrative, and access restrictions)

(6) Detailed list of all PPE, special tools, and safety equipment required including required calibrations, certifications, and inspections.

(7) List of all training provided for qualified personnel. A separate list of all qualified personnel shall also be provided.

(8) Lighting survey to ensure adequate lighting (in addition to flash lights) is available for the task, particularly for spaces not normally illuminated such as vaults and manholes.

(9) Approach boundaries as determined by the shock risk assessment/hazard analysis (as applicable).

(10) Arc-flash boundaries as determined by the arc-flash risk assessment/hazard analysis (as applicable).

Note: A Sample JHA is available in Appendix G.

RELEASED - Printed documents may be obsolete; validate prior to use.

3.5.2 Electrical System Outage Work Permits

a. All necessary outages that affect utility systems, such as electrical, water, fire detection and protection systems, and air handling systems, require an electrical system outage work permit. Work shall be scheduled so as to minimize outages.

b. Request for utility outage permits shall be made in writing to the CO at least 14 working days in advance of the time required.

c. The request shall state the system involved, area involved, approximate time of outage, and the nature of the work.

> *Note: Submittal of a contractor's outage request does not constitute automatic approval. Due to the nature of the operations at KSC, the contractor may not know until the day before the requested date if the outage will take place as scheduled. All outages will normally take place outside normal work hours.*

d. When high and medium voltage circuits or equipment is de-energized by KSC's Base Operations Support Services (BOSS), the contractor shall obtain a work permit (KSC Form 26-311) from the BOSS through the project CO.

e. The contractor shall lockout/tag-out the required circuits.

f. After lockout/tag-out is complete, the contractor shall verify lack of voltage using suitable test equipment and proper PPE prior to grounding or performing any work on such circuit(s) or equipment.

g. When working in manholes or vaults containing energized medium voltage cables, the contractor shall request that protective relays supplying all such cables be set to trip with no delay.

h. The contractor shall obtain a work permit (KSC Form 26-400 NS) from BOSS through the project CO indicating that all such relays are set with instantaneous trip "maintenance" settings prior to entering or working in any manhole or vault with energized medium voltage cables.

3.5.3 Testing of Electrical Parts and Equipment Prior to Employee Exposure

a. A qualified electrical person shall use test equipment to determine the circuit elements and electrical parts of equipment to which employees will be exposed.

b. The qualified person shall also verify that the circuit elements and equipment parts are de-energized after the circuit(s) is locked and tagged out.

c. The test shall determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage back feed even though specific parts of the circuit have been de-energized and presumed to be safe.

d. The test equipment shall be checked for proper operation immediately before and after the absence of voltage check on an energized circuit.

e. Prior to reenergizing equipment, a qualified electrical person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices were removed so that the circuits and equipment can be safely re-energized.

RELEASED - Printed documents may be obsolete; validate prior to use.

3.5.4 Exposure to Energized Parts

a. Energized parts to which an employee might be exposed shall be placed in an electrically safe work condition before any employee works on or approaches them unless the contractor can demonstrate that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations.

b. If energized parts are not placed in an electrically safe work condition (e.g., due to increased or additional hazards or infeasibility), or if a task involves an employee crossing the NFPA 70E prohibited approach boundary, the work to be performed shall be considered energized electrical work and be performed under a written Energized Electrical Work Analysis & Authorization Permit (KSC Form 50-103) (exception, items c and d below).

c. Upon considering the capacity of the source and any overcurrent protection between the energy source and the worker, if there is no increased exposure to electrical burns or explosion due to electrical arcs, it shall be permissible for personnel to work with energized parts that operate at less than 50 volts to ground without de-energizing the parts.

d. Work performed on or near live parts by qualified electrical persons related to tasks to include testing, troubleshooting, and voltage measuring, is permitted without an energized electrical work permit, provided appropriate safe work practices and personal protective equipment are used.

Note: The repairing, replacing, or removing of any energized exposed components during these tasks is considered energized work, not troubleshooting or testing.

e. A two-person buddy system shall be used when performing work on or near exposed energized parts.

f. The site supervisor shall conduct an energized work pre-work briefing and document it using page four of KSC Form 50-103 prior to starting work.

3.5.5 Energized Electrical Work Analysis and Authorization Permit Contents

a. An Energized Electrical Work Analysis and Authorization Permit (KSC Form 50-103) shall include, at a minimum the following information:

(1) A description of the circuit and equipment to be worked on and their location.

(2) Justification for why the work must be performed in an energized condition.

(3) A description of the safe work practices to be employed.

(4) Results of the shock hazard analysis and determination of shock protection boundaries.

(5) Results of the flash hazard analysis and determination of flash protection boundaries.

(6) The personal protective equipment to safely perform the assigned task.

(7) Means employed to restrict the access of unqualified persons from the work area.

(8) Evidence of completion of a job briefing, including a discussion of job-specific hazards.

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(9) Energized work approval, with signatures of authorizing or responsible contractor management personnel (e.g., superintendent, safety officer, owner).

b. The Energized Electrical Work Analysis and Authorization Permit (KSC Form 50-103) shall be submitted for review and acceptance to the CO in consultation with a NASA Electrical Subject Matter Expert and NASA Safety.

3.5.5.1 Working in Close Proximity to Energized Parts

a. If the exposed parts are not de-energized, additional safety-related work practices shall be implemented to protect employees against direct contact with energized circuit part with any portion of the body or indirectly through some other conductive object.

b. Work practices shall be suitable for the conditions under which the work is to be performed and for the voltage level of the exposed electric conductors or circuit parts.

3.5.5.2 Shock Hazard Analyses/Risk Assessment

a. A shock hazard analysis shall be performed by a qualified electrical person to determine voltage exposure, boundary requirements, and the personal protective equipment necessary in order to minimize the possibility of electric shock.

> *Note: The Government will provide available information on applied system voltage, upstream circuit protective device settings, cabling distances and sizes, and available fault current as required to support the shock hazard*/risk assessment *and flash hazard analyses*/risk assessment*.*

b. Results of the shock hazard analysis/risk assessment shall be provided to the CO and the Center Safety Office for review.

3.5.5.3 Arc Flash Hazard Analyses/Risk Assessment and Arc Flash PPE

a. An Arc flash hazard analysis/risk assessment shall be completed by a qualified electrical person to protect personnel from arc flash injury.

b. Results of the arc flash analysis/risk assessment shall be provided to the CO and reviewed by the CO and the Center Safety Office.

c. The analysis/risk assessment shall determine the arc flash protection boundary and the personal protective equipment that personnel within the arc flash protection boundary use.

d. Personnel working with, on, or around energized circuits shall wear appropriate arc flash personal protective equipment as required by NFPA Code 70E.

3.5.6 Temporary Power/Wiring

a. Ground fault circuit interrupters (GFCIs) shall be utilized on all temporary power.

b. Extension devices shall be UL-Listed.

c. Electrical extension devices for 120 VAC shall be three wire grounded, "Dead Front" type with adequate current carrying capacity, but in no case less than 14 AWG and used in conjunction with GFCIs.

RELEASED - Printed documents may be obsolete; validate prior to use.

d. Temporary electrical wiring required during construction and major repairs shall be installed by a qualified electrician and protected with circuit breaker or fuses.

e. Temporary wiring and extension cords shall be protected against mechanical damage and, when damaged or spliced, removed from service.

f. Extension cords run through doorways, windows, or similar openings shall be protected from damage.

g. In areas where vehicles might run over the extension device, a protective cover/bridging device with brightly colored cones designating the hazard shall be used to reduce the possibility of damage to the extension device.

h. Equipment power cords, extension cords, and other electrical cabling should be used in a manner that does not create a tripping hazard. If such placement is unavoidable, a protective cover or equivalent shall be placed over the cable and marked in such a manner as to alert personnel to the tripping hazard (e.g., black/yellow safety tape, brightly colored cones).

i. Electrical extension devices shall not be used in combination (i.e., “piggybacked”) where one extension device is plugged into another.

Note: The use of a single GFCI pigtail is excluded from this requirement.

j. When using extension cords in combination with GFCI pigtails, the maximum rated load applied shall not exceed the rating of the GFCI pigtail.

3.6 Equipment

a. The contractor shall submit a list of all specialty or heavy equipment (contractor-owned, leased, or rented) proposed for use on the contract, including but not limited to forklifts, lulls, cranes, earth moving equipment, and other powered industrial trucks.

b. Operators of equipment shall be trained to use the equipment.

c. Documentation of training shall be submitted in accordance with the training and applicable equipment section of this document.

d. The contractor shall perform daily equipment inspections and as recommended by the manufacturer.

e. Tools, materials, or equipment not in compliance with applicable regulatory requirements shall not be used.

f. Defective equipment shall be removed from service or tagged out using KSC Form 20-165 (or a contractor equivalent tag) to render them inoperable.

3.7 Excavation

External Reference: 29 CFR 1926 Subpart P provides OSHA regulations concerning Excavation.

RELEASED - Printed documents may be obsolete; validate prior to use.

3.7.1 Dig Permits

a. Anytime digging is performed for any reason and to any depth, an approved Utility Locate/Excavation Permit Request (KSC Form 26-312NS) shall be obtained.

Note: A sample Locate/Excavation Permit Request form is available in Appendix H.

b. Permits are coordinated through the project CO and shall remain on site for review for the duration of the permit.

c. Any deviations from the approved excavation shall be approved in advance and submitted to the CO in writing.

d. Contractors shall adhere to the excavation permit category and conditions.

3.7.2 Special Requirements to Hand-Dig Excavations in Specific Situations

a. The contractor shall hand dig all excavations within 24 inches in all directions of a marked located utility line.

b. The contractor shall also hand dig a pilot trench when called for on the Dig Permit for all underground utility work along the centerline of new trenches and down to the bottom elevation of the new utility.

c. Machine excavation shall proceed only after it is determined that all existing utilities have been identified and protected.

3.7.3 Protection of Personnel during Excavations

a. A record of daily inspections shall be maintained at the job site.

b. In accordance with 29 CFR 1926, Subpart P, Appendix B, Soil on KSC is classified as type C.

3.8 Fall Protection

a. External References: 29 CFR 1926 Subpart M provides OSHA regulations concerning Fall Protection.

b. The requirements in KSC-STD-S-0033, KSC Fall Protection Standard, shall be met.

c. As required by contract, contractors working at KSC shall submit a Site Specific Fall Protection Plan that addresses project specific fall hazards, fall protection methods, and rescue.

Note 1: This Plan will become a part of the contractor's overall project SSSP, which addresses the contractor's approach to implementing the requirements of this standard and all applicable Occupational Safety and Health Administration (OSHA) regulations.

Note 2: A sample Site Specific Fall Protection Plan is available in Appendix *I.*

3.9 Fire Safety

a. Contractors are responsible for on-site fire prevention and protection while in the process of executing contracts on KSC and satellite installations. Fire prevention and protection policies contained within have been established in accordance with NASA directives, OSHA Code of Federal Regulations, and NFPA Fire Codes.

RELEASED - Printed documents may be obsolete; validate prior to use.

b. The contractor shall brief their employees on fire prevention and protection responsibilities.

Note: Construction sites will be inspected periodically by KSC fire inspectors to ensure compliance with fire prevention measures. The CO will be notified of any areas found to be substandard.

3.9.1 Handling and Storage of Flammable Liquids

a. Elevated fuel storage tanks shall be:

(1) Grounded/Bonded.

(2) Free of leaks (hose, nozzles, and valves).

(3) Equipped with "No Smoking within 50 feet" signs.

(4) Located at least 50 feet from buildings and combustibles.

(5) Posted with proper placards/labels.

b. Small containers of fuel shall be stored in Underwriters Laboratories or Factory Mutual and NFPA 30 approved (listed) Flammable Storage Cabinets labeled "Flammable - Keep Fire Away."

c. Flammables and any other volatile material shall be removed from worksites at the end of each day and stored in an area previously approved by the CO and the KSC Fire Prevention Office or removed from the installation.

d. Flammables and any other volatile material shall not be stored or left overnight in any building, facility, or structure.

e. All hazardous material spills shall be reported immediately by calling 911, (321) 867-7911 (cell phone on KSC), (321) 853-0911 (cell phone on CCAFS), the CO/COR, Environmental Point of Contact (EPOC), and NASA Safety.

f. Stored containers shall be sealed or covered.

g. Leaking containers shall be removed from the storage area or taken to a safe location outside the building and the contents transferred to an undamaged container.

h. Wiping rags, drop cloths, paint brushes, and rollers shall be stored in covered metal containers at the end of each working day.

i. All sources of ignition shall be eliminated and the area well ventilated when floor finishes containing combustible or flammable liquids are used.

3.9.2 Smoking

a. The contractor shall not allow smoking in any facilities or on roofs of facilities on KSC.

b. The contractor shall allow smoking only in designated areas that are approved by the KSC Fire Prevention Office.

RELEASED - Printed documents may be obsolete; validate prior to use.

c. Designated smoking areas shall be designated by conspicuous and legible signs and be equipped with an adequate number of readily available, metal containers with self-closing cover devices for disposal of smoking material.

d. Each metal container shall have stenciled on it “SMOKING MATERIAL ONLY.”

e. All cigarette lighting items (e.g., lighters, matches) shall be surrendered to the Gate Security Guard or at entry control points in areas where smoking or flame producing devices are forbidden.

f. At the end of every shift of duty day, all collected smoking material shall be completely extinguished, saturated with water, and removed for disposal in dumpsters.

g. All spark-producing device shall comply with NASA-STD-8719.11, Safety Standard for Fire Protection.

3.9.3 Fuel Powered Equipment

a. Fuel powered equipment (e.g., air compressors, hoists, pumps) shall be located so that exhaust stacks are well away from combustible material and facility air intakes.

b. Refueling shall not be conducted while engine is running or hot.

c. Equipment shall be free of fuel and oil leaks.

d. Fuel-powered equipment shall not be used inside buildings or facilities or under facility overhangs.

3.9.4 Fire Hydrants Adjacent to Construction Sites

a. Fire hydrants shall only be used with the approval of the KSC Assistant Chief of Fire Protection at 321-861-4684.

b. Fire hydrants shall not be blocked.

c. A minimum clearance of 25 feet shall be maintained at all times.

d. After obtaining approval from the KSC Assistant Chief of Fire Protection and prior to use, the contractor shall place a three-way valve on hydrants used to support construction activities.

e. At the end of the workday, hoses shall be disconnected from the fire hydrant and the caps replaced.

f. Fire hydrants shall only be opened with a hydrant wrench.

3.9.5 Fire Protection and Prevention

a. External Reference: 29 CFR 1926 Subpart F provides OSHA regulations concerning Fire Protection and Prevention.

b. A fire extinguisher belonging to a facility shall not be considered adequate fire protection in lieu of a contractor-provided fire extinguisher for all hot work operations.

RELEASED - Printed documents may be obsolete; validate prior to use.

c. Fire extinguishers and other firefighting equipment shall be visible and accessible at all times.

d. Contractor personnel shall be trained on classification of fires, fire extinguishers, and their uses.

e. The contractor shall have CO approval prior to tampering with, disturbing, or modifying the fire alarm detection and suppression systems unless specifically identified in the contract that work is to be performed on these systems.

f. The use of temporary heaters compliant with National Fire Codes shall be coordinated with the Fire Inspector.

g. Access to portable fire extinguishers and fire detection/suppression devices shall be kept clear and unobstructed at all times.

Note: The KSC Fire Prevention Office is available for assistance in any matters pertaining to good fire safety practices. They can be reached at 861-4684 Monday through Friday from 0700 to 1530 hours. After 1530 hours, and on weekends, for questions about fire safety call 861-8718 or 867-4103.

3.9.6 Blocking Facility Access

Any road or access to facilities that will be blocked due to construction or digging shall be reported to the BOSS Consolidated Control Center (867-7627) at least 24 hours before actual work begins.

3.10 Hand and Power Tools

a. External references: 29 CFR 1926 Subpart I and the applicable ANSI standard provide requirements for Hand and Power Tools design, use and maintenance.

b. Hand and power tools shall not be modified from the Original Equipment Manufacturer's (OEM) design/requirements unless authorized by the manufacturer.

c. Extension cords used for portable power tools shall be ground fault (GFCI) protected unless the cord is plugged into a ground fault protected outlet.

d. Power tools shall be disconnected at the end of each workday.

e. Requirements for Tools Using Loads (Ammunition)

(1) Loads (ammunition) shall be stored in locked metal containers (limited to 1000 rounds unless stored in an approved explosive storage area).

(2) Only the quantity necessary for the specific job shall be taken to the job site.

(3) Loads (as with all explosive materials) shall be kept away from heat sources.

(4) Loads shall remain in the personal control of the authorized operator.

(5) Loads shall never be left unattended at the job site.

(6) Each authorized operator shall keep positive control on all loads until unused portions are returned to the locked containers in the storage area.

RELEASED - Printed documents may be obsolete; validate prior to use.

(7) There shall be a standard means of identifying the powder levels of loads used.

3.11 Hazardous Materials

3.11.1 Asbestos Containing Material

a. External References: Asbestos Containing Material (ACM) compliance is provided in 29 CFR 1926 Subpart Z, National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR 61 Subpart M, the Florida Administrative Code (FAC) requirements FAC 62-257, and the Florida Statute (F.S.) 469 Asbestos Abatement, and F.S. 376.60 Asbestos Removal Program Inspection and Notification Fee.

b. The contractor shall provide a written Asbestos Management and Abatement Implementation plan, approved by the CO, Industrial Hygiene, EPOC, and NASA Safety, prior to the commencement of work, as an appendix to the SSSP.

c. The contractor shall:

(1) Verify the information provided is accurate and complete.

(2) Notify the CO/COR if any undocumented ACM or suspected ACM is encountered.

Note: Information provided on material quantities and room dimensions is based on estimated values determined by the facility directorate at the time the survey was performed. Survey data is based on non-destructive inspection/sample basis; additional materials may be present/discovered during facility renovations. Any KSC inspection data provided is for operations and maintenance (O&M) planning purposes only.

d. The contractor shall coordinate any asbestos management and abatement with designated KSC Environmental Health, Industrial Hygiene, and Fire Services personnel and any resident government or contractor organization whose employees may have access to the work location.

3.11.1.1 Placards, Signs, and Other Notices

In addition to posting requirements identified in 29 CFR 1926.1101, the notice shall identify the type of work in progress, Project Identification Number, and provide the name and phone number of the CO for project information and for notification in the event of an emergency.

3.11.1.2 Asbestos Abatement Requirements

If more than 260 linear feet, 160 square feet, or 35 cubic feet of ACM or presumed asbestos containing material (PACM) is to be removed, or any load-bearing structure is to be demolished regardless of whether or not asbestos is present, the contractor shall submit to the Florida Department of Environmental Protection (FDEP) a “Notice of Asbestos Renovation or Demolition Form” [DEP Form 62-257.900(1)].

3.11.1.3 Project Monitoring

Monitoring records shall be maintained at the worksite and be available for inspection.

RELEASED - Printed documents may be obsolete; validate prior to use.

3.11.1.4 Pre-Work Asbestos Abatement Inspection

a. Asbestos abatement work shall not begin until a workplace inspection involving the establishment of regulated areas related to asbestos abatement has been conducted.

b. Pre-work asbestos abatement inspections shall be requested by contacting the Medical and Environmental Health Services duty office at 867-2400.

c. Abatement work shall be permitted to proceed upon successful completion of the inspection KSC Form 28-1230A; Pre-work Inspection (view a sample form in Appendix J).

3.11.1.5 Final Asbestos Abatement Clearance Inspection

a. A Final Asbestos Abatement Clearance Inspection will be completed prior to the opening of a regulated area for normal occupancy following an asbestos abatement activity.

b. The contractor shall request the Final Asbestos Abatement Clearance Inspection at least 24 hours in advance by contacting the Medical and Environmental Health Services duty office at 867-2400.

c. A regulated area shall not be opened until a NASA EH Office representative successfully completes a Final Clearance Inspection by completing KSC Form 28-1231A; Post Work Inspection (view a sample form in Appendix K).

3.11.2 Steel Structure Maintenance or Demolition (Abrasive Blasting/Surface Preparation/Spray Painting)

a. When performing work involving toxic metals regulated under 29 CFR 1926 Subpart Z, the contractor shall provide a written Toxic Metals Safety and Health Plan as an appendix to the SSSP.

> *Note: This requirement is applicable, absent a valid negative exposure assessment or other objective data, to any work on steel structures that involves abrasive blasting, surface preparation, spray painting, welding, cutting, or other hot work involving coated metal surfaces that contain regulated metals.*

b. The Toxic Metals Safety and Health Plan shall:

(1) Be approved by the CO, Industrial Hygiene, EPOC, and NASA Safety prior to the commencement of work.

(2) Be specific to the structure(s) defined in the contract statement of work.

(3) Identify regulated work areas, where required.

(4) Describe the contractor's hygiene practices and worksite availability of change rooms, showers, and hand washing facilities and lunch room facilities.

(5) Address the contractor's approach to contain and control dusts, fumes, and other airborne or waterborne emissions from the worksite.

(6) Describe the contractor's exposure monitoring plan.

RELEASED - Printed documents may be obsolete; validate prior to use.

c. Prior to the commencement of any spray painting or abrasive blasting operations, the contractor shall take precautions to protect all personnel and government hardware from contamination or damage during sandblasting and painting operations.

Note: The CO is the approving authority for the method of protection.

d. Power tools used for surface preparation shall be equipped with dust collection shrouds or other attachments exhausted through a high efficiency particulate air (HEPA) filtered vacuum system.

e. At no time shall workers be allowed to leave the worksite wearing contaminated clothing or equipment (e.g., shoes, coveralls, head gear).

f. Contractor is responsible to ensure all contaminated clothing and equipment shall be prevented from reaching the worker's home or vehicle.

3.11.2.1 Project Monitoring

a. Each contractor performing regulated work is responsible for ensuring project monitoring is in accordance with the applicable requirements of 29 CFR 1926.62 and 29 CFR 1926 Subpart Z.

b. Monitoring records shall be maintained at the worksite and be available for government inspection.

3.11.2.2 Pre-work Inspection

a. Where work requires the establishment of a regulated area, work shall not begin until the government conducts a pre-work inspection of the regulated area and any associated containments related to the work.

b. Pre-work inspection shall be requested by contacting the Medical and Environmental Health Services duty office at 867-2400.

3.11.3 Silica

a. When work includes concrete cutting, crushing, or other operations that mechanically abrade concrete and mortar, the SSSP shall address the contractor’s approach, use of engineering and work practice controls, and use of respiratory protection to prevent employee exposure to silica dust.

b. Each contractor shall ensure project monitoring to demonstrate exposure compliance with the requirements of 29 CFR 1926.55, Appendix A and 29 CFR 1962.57.

c. Monitoring records shall be maintained at the worksite and be available for government inspection.

d. The contractor shall establish a controlled work area whenever unprotected personnel may be exposed to airborne silica dust that can reasonably be expected to be in excess of applicable exposure limits.

e. Silica plans shall be submitted to and approved by the CO, Industrial Hygiene, EPOC, and NASA Safety prior to the initiation of the respective work activities.

RELEASED - Printed documents may be obsolete; validate prior to use.

f. The controlled work area shall have warning signs that read:

WARNING
CRYSTALLINE SILICA WORK AREA
RESPIRATORY PROTECTION REQUIRED
NO SMOKING, DRINKING, OR EATING

3.12 Hearing Loss Prevention and Hazardous Noise

a. When work includes employee exposure that exceeds the limits in the tables below, the SSSP shall address the contractors approach to complying with the requirements of 29 CFR 1926.52.

b. Employee noise exposures shall be managed through implementation of engineering, work practice, or PPE to the following exposure limits:

TABLE B-1: NOISE EXPOSURE LIMITS[1]

DURATION		EXPOSURE LEVEL[2]
(hours)	(minutes)	dBA
16	960	82
8	480	85
4	240	88
2	120	91
1	60	94
0.5	30	97
0.25	15	100
0.125 or less	7.5 or less	103

[1] Using:
Exchange Rate = 3 dB
Lower Threshold = 80 dB,
$T=480/2^{(L-85)/3}$ where T=time in min. and L=exposure level
Meter set to slow response

[2] The exposure noted for each sound level for the duration noted is equivalent to 100% of the allowed noise dose. The Action Level is any exposure equivalent to 50% of the exposure duration in this Table.

RELEASED - Printed documents may be obsolete; validate prior to use.

TABLE B-2: NOISE EXPOSURE LIMITS FOR IMPACT OR IMPULSIVE NOISE

Sound Level **Decibels (dB)***	**PERMITTED NUMBER OF IMPULSES OR IMPACTS PER DAY (imp/day)**
>130	none
130	100
120	1,000
110	10,000
**Decibels peak sound pressure level measured with a Type I/II sound level meter with peak hold feature using Z, C-weighting, or linear scale at fast response.*	

c. Hearing Protection Devices

(1) External Reference: 29 CFR 1910.95 and 29 CFR 1926.101 provide OSHA regulations concerning hearing protection.

(2) Such equipment will be issued for the exclusive use of each employee and not be traded or shared.

(3) Personnel shall wear hearing protection whenever engineering and administrative controls do not reduce employee noise exposure below the Action Level.

(4) All persons working within a posted hazardous noise area, without regard to their exposure duration, shall wear hearing protection when noise is present.

(5) All employees operating equipment with sound levels exceeding levels exceeding 85 decibels (acoustic) (dBA) shall use hearing protection.

(6) Hearing protectors shall attenuate the employee's noise exposure to a level below the noise exposure limit of 85 dBA 8-hr time weighted average (TWA).

(7) A combination of both earmuffs and plugs shall be used where noise levels equal or exceed 100 dBA 8-hr TWA and any exposure equal to or greater than 105 dBA.

d. The contractor shall affix appropriate warning signs on the perimeter and control area entry point for workers and surrounding area employees who may pass near the worksite when noise levels reach the action level greater than 82 dBA.

e. External Reference: 29 CFR 1910.145 provides OSHA regulations concerning Warning signs, decals, and “Specifications for accident prevention signs and tags.”

3.13 Hot Work Permits

a. NASA-STD 8719.11A, Safety Standard for Fire Protection, requirements for flame/spark producing devices and welding shall be met.

RELEASED - Printed documents may be obsolete; validate prior to use.

b. Contractor shall obtain a KSC Form 2-271, Hot Work, New Construction, Demolition Permit when using a non-flame heat producing devices used within 10 feet of flammable, combustible, or explosive materials.

c. KSC Hot Work Permit(s) shall be obtained from Kennedy Fire Services prior to any:

(1) Hot work for demolition, modification or new construction that includes welding, cutting, burning, open flame and heat producing operations, soldering, heat sealing, or any spark producing operation (e.g., grinding). Complete KSC Form 2-271 (see sample form in Appendix L).

(2) Hot work for roof construction or repair using “tar kettle” or “torchdown” operations. Complete KSC Form 2-272 (see sample form in Appendix M).

d. The CO shall facilitate obtaining the hot work permit.

e. The contractor shall comply with all requirements identified on the hot work permit.

Note: The Fire Inspector who issues the permit will perform an on-site inspection and briefing prior to issuing the permit and will inspect the site periodically to ensure hot work requirements are being met and prior to any permit renewal.

f. The contractor shall comply with all requirements identified on the permit and have the permit posted in a visible and accessible area on the job site to employees and inspectors for the duration of operations it was issued for.

g. All combustible material shall be cleared from the hot work area.

h. Fire resistant guards, curtains, or shields shall be used as required.

i. All combustibles (e.g., trash, debris, wood) shall be removed daily.

j. All flammable liquids and propane cylinders shall be removed from roofs at the end of each work day.

k. Flammable gas containers shall be of the approved safety type with spark arresting screen in filler neck, cap, and vent cap intact and an attached HMIS label with correct information.

l. A fire watch shall monitor all areas where hot work has been performed for the minimum time specified in the permit after hot work is stopped. This includes breaks, lunch, and end of shift.

m. The fire watch (where applicable by permit) shall be familiar with fire watch duties and be trained to operate the approved fire extinguishers.

n. The permit shall identify the type and number of fire extinguishers required for the type of work and size of the area of work being performed.

3.14 Industrial Hygiene

a. In addition to meeting all OSHA regulations involving Industrial Hygiene, the contractor shall comply with KNPR 1840.19, KSC Industrial Hygiene Program.

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b. The contractor shall provide employees with an environment in which occupational health hazards are identified, evaluated, and eliminated or controlled in such a manner that personnel do not suffer adverse health effects as a result of their employment.

c. Additionally, the contractor shall ensure:

(1) Workplace inspections are conducted and operations/procedures are reviewed to identify hazardous materials and physical agents.

(2) SDS for materials used in the workplace are reviewed to identify health hazards, symptoms of exposure, and requirements for safe use of the material.

(3) Employees are aware of hazardous materials and physical agents in the work area, understand the requirements for safe work with these materials and agents, and know what actions to take in an emergency (e.g., chemical spill or release).

3.15 Ladders and Stairways

External Reference: 29 CFR 1926, Subpart X provides OSHA regulations concerning Ladders and Stairways.

3.15.1 Ladders

a. The contractor shall ensure that each employee using ladders is trained on recognizing the fall hazards, proper placement, use and construction of, maximum intended load, and the standards of 29 CFR 1926 Subpart X, as applicable.

b. The contractor shall inspect ladders daily prior to use.

c. Employees working on ladders shall:

(1) Maintain three points of contact at all times (i.e., one hand and two feet, two hands and one foot). Always face the ladder when performing all work.

(2) Maintain the stability of the ladder by avoiding overreaching.

(3) Keep the belt buckle or the centerline of the body between the rails.

(4) Ensure the balance of the ladder by refraining from placing one foot on an adjacent surface while the other foot is on the ladder.

(5) Ensure material, equipment, and tools are not carried by hand while ascending or descending a ladder.

d. Stepladders shall be used in the fully opened and locked position.

e. Ladders shall have appropriate identification and warning labels per the manufacturer.

3.15.2 Stairs

a. OSHA regulation 29 CFR 1910.25 provides requirements regarding stairs.

b. Stairs shall be provided for access to office trailers or other transportable work locations.

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c. Stairway platforms shall be no less than the width of a stairway and a minimum of 30 inches in length measured in the direction of travel.

d. Standard railings and mid-rails shall be provided on the open sides of all exposed stairways and stair platforms.

e. Handrails and mid-rails shall be provided on at least one side of closed stairways preferably on the right side descending.

3.16 Lockout/Tagout (Control of Hazardous Energy)

Lockout/Tagout (LOTO) is the process of configuring equipment in a temporary condition in which the unexpected release of energy is prevented from endangering personnel performing servicing or maintenance tasks. A safe energy state shall be established in accordance with the applicable standard for the scope of work.

3.16.1 LOTO Devices

OSHA requires the use of tags as warning devices to alert personnel of the LOTO status, but tags do not provide physical restraint to prevent a device from being activated. Physical restraint is provided by locks. OSHA requires the use of locks in all LOTO situations where it is physically possible to attach a lock.

a. When conducting LOTO processes at KSC, and it is not physically possible to attach a lock to a device being locked out, a procedure shall be written to explain why it is not physically possible to apply a lock and to define how the hazards will be isolated in the absence of a lock.

b. Each authorized employee shall be issued locks, tags, multiple lock hasps, or other LOTO devices as deemed necessary, either individually or in a kit form (e.g., centralized locker) by his or her supervisor or designee.

c. Locks shall be identified using KSC Form 20-195a (Lockout Identifiers) (see sample form in Appendix N).

d. Only KSC Form 20-195 (see sample tag in Appendix O) shall be used as the LOTO tag.

e. Only authorized employees trained in LOTO shall be permitted to apply KSC Form 20-195.

f. KSC Form 20-195 shall not be used for any other purpose other than LOTO.

g. In addition to attaching KSC Form 20-195 to the lock, KSC Form 20-195a shall also be attached directly to the lock as a unique identifier (see sample tags in Appendix O and N).

3.16.2 LOTO Procedures

Refer to this section in KSC-UG-8715.3, KSC Safety User's Guide, for additional guidance/suggestions on this topic.

3.16.3 Group LOTO

a. OSHA regulations 29 CFR 1910.147 concerning Group Lockout/Tagout (Control of Hazardous Energy) shall be met.

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b. Each authorized employee shall affix a personal lockout and tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work and remove those devices when he or she stops working on the machine or equipment being serviced or maintained.

3.16.4 LOTO Device Removal

In situations where the authorized employee is not available to remove LOTO devices, it shall be permissible to remove the LOTO device under the direction of the authorized employee's supervision, provided that all of the following conditions are met:

a. At least one attempt is made to contact the authorized person who applied the device(s), verifying that the authorized employee who applied the device is not at the facility.

b. The authorized employee's supervisor and another authorized employee must be present.

c. A determination is made that it is safe to start the equipment/machinery prior to removing the LOTO device.

3.16.5 LOTO Training

3.16.5.1 General Requirements for Affected and Authorized Employees

a. Training shall be conducted and documented for all Affected and Authorized employees.

b. Employees shall receive initial training or instruction in LOTO to ensure that the purpose and function of the LOTO (energy control) program are understood.

c. The employer shall ensure employees acquire the knowledge and skills required for the safe application, usage, and removal of the energy controls.

d. Employees shall be trained in LOTO requirements in accordance with their assigned (or designated) level of responsibility.

e. The employer shall certify that employee training has been accomplished and that employee training is current.

f. The certification shall contain each employee's name and dates of training.

g. A written/electronic test shall be completed as part of the training/certification.

h. External Reference: As required by NFPA 70E Section 110.2, retrain employees in LOTO requirements at least every 3 years.

3.16.5.2 Training Requirements for Authorized Employees

a. Authorized Employee training shall be in accordance with 29 CFR 1910.147(c)(7)(i)(A).

3.16.5.3 Training Requirements for Affected Employees

Affected employees are those who operate or use the equipment being serviced or maintained or others in the area where equipment is locked or tagged out. Training for affected employees shall ensure that these employees are able to:

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a. Recognize when LOTO procedures are being implemented.

b. Understand the purpose of LOTO procedures and the importance of not attempting to startup or use equipment/machinery that has been locked or tagged out.

3.16.6 Recordkeeping/Documentation

a. Each construction contractor shall maintain inventory records of locks and tags.

b. Inventory lock records shall include:

(1) Number of locks on hand.

(2) Locks including their serial number issued to the employee using them.

(3) Issued person's name.

(4) Lock numbers lost or destroyed.

Note: Completing KSC Form 28-915 NS, Lockout Lock and Lockout Tag Inventory Record, meets these requirements. NASA organizations should use this form. Contractors may utilize this or other forms provided that the data elements required above are addressed. See Appendix P for a sample form.

c. Tag control records shall include:

(1) Numbers of tags received (lot numbers).

(2) Tag numbers issued to employees.

(3) Tags issued to specific shops or facilities (if applicable).

(4) Numbers of tags lost or destroyed.

Note: Completing KSC Form 28-915 NS, Lockout Lock and Lockout Tag Inventory Record, meets these requirements. NASA organizations should use this form. Contractors may utilize this or other forms provided that the data elements required above are addressed. See Appendix P for a sample form.

d. Contractor will provide an inventory of used and unused NASA LOTO tags to their NASA Safety representative prior to the punch-list walk-down

3.17 Personal Protective Equipment (PPE)

Personal Protective Equipment requirements applicable to contractors are located in KNPR 8715.5, KSC Personal Protective Equipment (PPE) Procedural Requirements. In addition to these requirements, the following also apply.

a. The contractor shall take all necessary precautions to protect employees and provide at contractor expense any personnel protective devices and safety equipment required.

b. The contractor shall ensure that any PPE required (including employee-owned PPE) is provided, used, and maintained in a compliant condition.

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c. The contractor shall document that all employees have received and understood the PPE training provided.

d. Contractor employees shall wear approved hard hats as required by the SSSP.

(1) ANSI/ISEA Z89.1 (Latest Revision) Class G or E hardhats shall be used.

(2) ANSI/ISEA Z89.1 (Latest Revision) Class C hardhats shall not be used on construction sites at KSC.

e. Approved industrial type safety glasses with side shields meeting the requirements of ANSI/ISEA Z87.1 (Latest Revision) shall be worn by contractor personnel if eye injuries may result from the task being performed.

f. When there is a potential crush hazard to the feet, safety type shoes shall be worn.

Note: It is recommended that all employees wear safety-toed shoes or boots. Safety toe work shoes may be required depending on the type of work being performed.

g. Arc rated/flame resistant clothing shall be worn for designated tasks that present a potential for arc flash, flash fire, or explosion.

3.18 Process Safety Management

a. Contractors working in areas covered by the OSHA Process Safety Management (PSM) Standard shall schedule an employee awareness briefing on PSM through the CO and ensure all employees attend prior to starting work.

b. The contractor shall ensure all employees are informed of the known potential fire, explosion, or toxic release hazards associated with a facility in which the contractor is performing work prior to starting work.

c. The contractor shall ensure all employees are briefed on the applicable provisions of the facility emergency action plan by conducting a facility safety briefing prior to commencement of work.

d. The contractor shall ensure that any new employees brought to the job site receive facility safety training prior to entering process areas.

e. The contractor shall ensure that employees follow the safety rules of the facility including all safe work practices.

f. The contractor shall inform the project CO, COR, and assigned Safety Specialist of any unique hazards to the facility presented by the contractor's work, or of facility hazards found during the contractor’s work.

3.19 Radiation Protection

a. External References: 29 CFR 1926.53 and 1926.54 provide OSHA regulations concerning Radiation Protection.

b. Radiation Protection requirements shall apply if the contract involves the use of ionizing or non-ionizing radiation producing equipment, devices, materials, or operations such as

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radiographic projectors, lasers, radio frequency (RF)/microwave transmitters, X-ray fluorescence (XRF) detection systems, or radioactive materials.

c. The contractor shall provide physical restraining barriers to protect surrounding area personnel from the emission of any radiation (e.g., weld testing, weld x-rays), preclude access to restricted areas by unauthorized personnel, and post the appropriate radiation hazard warning signs.

d. The contractor shall comply with KNPR 1860.1, KSC Ionizing Radiation Protection Program, KNPR 1860.2, KSC Non-Ionizing Radiation Protection Program, and applicable Federal, state, and local regulations for these types of activities performed.

3.20 Respiratory Protection

External References: 29 CFR 1926 Subpart E and 29 CFR 1910.134 provides OSHA regulations concerning Respiratory Protection.

3.20.1 Respiratory Protection Plan

a. This section shall apply to all contracts involving asbestos abatement, abrasive blasting, painting, and other work where hazardous atmospheres can be anticipated.

b. Contractors whose work requires the use of respiratory protection PPE shall provide a written plan for such work as part of its SSSP.

c. The respiratory protection plan shall be submitted for review and approval by the CO, Industrial Hygiene, EPOC, and NASA Safety.

d. The plan shall list all of the required respiratory protection PPE that will be used for the contracted work and the basis for its selection.

e. The respiratory protection plan shall be maintained by the contractor at the worksite for the duration of the contracted work.

3.20.2 Respirator Selection and Exposure Monitoring

a. Each contractor performing work that requires use of respiratory protection PPE shall perform a pre-work exposure assessment to determine appropriate respirator selection and identify that PPE in its site-specific respiratory protection plan.

b. The contractor’s site-specific respiratory protection plan shall describe the contractor’s exposure monitoring approach to demonstrate the proper selection of respiratory PPE.

c. Monitoring records shall be maintained at the worksite and be available for government inspection.

3.20.3 Breathing Air

a. The contractor shall take precautions to ensure that connectors used in contractor-supplied breathing air systems are incompatible with connectors present on either KSC gas systems or on contractor supplied systems that are used to supply non-respirable gases.

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Note: KSC-STD-Z-0008, Standard for Design of Ground Life Support Systems and Equipment, establishes requirements for connectors to be used in KSC facility breathing air and non-respirable gas systems. Facility breathing air systems located at KSC/CCAFS are to use a Hansen 3/8 inch quick disconnect as a breathing air distribution interface. KSC facility non-respirable gas systems are to use ¼ inch quick disconnects for gas distribution interfaces. Although most facility systems were designed in accordance with this standard, there are nonconforming locations at KSC.

b. The contractor shall be permitted to use KSC facility breathing air systems if available.

Note: The breathing air test and the safety inspection can be coordinated through the CO, and will be at no cost to the contractor.

c. The contractor shall perform a Pre-Work Site Inspection to identify coupling types in use at the work location before mobilizing or using any breathing air equipment.

d. The contractor shall also submit a written certification to show the contractor's breathing air system has been recently inspected and meets Grade D breathing air standards.

Note: Alternately, the contractor may arrange for on-site testing of contractor-supplied breathing air by the Government at least five days prior to start of work.

e. The contractor shall also provide a worksite evaluation for NASA Safety to review before using any breathing air system.

f. The contractor shall tag or label connector ends of all lines and flexible hoses of contractor-provided breathing air or non-respirable gas distribution systems with tags or labels that clearly identify the contents of the lines or hoses.

g. The contractor shall provide a description of the steps taken to comply with these requirements in their SSSP submittal.

3.21 Rollover Protection for Mobile Equipment

a. Rollover protection devices and seatbelts shall be in place on all special purpose equipment at all times.

Note: Equipment includes crawler and rubber-tired tractors with or without attachments (e.g. such as front end loaders, blades, self-propelled earth movers, including pan scrapers, bottom dumps, side dumps, rollers, utility vehicles, golf carts, graders).

b. Special purpose equipment without rollover protection devices shall not be allowed on the construction site.

Note: Special purpose equipment may be exempted from seatbelts if allowed by the manufacturer's requirements.

c. Seatbelts shall be utilized anytime the equipment is in operation.

3.22 Scaffolding

a. External Reference: 29 CFR 1926 Subpart L provides OSHA regulations concerning Scaffolding. KSC-STD-S-0033 provides KSC requirements concerning fall protection and scaffolding.

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b. The contractor shall designate a competent person (scaffolding) for the erection and inspection of any scaffolding systems used on the contract.

c. If protection systems cannot be used, a qualified person shall develop a fall protection plan.

d. Scaffold platforms where the potential for a fall of four feet or greater exists shall be protected by the use of fall protection systems (guardrails, fall arrest, fall restraint).

Note 1: A competent person in scaffolding is one who is capable of identifying existing and predictable hazards as it relates to scaffolding in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Note 2: A qualified person in scaffolding is a person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

e. Scaffold users shall confirm that a competent person (scaffolding) has inspected the scaffolding during that work shift before they access the scaffolding.

f. The inspection shall be documented and available to employees that access the scaffold.

Note: A recommended documentation process includes a tag attached to the scaffold that shows the inspector's name and date/time of each inspection.

g. Guardrails and toe boards shall be installed on all open sides and ends of platforms more than four feet above the ground or floor.

h. All planking used on scaffolds shall be <u>scaffold grade</u>, or equivalent.

i. Scaffolds that are not rolling tower-type scaffolds shall not be moved while employees are on them.

j. Moving rolling tower type scaffold while employees are on them shall be permitted only when all of the following conditions are met:

(1) The maximum scaffold height does not exceed twice the minimum base width/length.

(2) The surface on which the scaffold is being moved is within three degrees of level and free of pits, holes, and obstructions.

(3) Employees on scaffold have been made aware of the move.

(4) Forces will be applied at points below five feet above the base of the structure.

(5) No portion of the employee on the scaffold extends outward beyond the wheels, casters, or other supports.

k. Minimum clearance from power lines for any scaffold component shall be:

(1) Insulated Lines less than 300 volts:	3 feet
(2) Insulated or non-insulated lines less than 50 kV:	10 feet

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(3) Insulated or non-insulated lines greater than 50 kV: 10 feet + 4” for each kV > 50 kV

l. Ladders or any makeshift device such as a box or barrel shall not be used to increase the working level height of employees on the scaffold.

m. All work shall be accomplished from the scaffold deck.

n. No employee shall climb the outside framework or cross braces of a scaffold.

o. All scaffold access shall be by ladder, walkway, ramp, or stairs.

p. No material shall be stored on scaffold decks.

q. Material staged on the scaffold deck for immediate installation or use that is not installed or used shall be removed from the scaffold when work is stopped for the day.

r. Contractors shall ensure employees who perform work (scaffold user) while on a scaffold are trained in accordance with the requirements identified in 29 CFR 1926.454.

s. Documentation of employee scaffold user training shall be provided as part of the contractor’s SSSP submittal.

3.23 Steel Erection

a. External Reference: 29 CFR 1926 Subpart R provides OSHA regulations concerning Steel Erection.

Note: In accordance with section 3.8, steel erection work will comply with KSC-STD-S-0033, KSC Fall Protection Standard.

b. The contractor shall have a Site Specific Steel Erection Plan that includes a complete final copy of specifications and drawings issued for construction by the design Professional Engineer (PE).

Note: A Preconstruction conference and site inspection should be conducted between the erector, contractor, project engineer, and any additional personnel needed to develop and review the site-specific steel erection plan.

c. Prior to commencement of steel erection the contractor shall ensure the following written notifications have been received:

(1) Concrete footings, piers and walls, and the mortar in masonry piers and wall as attained, on the basis of an appropriate ASTM standard test method of field cured samples either 75 percent of the intended minimum compressive design strength of sufficient strength to support the loads imposed during steel erection.

(2) Any repairs, replacements, and modification of the anchor bolts shall be conducted in accordance with 29 CFR Subpart R Steel Erection 1926.755(b).

3.24 Elevating and Rotating Work Platforms

External Reference: 29 CFR 1926 Subpart L, Appendix C, provides OSHA regulations concerning Elevating and Rotating Work Platforms.

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3.24.1 General Requirements for Elevating Work Platforms

a. “Field Modification” of aerial lifts for uses other than those intended shall be permitted only after the modification has been certified in writing by the manufacturer or by a nationally recognized testing laboratory in accordance with all applicable provisions of ANSI/SAIA A92-2, A92.3, A92.5, and A92.6.

Note: If a request to evaluate a “field modification” is submitted to the manufacturer and a response is not received within a reasonable time period, a Professional Engineer may be assigned to evaluate the unit and calculate a process to modify the unit, adding the necessary fall protection devices necessary to safely use the lift.

b. Boom and basket load limits specified by the manufacturer shall not be exceeded.

c. Electrical tests performed on high voltage bucket trucks shall be made in conformance with the requirements of ANSI/SAIA A92-2.

d. If lift equipment is modified, as outlined above, all welding shall conform to the Automotive Welding Society (AWS) Standards.

e. When operating aerial lifts under, over, by, or near energized electric power lines, the operator shall not approach closer than the restricted approach boundary as defined in NFPA 70E, Table 130.2(C).

f. A personal fall restraint or arrest system shall be required for all employees in any lift.

g. An energy-absorbing length-adjustable lanyard or personal fall limiter (PFL) and a full body harness shall be used.

h. The lanyard or PFL shall be connected to an approved anchor point in the basket and adjusted in length in such a manner that it reduces the possibility of the worker falling over the guardrails yet permits the work to be accomplished.

3.24.2 Operations

a. Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

b. Fall protection equipment shall only be used by personnel that have been properly trained.

c. Fall protection equipment shall be inspected prior to each use.

d. Attaching fall arrest or positioning lanyards to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted.

e. The brakes shall be set and outriggers, when required, be positioned on pads or a solid surface.

f. Wheel chocks shall be installed before using an aerial lift on an incline.

g. Aerial platforms shall not be operated in any manner on grades, side slopes, or ramps exceeding those for which the aerial platform is rated by the manufacturer.

h. An aerial lift truck shall not be moved when the boom is elevated in a working position with employees in the basket.

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i. Articulating Boom and Extensible Boom Platform Operation

(1) Articulating boom and extensible boom platforms, primarily designed as personnel carriers, shall have operational platform (upper) and lower controls.

(2) Upper controls shall be in or beside the platform within easy reach of the operator.

(3) Lower controls shall provide for overriding the upper controls.

(4) Controls shall be plainly marked as to their function.

(5) Lower level controls shall not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.

3.24.3 Work Practices

a. Employees shall keep all parts of the body inside the platform during raising, lowering, and positioning.

Note: This provision does not apply to an occupant of the platform performing the duties of a signal person.

b. Employees shall always stand firmly on the floor of the basket and not sit or climb on the edge or railings of the basket or use planks, ladders, or other devices to gain additional elevation or for a work position.

c. If the employee must exit the lift, the employee shall use the double lanyard system.

d. To use the double lanyard system, the employee(s) exiting the lift shall:

(1) Remain tied in the lift with one lanyard.

(2) Attach the second lanyard to a fixed anchorage on the structure.

(3) Disconnect the first lanyard from the lift and climb out.

(4) Not exit the lift if not properly secured.

(5) Reverse the process upon re-entry to the lift.

(6) Maintain 100% fall protection throughout the process.

e. The employee shall exit the lift by use of a gate and not exit the lift by climbing on or over the railing.

f. Employees shall be permitted to use the lift as a fall protection tie-off point when performing work outside the lift ONLY when the lift is equipped with original equipment manufacturer (OEM) external fall protection anchorage and the manufacturer intended the lift to be used in this manner.

3.24.4 Inspection and Maintenance

a. Elevating and rotating work platforms shall be inspected daily and not be placed in service if the inspection shows any condition adversely affecting the safety of the vehicle.

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b. If the contractor is working more than one shift per day, inspections shall be done at the start of each shift.

c. The following items shall be inspected:

(1) Operating controls and associated mechanisms for conditions interfering with proper operation.

(2) Visual and audible safety devices for malfunction.

(3) Hydraulic or pneumatic systems for observable deterioration or excessive leakage.

(4) Fiberglass and other insulating components for visible damage or contamination.

(5) Operational and instructional markings for missing or illegible text...

(6) The aerial device electrical systems for malfunction, signs of excessive deterioration, dirt and moisture accumulation.

(7) Visual inspection of bolts, pins, and other fasteners for loose, deformed, or missing fasteners and other locking devices.

d. Any suspected items shall be carefully examined or tested and a determination made by a qualified person as to whether they constitute a safety hazard.

e. All unsafe items shall be replaced or repaired before use.

f. Elevating and rotating work platforms that are used on an around the clock basis shall be examined after each shift.

g. If defects are found, they shall be immediately reported and corrected.

h. Inspections shall be documented, signed, and kept with the equipment at the worksite.

i. If operators change during the same shift, they shall review the inspection document and initial it if the status of the vehicle did not change.

3.24.5 Training Requirements

a. Employees shall receive formal training in elevated work platforms before being allowed to operate any aerial lift as defined by this procedure.

b. Employees shall receive formal training in fall protection equipment before operating in an aerial lift.

c. Training documentation shall be submitted for NASA Safety review/approval prior to the initiation of the respective work activities.

d. All training documentation shall be submitted with sufficient review time in accordance with KNPR 8715.7 2.1 (f) (Note).

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3.25 Welding and Cutting Operations

a. Only employees properly trained and certified to operate welding and torch equipment shall operate such equipment.

b. All welding and cutting operations shall be in accordance with KSC Fire Prevention Procedures for Contractors and the National Fire Protection Association 51B.

c. A KSC Hot Work Permit(s) shall be obtained from Kennedy Fire Services prior to any hot work for demolition, modification, or new construction that includes welding, cutting, burning, open flame and heat producing operations, soldering, heat sealing, or any spark producing operation (e.g., grinding). (KSC Form 2-271)

d. The contractor shall ensure flammable materials are at least 50 feet and combustibles 35 feet from welding operation. Exceptions are only authorized when approved by the KSC Fire Inspector when:

(1) The flammable and combustible materials cannot be relocated.

(2) The work cannot be accomplished by any other means.

(3) The flammable and combustible materials are protected by the use of welding blankets or other fire inspector approved methods.

e. Welding and cutting operations shall not be conducted in the vicinity of flammable liquids, gases, vapors, or oxygen enriched atmospheres.

f Prior to any torch cutting or welding on any painted surface, the coating shall be removed a minimum of 4 inches in each direction from the cut/weld point or the OSHA standard 29 CFR 1926.62 and 29 CFR 1926.354 PPE requirements must be met.

g. Only approved equipment (e.g., torches, regulators, pressure reducing valves, acetylene generators, gas hoses, electrical cables) shall be acquired and used for hot work operations.

h. All work shall be properly shielded from observation of the bare arc by adjacent or passing personnel.

i. Arc welders shall conduct inspections daily before beginning operations to ensure their equipment is clear of defects and safe to use. Report any defects to supervision.

j. All portable cylinders used for storage and transportation of compressed gasses shall be constructed and maintained in accordance with the regulations of the U.S. Department of Transportation (DOT).

k. Labeling or marking of Cylinders used in Welding

(1) Cylinders shall be legibly marked with either the chemical or trade name of the gas contained.

(2) Cylinder labeling or marking shall be by means which is not easily removed.

(3) When practical the marking shall be on the shoulder of the cylinder.

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l. Compressed gas cylinders shall be equipped with valves and connections that comply with ANSI requirements.

m. Cylinder valves shall be closed before moving cylinders, when work is finished, and when empty.

n. Acetylene is flammable and highly explosive when mixed with air. As such, it shall be handled and stored safely as follows:

(1) Acetylene shall be stored in a vertical position.

(2) Never use acetylene at a pressure higher than 15 psig.

(3) Where cylinders have been lying in a horizontal position, they shall stand in an upright position for at least two hours prior to use.

o. Cylinders shall be placed in storage when there is no reasonable anticipation of use within a 24 hour period.

p. Cylinders in use or transport shall be stored in an upright position and secured by chain or bracket that prevents falling. The preferred method is an approved welding cart.

q. When transporting cylinders by a crane or derrick, a cradle, boat, or suitable platform shall be used.

r. Slings, chokers, ropes, or electric magnets shall not be used for this purpose.

s. Valve protection caps shall always be in place when not in use or inter connected.

t. Cylinders shall not be dropped, struck, handled roughly, or permitted to strike each other violently.

u. Valve caps shall be used to protect valves from damage.

v. Valve caps shall not be used as a lifting device (ANSI Z49.1 10.8.3.7).

w. Valve protection caps shall be installed before moving the cylinder unless the cylinder is secured on a special truck.

3.26 Working Over or Near Water

a. External Reference: 29 CFR 1926.106 provides OSHA regulations concerning Working Over or Near Water.

b. A serviceable United States Coast Guard (USCG)-approved life vest or buoyant work vest shall be worn by all employees required to work within six feet of an unprotected edge that is over water.

3.27 Work Zone Maintenance of Traffic (MOT)

a. Where work is accomplished on or within 15 feet of the roadway, a work zone safety Maintenance of Traffic (MOT) plan shall be developed as a part of the contractor's SSSP by an individual trained to the advanced or intermediate MOT level.

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b. The MOT plan shall be developed and implemented in accordance with the most current Florida Department of Transportation (FDOT) standards.

Note: In lieu of an engineered plan, pre-designed plans found in FDOT Design Standard for Traffic Control through Work Zones, Index 600, may be used.

c. MOT's shall be submitted to the CO and NASA Safety as part of the SSSP or as the need for such a plan arises.

d. All employees working within 15 feet of a roadway or street shall wear reflective vests compliant with ANSI/ISEA 107 – 2015 Class 2 High-Visibility Safety Apparel. Class 3 is required for flaggers performing work at night.

e. The contractor site supervisor managing traffic control set up shall be trained to the intermediate or advanced MOT level.

f. The Intermediate or Advanced trained MOT person shall verify or ensure the control zone is correctly set up prior to the start of each day's work.

g. Only trained flagmen shall be used to control traffic through work zones.

h. The flagman shall have no other duties assigned while the traffic control zone is established.

i. The verification of training shall be submitted in the training section of the contractor's SSSP.

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APPENDIX A: DEFINITIONS

Acetylene: At 70° F and atmospheric pressure, pure acetylene is a colorless, odorless, gas. The commercial grade of acetylene, generated from calcium carbide, has a distinctive garlic odor.

Low pressure – at or below 1 psig

High pressure – above 1 psig, but not exceeding 15 psig

Action Level: The concentration or level at which the use of control measures becomes mandatory. The Action Level is used when variations of measured air contaminant levels can exceed the regulated level. Unless otherwise mandated by a specific regulatory or consensus standard, the "action level" is set at one-half of the exposure limit of the hazardous material.

Adverse Weather: Winds in excess of 50 knots, heavy rain or hail, or the potential for lightning within 5 nautical miles that could affect the area within 30 minutes.

Anchorage (Anchor Point): A secure point of attachment for lifelines, lanyards, or deceleration devices. It shall be capable of supporting 5000 pounds per person or designed by a qualified person with a safety factor of 2.

Approved: Listed and approved by Underwriters Laboratories, Inc., Factory Mutual Engineering Corporation, The Bureau of Mines, National Institute for Occupational Safety and Health (NIOSH), ANSI, NFPA, or other nationally recognized agencies which list, approve, test, or develop specifications for equipment to meet Fire Protection, Health, or Safety requirements or acceptable to the authority having jurisdiction.

Asbestos Containing Material (ACM): Any material that contains greater than one percent asbestos by volume.

Authority Having Jurisdiction: The NASA organization/directorate, office, or individual responsible for approving equipment, an installation, or a procedure.

Brazing: A process where metals are soldered together by heating the metal to temperatures above 800° F and using a nonferrous filler metal having a lower melting point to join the metals together.

Close Call: An event in which there is no injury or only minor injury requiring first aid and/or no equipment or property damage, or minor equipment or property damage of less than $20,000, or no injury or only minor injury requiring first aid, but which possesses a potential to cause a mishap.

Competent Person: One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.

Compressed Gas Cylinder: A container specifically designed for compressed gases. High pressure cylinder means those approved for service pressure of 900 psig or greater. Low pressure cylinders are those marked with a service pressure of less than 900 psig.

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Confined Space: A space that is large enough and configured so that a worker can bodily enter and perform assigned work, and has limited or restricted means of entry or exit, (for example: tanks, vessels, storage bins, vaults, pits and spaces that may have limited entry), and is not designed for continuous human occupancy.

Connector: A device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabineer, or it may be an integral component part of the system, such as a buckle or D-ring sewn into a body belt, body harness, or snap hook spliced or sewn to a lanyard or self-retracting lanyard.

Contracting Officer: A person with the authority to enter into, administer, and terminate contracts and make related determinations and findings.

Contracting Officer's Representative (COR): An individual, including a contracting officer's technical representative (COTR), designated and authorized in writing by the contracting officer to perform specific technical or administrative functions.

Critical Lift: Lifts where failure/loss of control presents an elevated risk of serious injury, loss of life, or loss of one-of-a-kind articles, high dollar items or major facility components whose loss would have serious programmatic or institutional impact. Critical lifts also include lifting of personnel with a crane, lifts exceeding 75 percent of the rated capacity of the crane, and lifts involving more than one crane.

Crystalline Silica: Crystalline silica is a basic component of soil, sand, granite, and many other minerals. Quartz is the most common form of crystalline silica. Cristobalite and tridymite are two other forms of crystalline silica. All three forms may become respirable size particles when workers chip, cut, drill, or grind objects that contain crystalline silica.

Daisy Chaining: *(Electrical Extension Devices)* Plugging one or more electrical devices into another. (**Piggybacking:** *(Electrical Extension Devices)*

Deceleration Device: Any mechanism, such as a rope grab, rip stitch lanyard, specially woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

Excavation: Any man made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

Exposure: The process by which a chemical or physical agent enters the body through any route of entry including inhalation, ingestion, or absorption through the skin. Potential for exposure exists where air contaminants are present or where hazardous materials can come into contact with the skin.

Facility: The buildings, containers, or equipment that contains or supports a process.

Failure: Load refusal, breakage, or separation of components.

Fall Arrest System: A system designed to stop one or more persons from striking a lower level or obstructions if a fall occurs. Fall arrest systems require the use of a full body harness, a

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connecting means, a suitable anchorage, planned rescue procedures, and proper training of all users.

Fire Watch: A person designated to monitor the area around a welder, normally outside an authorized welding shop, to watch for fires resulting from welding, cutting, or torch use operations.

Flammable Gas: Any substance that exists in the gaseous stage at normal atmospheric temperature and pressure. It is capable of being ignited and rapidly oxidized when mixed with the proper portions of air.

Flammable Liquid: Any liquid having a flashpoint below 100 deg. F. (37.8 deg. C.), except any mixture having components with flashpoints of 100 deg. F. (37.8 deg. C.) or higher, the total of which make up 99 percent or more of the total volume of the mixture. Flammable liquids are identified as Class I liquids.

Fuel Gas: Gases such as acetylene, natural gas, hydrogen, propane, methylacetylene propadiene, synthetic fuels, and hydrocarbons are usually used with oxygen to produce heating.

Hazardous Chemical or Material: Any solid, liquid, or gaseous material which meets the hazard reporting requirements of 29CFR 1910.1200. These includes commodities that, under foreseeable conditions, are toxic, carcinogenic, cryogenic, explosive, flammable, pyrophoric, water-reactive, corrosive, an oxidizer, a compressed gas, a combustible liquid, or are chemically unstable.

Hazardous Operation/Work Activity: Any operation or other work activity that, without implementation of proper mitigations, has a high potential to result in loss of life, serious injury to personnel or public, or damage to property due to the material or equipment involved or the nature of the operation/activity itself.

Health Hazard: A health hazard is a chemical or physical agent where it is established that acute or chronic injury or illness may occur in exposed employees, based upon statistically significant evidence in at least one study conducted in accordance with scientific principles.

Hoist (Hoisting): All crane or derrick functions such as lowering, lifting, swinging, booming in and out or up and down, or suspending a personnel platform.

Hole: A gap or void 2 inches or more, (5.1 cm) in its least dimension in a floor, roof, or other walking/working surface.

Hot Work: A work activity that by its nature creates an open source of ignition that is capable of initiating fires or explosions, e.g., electrical or gas welding, cutting, brazing, grinding, or similar flame or spark producing operations.

Hot Work Permit: KSC Welding and Burn Permit issued through KSC Fire Protection Services for operations at KSC

Imminent Danger: An impending or threatening situation which if left uncorrected is likely result in serious injury or property damage.

In Storage: OSHA interprets oxygen/acetylene cylinders to be in storage when it is reasonably anticipated that gas will not be drawn from the cylinder within 24 hours (overnight hours

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included). "Reasonably anticipated" is based on whether specific welding or cutting work is planned or scheduled within a 24 hour period from the last use.

Industrial Hygiene: The profession devoted to the prevention of occupational illness or disease associated with exposures to hazardous materials and physical agents.

Infeasible: It is impossible to perform the construction work using a conventional fall protection system (i.e. guardrail system or personal fall arrest system) or that it is technologically impossible to use any one of these systems to provide fall protection.

Live Parts (Electrical): Energized conductive components.

Lockout/Tagout (LOTO): The process of configuring equipment in a temporary condition in which the release of energy is prevented from endangering personnel performing servicing or maintenance. The placement of a lock/tag on the energy isolating device in accordance with the established procedure, indicating that the energy isolating device shall not be operated until removal of the lock/tag in the accordance with the established procedure.

Maximum Intended Load: The total load of all persons, equipment, tools, materials, transmitted loads, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.

Mishap: An undesired and unexpected event that results in injury requiring more than first aid, occupational illness to personnel, or damage to property of at least $20,000. Reference NPR 8621.1, for defined levels of NASA mishaps.

Noncompliance: A violation of an OSHA Standard or a provision of this document.

Nuts and Bolts: Pre work meeting to discuss safety, environmental, and operational concerns/aspects of a construction project before field work begins.

Opening: A gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition, through which employees can fall to a lower level. A gap 12 inches or more in its least dimension in a floor, roof or other walking/working surface. Skylights and smoke domes are classified as holes when they do not meet strength requirements (capable of supporting without failure twice the weight of employees, equipment and materials that may be imposed on the cover at any one time).

Platform: A work surface elevated above lower levels. Platforms can be constructed using individual wood planks, fabricated planks, fabricated decks, and fabricated platforms.

Qualified Operator: a person knowledgeable of the equipment’s/machine’s operations, operations manual, limitations, restrictions, and safety requirements

Qualified Person: A person who, by possession of a recognized degree, licensing (electrical), certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

Rated Load: The static weight the basic equipment can safely support or lift.

Rescue: Fire Services rescue personnel.

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Roofing Work: The hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.

Safety: The freedom from conditions that can cause death, injury, occupational illness, damage to or loss of equipment or property, or harm to the environment**.**

Safety Data Sheet (SDS): Technical information on chemical products published by the chemical manufacturer, formulator, or importer. The SDS contains product name, ingredients, toxicity, physical and chemical characteristics, fire and explosion data, health hazard information, and emergency and disposal procedures.

Serious Accident/Incident: Accident/incident resulting in an injury or illness requiring prompt medical treatment or in situations such as fires, facility or government property damage (estimated at $20,000 or more), hazardous material or chemical spills, threatening behavior or workplace violence, explosions, bomb threats or a wild animal sighting that poses an immediate threat to any employee.

Steel Erection: Construction, alteration or repair of steel buildings, bridges and other structures, including the installation of metal decking and all planking used during the process of erection. Steel erection activities include hoisting, laying out, placing, connecting, welding, burning, guying, bracing, bolting, plumbing and rigging structural steel, steel joists and metal buildings; installing metal decking, curtain walls, window walls, siding systems, miscellaneous metals, ornamental iron and similar materials; and moving point to point while performing these activities.

Stop Work Authority (Safety): Authority provided to all employees at KSC to stop work or work tasks that pose an imminent danger to the employee(s) performing the work or others in the area. The authority is limited to the location where the imminent danger is present.

Stop Work Order (Safety): A directive from the Contracting Officer to cease part or all jobsite work for not following safety and health procedures, imminent danger situation or conditions, accumulation of safety violations, etc.

Toe Board: A low protective barrier that prevents material and equipment from falling to lower levels and provides protection from falls for personnel.

Unprotected Sides and Edges: Any side or edge (except at entrances to points of access) of walking/working surface (e.g., floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches high.

Violation: An omission or commission, a condition, or a situation that is in conflict with the procedures, standards and the requirements of safety and health standards.

Violation (Repeat): Occurring more than once; usually after it being previously identified; may be classified as minor or serious

Violation (Willful): A violation committed with an intentional disregard of, or plain indifference to, the requirements of OSHA or this document.

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Voluntary Protection Program (VPP): VPP is a cooperative effort between OSHA, employers, employees, and unions that rewards exemplary safety and health programs which go beyond federal law requirements.

Walking/Working Surface: Any surface, whether horizontal or vertical on which an employee walks or works, including but not limited to floors, ramps, bridges, runways, formwork and concrete reinforcing steel. Does not include ladders, vehicles, or trailers on which employees must be located to perform their work duties.

Welder or Welding Operator: As used herein are intended to designate any certified operator of electric or oxyfuel gas welding or cutting equipment, or allied processes.

Welding, Electric: The process in which electrical energy is converted into heat for welding (i.e. arc welding and resistance welding)

Welding, Gas: A group of welding processes wherein fusion is produced by heating with a gas flame, with or without the application of pressure or filler materials.

Work Area: The portion of a walking/working surface where job duties are being performed.

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APPENDIX B: ACRONYMS

ACM	Asbestos Containing Material
AHA	Activity Hazard Analysis
ANSI	American National Standard Institute
ASTM	American Society for Testing and Materials
AWS	Automotive Welding Society
BOSS	Base Operations Support Services
CCAFS	Cape Canaveral Air Force Station
CFR	Code of Federal Regulation
CMU	Concrete Masonry Unit
CO	Contracting Officer
CoF	KSC Construction of Facilities
COR	Contracting Officer Representative
dB	decibels
dBA	decibels (acoustic)
DEP	[Florida] Department of Environmental Protection
DOT	United States Department of Transportation
EH	Environmental Health
EMS	Emergency Medical Services
EPCRA	Emergency Planning and Community Right-to-Know Act
EPOC	Environmental Point of Contact
FAA	Federal Aviation Administration
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
F.S.	Florida Statute
GFCI	Ground Fault Circuit Interrupter
HEPA	High Efficiency Particulate Air
HMIS	Hazardous Materials Identification Sheet
IEEE	Institute of Electrical and Electronics Engineers
ISEA	International Safety Equipment Association
JHA	Job Hazard Analysis
JSA	Job Safety Analysis
KDP	Kennedy Documented Procedures

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KNPR	Kennedy NASA Procedural Requirement
KSC	John F. Kennedy Space Center
kV	Kilovolt
LDEM	Lifting Devices and Equipment Manager
LHNA	Lightning Hazard Notification Area
LOTO	Lockout Tagout
MOT	Maintenance of Traffic
mph	miles per hour
NASA	National Aeronautics and Space Administration
NEC	National Electric Code
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
nm	nautical mile
NOSV	Notice of Safety Violation
NPR	NASA Procedural Requirement
OHF	Occupational Health Facility
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
PACM	Presumed Asbestos Containing Material
PAWS	Pager and Area Warning System
PCN	Project Control Number
PE	Professional Engineer
PMI	Preventative Maintenance Inspection
POC	Point-of-Contact
PPE	Personal Protective Equipment
psig	pounds per square inch gauge
PSM	Process Safety Management
RF	Radio Frequency
SAIA	Scaffold and Access Industry Association
SDS	Safety Data Sheet
SSR	Safety Statistics Record
SSSP	Site-Specific Safety and Health Plan
TAWS	Tornado Area Warning System
TWA	Time Weighted Average

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UG	User Guide
USCG	United States Coast Guard
XRF	X-Ray Fluorescence
VPP	Voluntary Protection Program

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APPENDIX C: SSSP (TEMPLATE)

The following template will provide guidance during the development of the SSSP.

Note: <u>Bold and *italicized*</u> words found in this example document denote areas the contractor needs to replace with the specific requested information. For sections that do not apply to the contract, the contractor may leave the section headings, delete the content, and insert "Not Applicable."

Site-Specific Safety and Health Plan (SSSP) for project:

_____

Project Title

_____ - _____

PCN **Contract Number**

_____

Company Name

The following listed Official is <<*Company's Name*>> authority for approval of this SSSP for the above listed project.

_____

Name of Company Official **Title** **Signature**

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Project-Specific Safety and Health Sections

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35. Hearing Loss Prevention and Hazardous Noise #
36. Hot Work Permits #
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38. Ladders and Stairways #
39. Lockout/Tagout (Control of Hazardous Energy) #
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47. Elevating and Rotating Work Platforms #
48. Welding and Cutting Operations #
49. Working Over or Near Water #
50. Work Zone Maintenance of Traffic (MOT) #

List of Appendixes #

<u>NOTE</u>: The contractor should list here any enclosures/appendices that the plan calls for (this may include training certifications, JHAs, fall protection plans, demolition plans, etc.). These appendixes are contractor specific so no example formats are provided in the following example document.

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Safety and Health Sections

1. General Project/Safety and Health Information

<<Company Name>> SSSP is a detailed plan of safety and health information, requirements, and regulations that ***<<Company Name>>*** will follow while conducting all work under NASA/KSC Procurement Office contract ***<<Project Title>>*** located in ***<<building name or number>>***.

a. The work this SSSP covers includes *<<describe here the general scope and statement of work to be performed on the project>>.*

b. This plan is written to address the safety and health aspects of this project's work requirements. Our Corporate Safety and Health plan and program, along with Federal, NASA/KSC, state, and local specific safety and health requirements were used in developing this plan.

c. This plan applies to all construction contractor personnel performing working on the site. ***<<Company Name's and their designated site supervisor employee name>>*** will be responsible for ensuring all employees follow all applicable safety and health regulatory requirements to include this SSSP.

d. All work under this contract will be performed safely so as not to create a hazard to personnel health or property (NASA and contractor). All work will be conducted in accordance with NASA and KSC provisions contained in the contract, all applicable sections of OSHA regulations, and other applicable local, state, and federal laws. ***<<Company Name>>*** will implement safe working practices and furnish equipment to assure a safe working environment.

e. ***<<Company Name>>*** will ensure employee compliance with this SSSP.

f. <***<<Company Name>>*** intends to hire the following sub-contractors to perform the work identified on this project. This list includes additional sub-contractors hired by our project sub-contractors. This list will be updated when any new sub-contractor(s) are identified and hired.

Sub Tier Seller Name	Type Work Performed
1. *<<Company A>>*	*Demolition of Existing Facility*
2. <<Company B>>	*Concrete and Masonry*
3. <<Company C>>	*Electrical*
4. <<Company D>>	*Fire Systems*

Definitions:

The contractor may include a section here that defines key terms within the plan to clarify items for their employees.

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2. Voluntary Protection Program

a. ***<<Company Name>>*** understands that Kennedy Space Center has implemented a comprehensive safety and health management system and is recognized by the Occupational Health and Safety Administration (OSHA) as a "Voluntary Protection Program (VPP) Star Worksite." Our company further understands that the VPP program promotes effective worksite-based safety and health by encouraging employers and employees to reduce the number of occupational safety and health hazards at their places of employment.

b. Though our company is not required by contract to be VPP certified we will:

(1) Follow the safety and health requirements of our host organization.

(2) Ensure employees are trained that they can report safety and health issues without fear of retaliation and that they can report anonymously.

(3) Support and comply with NASA/KSC contractor oversight program.

(4) Identify, correct, and track uncontrolled hazards on our jobsites in a timely manner.

(5) Comply with NASA/KSC in resolving any non-compliant work practices.

3. Contractor Employee Training

a. All ***<<Company Name>>*** and employees engaged in jobsite activities will have received the required training that allows them to be safe during work activities. Personnel will not perform any work activity on the jobsite until they have received the training required for their job responsibilities and activities.

b. ***<<Company Name>>*** has enclosed a list of employees that will be performing work on the site (*see* ***<<appendix # >>***). The list certifies that the employees have received all required training, and a documented copy of the list will be updated before new employees or sub-contractors begin performing work on the jobsite.

(1) The list will contain the names, date of training, type of training received, and expiration dates of training and training certification of special role employees such as the site supervisor, competent persons, qualified persons, and heavy equipment operators, applicable to this contract.

c. ***<<Site Supervisor's Name>>*** will ensure that new site employees' training is verified prior to the employees being allowed to work on the site and that all safety and health training is accomplished by the organization employees or an outside company qualified to train.

d. ***<<Company Name>>*** plans to use temporary employees on this project. The site supervisor will ensure these employees are trained or verify and certify (document) that they have been trained in basic OSHA and this SSSP requirements for the tasks that they will be performing at the jobsite. ***<<Include this paragraph as applicable>>***

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4. Accident/Incident (Mishap/Close Call) Reporting

a. In the event of a serious injury, employees will immediately notify the site supervisor and call 911 or (321) 867-7911 (cell phone on KSC) or (321) 853-0911 (cell phone on CCAFS). Ambulances are on call 24 hrs./day; 7 days/week on both KSC and Cape Canaveral Air Force Station (CCAFS).

b. The site supervisor will report severe mishap incidents (property damage greater than $500,000 or personnel injury/illness equivalent requiring inpatient hospital care or permanent or partial disability) within 1 hour to the Center Institutional Safety Office (321) 867-SAFE, the project CO, and COR by telephone or in person.

c. Less severe mishap or close call incidents (potential for or actual property damage greater than $20,000 or personnel injury/illness equivalent to or exceeds a nonfatal OSHA-recordable occupational injury and does not meet the criteria of a more severe mishap identified above) will be reported to the Center Institutional Safety Office, CO, and COR within 4 hours of the event (or by 7:30 AM the next workday for incidents occurring during shifts other than first shift) by telephone (321) 867-SAFE or in person.

d. Initial mishap or close call notification/report includes all available information such as:

(1) The time and location of the incident

(2) A detailed incident description

(3) The number of persons involved and associated organization(s)

(4) Preliminary worst case estimate of the injuries and direct cost estimate

(5) Causal factors, if known

(6) Corrective/hazard mitigation actions taken

e. In the event of an accident or mishap, the site supervisor will ensure immediate action is taken to secure potentially dangerous conditions (e.g., disconnect electrical power, secure machinery) in order to protect employees. The scene of an accident or mishap will be secured and remain intact until released by KSC Safety, KSC Security, and the Contracting Officer (CO) or the COR.

f. The site supervisor will ensure all potential incident witnesses and affected equipment remains until released by the appropriate NASA authority.

g. The site supervisor will submit to the COR, CO and KSC Institutional Safety Office (SA-E2) a KSC Incident Report, KDP-F-3645 by hand, e-mail, or fax (321) 867-1120 within 4 hours of the mishap/close call. If the report is submitted by non-secure means all personal identification of the employee injured will be removed (name, social security number, etc.).

h. ***<<Company Name>>*** will notify their company president/top-level management or program manager of all incidents that are deemed immediately dangerous to the life and health of their employees.

i. ***<<Company Name>>*** will investigate less severe mishap or close call incidents (unless directed otherwise by the NASA Safety Office) in order to determine the root cause and furnish

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the CO with a written report within 30 days of the mishap or close call by completing page 2 of the KSC Incident Report (KDP-F-3645, NASA Direct Construction Contractor Mishap Report) which will include the investigation findings and proposed or completed corrective actions.

j. <***<<Company Name>>*** understands that NASA may appoint an observer or investigating authority for any incident.

k. <***<<Company Name>> will*** (in accordance with the requirements of our contract) cooperate with any Government incident investigation.

l. ***<<Company Name>>*** will perform trend analysis of their mishaps/close calls to identify potential reoccurring safety issues and share the analysis results with all worksite employees.

5. Weather Policy

a. ***<<Company Name>>*** will ensure employees on the jobsite are protected from adverse weather conditions. That includes winds in excess of 35 knots, heavy rain/hail, tornados, or the potential for lightning within 5 nautical miles that could affect the area within 30 minutes.

b. The site supervisor will have a means emergency communication and of receiving the KSC weather advisories and warning alerts at all times during work performance. ***<<Company Name>>*** will receive these alerts from a weather warning pager or text message received on a cell phone. These actions are coordinated through the project CO.

c. The site supervisor will alert employees of adverse weather conditions and heat stress advisories in the area. The site supervisor will take appropriate action to protect employees when alerted.

d. ***<<Company Name>>*** will adhere to the work restrictions based upon the table below.

WIND LIMITATIONS TABLE

Steady State	**Gusts**	**Limitations**
17.38 knots (20mph)	22 knots (25 mph)	No erection of, or work on floats, spiders, and/or scaffolding
30 knots (34.5 mph)	35 knots (40.3 mph)	No work on facility roofs, structure tops, unprotected areas, or outside hand rails (materials on roofs are secured or removed).
35 knots (40.3 mph)	40 knots (46 mph)	Contractor Supervisors will immediately conduct a walk down of their area for unsecured items.
40 knots (46 mph) and above	45 knots (51.7 mph) and above	Immediate actions will be taken to secure at ground level all loose or unanchored items, equipment, supplies, and materials.

e. The contractor will comply with wind advisories and warnings issued by the 45th Space Wing Weather Office unless an Alternate Wind Advisory Plan is approved as part of the contractor's SSSP. An approved alternate wind plan must contain the following elements

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f. Upon notification of a KSC announced Adverse Wind Condition or if wind conditions on the jobsite appear to exceed safe working conditions, the project weather team will determine site specific weather/wind work restrictions.

g. The **<<Project Name>>** project weather team consists of the following personnel:

(1) <<Name of contractor onsite Supervisor>>

(2) <<Name of project BOSS Construction Inspector>>

(3) <<Project CO or COR>>

h. The On-Site Weather Team will evaluate wind conditions by use of the following resources:

(1) The 45th Space Wing weather forecaster (321-853-8484)

(2) Calibrated onsite anemometers. Anemometers will only be used by trained personnel.

(3) Visually check wind socks (if available)

i. Two of the first three methods identified above (minimum of two to corroborate wind readings) will be used to accurately determine wind speeds in the vicinity of the construction worksite

j. Winds will be monitored on a continuous bases and updates recorded in writing hourly at a minimum during a Center wide wind advisory/warning.

Lightning Restrictions

a. A Phase I Lightning Watch indicates that conditions are favorable for lightning to occur in indicated areas within 30 minutes. A Phase I Lightning Watch is intended to provide personnel sufficient lead-time to secure their operations before the forecasted lightning begins. During Phase I Lightning Warnings, task leaders and personnel will prepare to safely halt any operations that may be affected if a Phase II Lightning Warning is announced (i.e., be prepared to safely halt operations that expose personnel to lightning hazards or that are required to be halted if a Phase II Lightning Warning is announced).

b. Phase II Lightning Warning indicates that lightning was observed or is forecasted to occur within 5 nautical miles. Individuals will act to protect themselves from the dangers of lightning upon being notified of a Phase II Lightning Warning. Personnel access to roofs or top levels of structures is prohibited. Electrical systems maintenance and any other operation requiring personnel risk of lightning exposure are prohibited.

Tornado Notification

a. Tornado Watch: Conditions exist for a tornado. Prepare for a tornado warning.

b. Tornado Warning: Tornado has been sighted. Personnel will take cover immediately in approved structures.

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Hurricane Condition (HURCON) Policy

a. During the Atlantic Hurricane Season (June 1 through November 30) Florida is subject to extreme destruction associated with hurricanes. ***<<Company Name>>*** and our employees will comply with instructions from the CO and follow the NASA/KSC Hurricane Policy.

b. Hurricane Condition III: Hurricane is forecasted to make landfall or impact the immediate area within 48 hours. Prepare site by securing structures and loose objects. Perform the necessary housekeeping. Prepare for evacuation.

c. Hurricane Condition II: Hurricane is forecasted to make landfall or impact the immediate area within 24 hrs. Evacuate site when directed by the CO and leave KSC.

d. ***<<Company Name>>*** will tie down trailers and equipment with anchorage that complies with KSC-PLN-1904, Trailer/Equipment Tiedown Plan for the Kennedy Space Center.

6. Clothing

a. All employees conducting work on this project will wear appropriate clothing. Appropriate clothing consists of at minimum long pants, short (at least four inches in length) or long-sleeved shirt (no tank tops), and a style of shoe determined by the type of work being performed. Overly loose fitting, torn, or ragged clothing will not be acceptable.

b. The site supervisor will check daily that workers have the proper clothing suitable for tasks and hazard level of work being performed.

c. Fire retardant clothing will be worn for designated tasks that present a potential for arc flash, flash fire, or explosion to minimize the effects of arc flash, flash fires, and burns from contacting hot equipment and material. This is also addressed in the sections for electrical and welding work.

7. Construction Site Safety

a. The site supervisor will ensure the safety of all personnel from all organizations while within the boundaries of the worksite. This is to include control of who is on site, what PPE, special conditions, and restrictions will be observed while on site.

b. The designated site supervisor(s) for the jobsite is (are) ***<<List name(s) of employee(s)>>***. A site supervisor will be on site at all times during construction. If the site supervisor cannot remain at the site, a designated authorized representative with the responsibilities, accountability, and authority of the absent supervisor will be identified. If such an individual is not designated, all construction work will be halted until the site supervisor returns.

c. The site supervisor or authorized representative while performing supervisory tasks will not perform other labor type duties (i.e., laborer or equipment operator).

d. ***<<Company Name>>*** will permit only those employees designated qualified to operate equipment and machinery. A qualified operator is one being knowledgeable of the equipment's/machine's operations, operations manual, limitations, restrictions, and safety requirements.

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e. Personnel will not use cell phones/texting devices while operating equipment (to include hand tools, machinery and heavy equipment) or driving vehicles (hands free only in vehicles). Necessary business calls or replying to pages or telephone calls may be accomplished only from a safe location (designated break area or area free from hazards) while at the jobsite.

f. All employees are encouraged to submit suggestions or report issues regarding site and facility safety and health to the project site supervisor, the NASA/KSC assigned Safety Specialist, or by calling the KSC Institutional Safety Office (SA-E2) at (321) 867-SAFE (7233) without fear of retribution.

g. Employees that are performing work in or transitioning through a construction site controlled by another contractor will comply with the safety and health requirements of that worksite and apply common sense to avoid injuries. In addition when working in the vicinity of or transitioning through an area where KSC operations are in progress, employees will comply with the safety and health requirements and direction of the NASA controlling authority of the area.

h. The site supervisor will maintain at all times a means of communication to contact emergency services and emergency numbers will be posted at the worksite in a location where all employees have access. The site supervisor will develop a means of communication to disseminate information throughout the worksite (handheld radios, bulletin boards, etc.).

8. Controlled Areas

Employees will not enter posted controlled areas, nor will the integrity of any installed protective system (e.g., guardrails, safety signs, warning lights) be rendered inoperable, without proper written approval from the CO in consultation with the appropriate facility management and the KSC Institutional Safety Office (SA-E2).

9. Sanitation Conditions and Facilities

a. External Reference: 29 CFR 1926.51 provides OSHA regulations concerning the Sanitation Conditions and Facilities.

10. Evacuation (Facility or Area)

a. For all work conducted inside a facility, ***<<Company Name>>*** will assign a point of contact (POC) prior to the beginning of work. Should evacuation of any area be necessary for reasons other than tornadoes, employees will follow the facility evacuation procedures and meet the POC at the marshalling area or at least 200 feet from the hazard. The site supervisor or designated POC will ensure accountability of employees. The POC will brief employees on evacuation and marshalling areas on the first day work begins.

b. The project supervisor or designated POC will notify the KSC on scene Commander if all employees are not accounted for. Employees will not return to work inside or within 200 feet of the facility until the on-scene commander gives the “ALL CLEAR”.

11. First Aid and Medical

a. Prior to starting work, ***<<Company Name>>*** will make provisions for prompt medical attention in case of employee injury. Emergencies will be reported by dialing 911, (321) 867-7911 (cell phone on KSC) or (321) 853-0911 (cell phone on CCAFS).

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b. All emergency contact telephone numbers will be posted at the jobsite in an area accessible and conspicuous to all personnel.

c. For non-emergency, walk-in medical care, personnel may report to the KSC Occupational Health Facility (OHF) located at the corner of 2nd St. SE and C Ave. SE during normal office hours (0700 – 1600 hrs.). After hours or on weekends, call the numbers listed in "11a" above. Emergency Medical Services (EMS) personnel evaluate for first aid or transport to nearest medical facility.

d. The site supervisor(s) will:

(1) Ensure employees know to report any injury to their supervisor immediately.

(2) Ensure employees report to the nearest Occupational Health Facility (OHF) facility immediately during clinic hours and after hours or on weekends call the numbers listed in "11a" above and EMS will evaluate for first aid or transport to nearest medical facility if necessary.

(3) Follow the requirements for KSC Accident/Incident (Mishap/Close Call) Reporting.

(4) Ensure any employee that is transported off base after hours report to the OHF the next duty day the OHF is open and comply with all follow-up visits.

(5) Ensure the employee is compliant with restrictions as ordered by the physician.

e. ***<<Company Name>>*** has developed a first aid program for the worksite. The first aid program is designed to reflect the known and anticipated risks of the specific work environment. Adequately trained person(s) are available to render first aid. First aid training includes instruction in general and workplace hazard specific knowledge and skills. First aid supplies are available in adequate quantities and are readily accessible.

12. Hazard Communications

The contractor describes in this section their approach to implementing the requirements of the OSHA Hazard Communication standard (29 CFR 1910.1200) for the work to be performed at the KSC worksite. The description needs to include:

a. Employee Training

b. List of Hazardous Materials to be used on the KSC worksite

c. Submittal of Safety Data Sheets

13. Heat Stress

The contractor describes here their heat stress prevention policy. The description needs to include:

a. Use of KSC-issued weather warning pagers.

b. Training and education in the hazard, risk factors, effects of heat stress including signs and symptoms and the actions that should be taken, and prevention methods.

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c. Approach to providing potable water, work breaks and other accommodations for preventing heat related illness.

14. Housekeeping

a. External Reference: 29 CFR 1910.25 provides OSHA regulations concerning Housekeeping.

15. Inspections (Worksite by Contractor)

a. The <<**Name of Contractor onsite Representative>>** will conduct or ensure a daily inspection of the jobsite, materials, and equipment is conducted to identify existing or potential hazards.

b. The inspection will be accomplished by the designated competent person (general). At least weekly, the site supervisor will document the completion of this inspection.

c. The worksite inspection will be accomplished by a competent person (general) is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.

16. Inspections (NASA Safety Representatives)

a. ***<<Company Name>>*** understands the jobsite is subject to inspection by KSC Safety and Health personnel at any time.

b. ***<<Company Name>>*** also understands that safety violations will be documented. The site supervisor will work with KSC Construction Safety Specialists, the CO designated representative, and CO (depending on severity) to implement corrective action(s).

17. Job Hazard Analysis (JHA)

a. Prior to the start of work, the ***<<Company Name>>*** will perform a job hazard analysis of the work to be performed. The completed JHA will be provided to KSC Institutional Safety Office (SA-E2) through the CO as an appendix to this SSSP prior to the work occurring.

b. A JHA is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. ***<<Company Name>>*** goal is to identify all uncontrolled hazards, then take the steps/actions to eliminate or reduce the hazards to an acceptable risk level.

c. <***<Company Name>>*** JHA(s) contains each of the sections identified below:

(1) Task (Activity) Description: Specify the work to be performed such as operating machinery, equipment, and powered hand tools.

(2) Hazard Description: Using the tasks listed, identify the hazards related to the work being performed such as flying debris, dust, wood chips, metal shavings getting into the eyes).

(3) Hazard Controls: The preventive measures taken to eliminate or mitigate the hazard to an acceptable operational level for example know and utilize the manufacturer's operating, maintenance, and safety procedures and use personal protective equipment (PPE) as required, such as ear protection, goggles, face shield, safety shoes, and work gloves.

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d. JHAs are living documents and will be reviewed, updated, and discussed with employees when changes occur in work tasks, alternate equipment is being used, or when alternate methods of performing the task are being considered such as using aerial lifts in place of scaffolding.

18. Maximum Work Hour Policy

<<Company Name>> will comply with NASA/KSC employee work hour limits.

a. No employee will work in excess of 12 consecutive hours in any one day. A minimum of 8 hours off time will be allotted between work shifts.

b. No employee will work in excess of 60 hours in any one work week.

c. No employee will work more than 7 consecutive days without one full day off.

d. No employee will work in excess of 240 hours during any 4 consecutive work weeks or 2500 hours in any rolling 12 month period.

e. A written request for exceptions to the above policy will be submitted for approval to the CO in consultation with KSC Institutional Safety Office (SA-E2).

19. Pre-task Meetings

Prior to the start of each work day, when a task changes during operations, prior to any hazardous task, or prior to any confined space entry, ***<<Company Name>>*** will conduct a pre-task (toolbox) meeting and communicate all job related safety issues with all employees involved. Where a task involves a confined space entry, completion of this meeting will be noted on the confined space entry permit. This meeting at a minimum will cover:

a. Work tasks planned for the day to include sequence and hazard management.

b. Weather issues that could affect that day's work.

c. PPE required for that day's work task(s).

d. Safety hazard awareness (from JHA).

20. Safety Meetings

a. The site supervisor will conduct and document weekly safety meetings for all employees at the jobsite. The meeting will discuss safety and health related issues as well as any incidents (and subsequent corrective actions taken) that have occurred at the site.

b. The first meeting will occur prior to beginning work on the first day on the job. Also, if during performance of the contract, a break of more than five working days occurs, the site supervisor will conduct a safety meeting on the first day back on the job.

c. The documentation of safety meetings will include a short summary of the items covered, the date and location of the meeting, the name and signature of the person conducting the meeting,

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and a roster of attendees. Documentation of these safety meetings will be kept at the construction site for review.

21. Safety Systems – (Permanently Installed)

a. ***<<Company Name>>*** will protect and in no way invalidate the integrity of any installed safety systems or personnel safety devices such as firefighting equipment and sensing devices, fire alarm centers, fire water supply, guard rails, safety chains, warning lights, and safety signs. Prior CO approval will be obtained when access to device-guarded systems is required.

b. In the event ***<<Company Name>>*** or NASA/KSC makes a determination (with CO approval) that it is necessary to temporarily remove or invalidate any personnel safety devices in order to accomplish a task, alternate means of protection prior to removing or invalidating any permanently installed safety devices or equipment will be developed, in place, and approved prior to any work occurs.

Project-Specific Safety and Health Section

22. Temporary Structures, Trailers, and Work Areas

a. All temporary structures and trailers will be clearly marked with our company's name and an emergency contact phone number. Trailers will be pre-approved by the KSC CO and the Facility Manager for parking locations and tied down if stationary for a period in excess of two weeks. A dig permit will be requested and approved prior to tying down any trailer or temporary structure.

b. ***<<Company Name>>*** worksite for this project will be clearly marked by a posted sign(s) with the following information. This information will be posted in an area visible to both contractor and NASA/KSC employees.

(1) Company Name

(2) Contractor Site Supervisor's name and contact phone number

(3) Contractor Safety Supervisor's name and contact phone number (if applicable)

(4) NASA/KSC Project Contracting Officer's (CO) name and contact phone number

(5) NASA/KSC Contract Officer Representative's name and phone number

(6) NASA/KSC Safety phone number (321-867-SAFE)

23. Vehicle Operations

a. ***<<Company Name>>*** will adhere to permit requirements, restrictions, and conditions for overweight, oversized, or slow moving vehicles as identified in contract clause JC-6, Traffic Restrictions, and in KNPR 1600.1, KSC Security Procedural Requirements.

b. ***<<Company Name>>*** will adhere to the prohibition of movement of oversized or slow moving vehicles on KSC roadways between the hours of 0600-0900 and 1500-1800, Monday through Friday.

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c. The remainder of the SSSP should only contain the following areas applicable to the work performed on this project.

24. Confined Space Entry

a. <***<<Company Name>>*** work on this project requires entry into and work in confined spaces. ***<<Company Name>>*** has enclosed an OSHA Compliant Confined Space Entry Program (Plan) that implements the applicable requirements of (29 CFR 1910.146, 1910.268, and 1910.269), KNPR 1840.19, KSC Industrial Hygiene Program, KNPR 1820.4, KSC Respiratory Protection Program and KNPR 8715.3, KSC Safety Procedural Requirements as ***<<appendix # >>*** to the project SSSP.

b. If the contract requires work in telecommunications manholes, identify here how your company will comply with the provisions of 29 CFR 1910.268(o) and 1910.269(e)

c. If the contract requires work in electrical or communications manholes, the following statement will be included in the plan

<<Company Name>> will notify and obtain approval from the Power Coordinator (321-867-7300) and from Communications Control (321-867-4141) respectively prior to performing any work.

d. As a part of its Confined Space Entry Plan, the contractor will describe its approach to implementing the requirements of the OSHA Permit-Entry Confined Space regulation. The plan will address:

(1) Employee training

(2) Site plan showing locations of confined spaces under scope of contracted work

(3) Pre-entry hazard assessment and entry requirements

(4) Approach to use of Government-provided services for atmospheric testing, or alternatively, the contractor's approach to performing atmospheric testing for confined space entry.

(5) Approach to coordinating confined space entry work with KSC Environmental Health, Fire Services, Power Coordinator, and Communications Control.

(6) Where the contractor will act as a controlling employer with operational control over the permit space during multiple employer entry, describe your approach to coordinate entry operations (for example, hazardous operations, required PPE, employee training, rescue, emergency services, and all other aspects of the entry) with each entrant's employer.

e. ***Company Name>>*** will perform their ***<<own atmospheric testing>> OR <<use the Government provided services including environmental health monitoring and consultation>> (identify which will be used)*** support for testing of atmospheres in confined spaces.

f. ***<<Company Name>>*** will ensure all water is pumped out of the confined space prior to entry checks.

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25. Cranes and Lifting Operations

a. ***<<Company Name>>*** will conduct all crane and lifting equipment operations and maintenance in compliance with manufacturer's recommendations, Subpart CC of 29 CFR 1926, applicable ASME standards, and NASA-STD-8719.9, NASA Lifting Standard

b. <***<<Company Name>>*** list of certified and trained mobile cranes and other lifting equipment personnel and the equipment they will be utilizing is as follows:

<<Employee>>	*<<Equipment Employee is Certified to Operate>>*
<<Employee>>	*<<Equipment Employee is Certified to Operate>>*
<<Employee>>	*<<Equipment Employee is Certified to Operate>>*
<<Employee>>	*<<Equipment Employee is Certified to Operate>>*

c. ***<<Company Name>>*** riggers are trained and certified in their discipline are trained in applicable crane or lifting equipment operation procedures.

d. All cranes and lifting equipment are certified for operational use by ***<<list appropriate authorizing agency>>.***

e. An operator will man the controls of any lifting device while a load is suspended or when the equipment is operational.

f. No personnel will perform work or be located under a suspended load at any time.

g. A daily, monthly, and annual equipment inspection is conducted and results documented and available at the jobsite. Cranes will be inspected by a competent person (cranes). These inspections will follow manufacturer's suggestions and include at a minimum the areas listed in chapter 5.4 of NASA-STD-8719.9.

h. ***<<Company Name>>*** maintains a documented system to track crane problems or discrepancies. Prior to an operation, the crane operator will review any previously noted problems or discrepancies to determine possible impact on the planned activity.

i. ***<<Company Name>>*** maintains the following documentation on the jobsite anytime a piece of lifting equipment is operational: Operator certification, equipment certification, inspection, and load test documentation.

j. A pre-task briefing will be performed and documented prior to commencing crane operations. The briefing will include at a minimum:

(1) An overview of the task to be performed.

(2) The methods used to accomplish the task.

(3) Who each member of the crew is and where they will be positioned.

(4) What task each member of the crew will perform.

(5) Who is in charge of the operation.

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k. The working area around any lifting operation will be controlled by ***<<list means of control>>***. Only personnel essential to the lifting operation will be inside the controlled area. If the controlled area cannot be maintained, the lifting operation will be discontinued.

l. The site supervisor will be in overall charge of lifting operation on the jobsite and will ensure all personnel involved are instructed in the proper positioning, rigging, and moving to be done.

m. This person will ensure:

(1) The crane has met all its maintenance, test, and inspection requirements and is to be operated within its rated capacity and the operator is properly certified.

(2) The vicinity of the lift is controlled and the operator remains at the controls the entire time the load is suspended.

(3) The crane operator and signalmen have communications with each other. If communications are lost, the lifting operation will be immediately stopped.

(4) All personnel within the controlled lifting area are wearing the appropriate personal protective equipment (e.g., hardhat, safety shoes, and gloves).

(5) A pre-task briefing was performed and all personnel are knowledgeable of the operation to be performed, tasks to be done, route to be traveled, and safety considerations.

(6) At no time will any part of the crane or load pass within the designated minimum safe approach distance of an electrical power line unless the line is de-energized and visibly grounded on both sides of the area of possible contact.

n. All crane operations will comply with the NASA/KSC Adverse Weather requirements and this plan. When moving cranes, adhere to the crane manufacturers wind limits for both operations and positioning.

o. A written lift plan will be submitted and approved by the CO in consultation with the KSC Lifting Devices and Equipment Manager (LDEM) and KSC Institutional Safety Office (SA-E2) for all crane operations involving critical lifts, as defined in Appendix F of KNPR 8715.7.

p. Cranes will not be used to hoist employees on a personnel platform unless approved in advance by the CO in consultation with the KSC LDEM and Center Safety Office.

q. Cranes left outdoors will be secured by the operator when operations are complete. Cranes of any height will be lowered during the hours of darkness. If this is not feasible, the crane will be lit in accordance with Federal Aviation Administration (FAA) regulations.

26. Demolition

a. ***<<Company Name>>*** will conduct all demolition operations in compliance with Subpart T to 29 CFR 1926.

b ***<<Company Name >>*** *will submit a demolition engineering survey to the CO for review*'.

c. The demolition activities involve hazardous materials, such as silica, mold, or toxic substances regulated under 29 CFR 1926 Subpart Z ***<<list specific materials involved and remove the rest>>***. A plan for safe handling and containment of those hazardous materials will

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be approved and in place prior to beginning of the demolition ***(see also section 3.11, Hazardous Substances of this example document for specific additional plan requirements).*** The plan for handling/containment of all hazardous materials will be in full compliance with applicable Federal, State of Florida, NASA, and other authorized regulatory agencies current standards.

d. During demolition, continuing inspections by a competent person (general) will be made as the work progresses to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material. No employee will be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.

e. If materials are to be dropped more than 20 feet to any point lying outside the exterior walls of the building, an enclosed chute of wood, or equivalent material, will be used. 29 CFR 1926.852 provides construction requirements for Chutes

f. Walkways or ladders will be provided for employees to safely reach or leave any scaffold or wall.

g. Any structural member being dismembered will not be overstressed.

h. No workers will be permitted in any area which can be adversely affected by demolition operations when balling or clamming is being performed. Only those workers necessary for the performance of the operations will be permitted in this area at any other time.

i. A Florida Department of Environmental Protection (FDEP) “Notice of Asbestos Renovation and Demolition Form” [DEP Form 62-257.900(1)] will be completed and submitted to the CO prior to demolition of any load-bearing structure regardless of whether or not asbestos is present.

27. Dive Operations (Commercial)

a. This section applies to diving and related support operations conducted in connection with this project. ***<<Company Name>>*** will conduct dive operations in accordance with 29 CFR 1910.401 through 440.

b. Contractor’s SSSP will address dive safety plan for any diving operations that is identified in their contract.

c. Each dive team member has the experience and training necessary to perform assigned tasks in a safe and healthful manner, the use of tools, equipment, and systems relevant to assigned tasks, techniques of the assigned diving mode, diving operations and emergency procedures.

Requirements to complete prior to Diving

a. A standby diver will be available whenever a diver is in the water.

Procedures to be followed during-Dive Operations

28. Electrical Safety

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a. All electrical work will be performed in accordance with the current edition of the National Electric Code (NEC), National Fire Protection Association (NFPA), OSHA, and contract referenced documents.

<<The SSSP will include a project-specific electrical work job hazard analysis performed by a qualified safety professional.

Contractors performing work on or near Electric Power Generation, Transmission, and Distribution (such as Orsino Substation, C-5 Substation, the Emergency Power Plant, and overhead and underground 15 kilovolt (kV) power distribution systems) will provide a written program for such work as part of their SSSP that is consistent with the requirements of 29 CFR 1910.269; 29 CFR 1910.332 through 29 CFR 1910.334; and IEEE C2 (National Electrical Safety Code).

The electrical safety program specifically addresses the Article 130 requirements for any energized electrical work to be performed by written work permit only. This will include applicable hazard analyses and associated approach boundary and personal protective equipment (PPE) determinations. >>

The written electrical safety program will include JHAs covering all anticipated or known work to be performed in hazardous locations or on or near energized parts including “routine” tasks not requiring an energized work permit by NFPA 70E.

b. Circuits will be placed in an electrically safe condition by de-energizing, applying lockout/tagout, and verifying lack of voltage using suitable test equipment prior to grounding or performing any work on electrical conductors or electrical circuits.

c. ***<<Company Name>>*** will complete and have approved an electrical system outage work permit for all required outages during the prosecution of work that affects utility systems, such as electrical, water, fire detection and protection systems, and air handling systems will require an electrical system outage work permit. Work will be scheduled to hold outages to a minimum. Request for utility outage permits will be made in writing to the CO at least 14 working days in advance of the time required. The request will include the system involved, area involved, approximate time of outage, and the nature of the work involved.

NOTE: Submittal of an outage request does not approve the outage or mean it will take place. Due to the nature of the operations at KSC, ***<<Company Name>>*** may not know until the day before the requested date if the outage will take place as scheduled. All outages will take place outside regular working hours.

d. Energized parts to which an employee might be exposed will be put into an electrically safe work condition before an employee works on or near them. ***<<Company Name>>*** will only request an exception when it can be demonstrated that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations.

e. If energized parts are not placed in an electrically safe work condition (i.e., due to increased or additional hazards or infeasibility), or a task involves an employee crossing the NFPA 70E prohibited approach boundary, the work to be performed will be considered energized electrical work and will be performed under a written Energized Electrical Work Analysis & Authorization Permit Energized Electrical Work Permit only. Energized parts that operate at less than 50 volts to ground need not be de-energized if there will be no increased exposure to electrical burns or to explosion due to electric arcs.

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f. If the exposed energized circuits are not de-energized, additional safety related work practices are to be implemented to protect employees who may be exposed to the electrical hazards involved. These work practices are documented in the project electrical JHA and specify actions that will protect employees against contact with energized circuit directly with any part of their body or indirectly through some other conductive object.

g. ***<<Company Name>>*** qualified person (electrical) will conduct a shock hazard analysis to determine the voltage to which personnel will be exposed, boundary requirements, and the personal protective equipment necessary in order to minimize the possibility of electric shock to personnel. Results of the shock hazard analysis are included in this SSSP and will be used to complete the electrical JHA.

h. <***<Company Name>>*** qualified person (electrical) will conduct a flash hazard analysis in order to protect personnel from the possibility of being injured by an arc flash. The analysis will determine the flash protection boundary and the personal protective equipment that people within the flash protection boundary will use. Personnel working with, on, or around energized circuits will wear appropriate arc flash personal protective equipment as required by NFPA code 70E.

i. For energized work, the site supervisor will conduct a pre-work briefing and document what was covered and the employees who received the prior to starting work.

j. Work performed on or near live parts by qualified persons (electrical) related to tasks such as testing, troubleshooting, and voltage measuring will be permitted to be performed without an energized electrical work permit, provided appropriate safe work practices and personal protective equipment are used.

k. The qualified electrical person will use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and will verify that the circuit elements and equipment parts are de-energized. The test will also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage backfeed even though specific parts of the circuit have been de-energized and presumed to be safe. If the circuit to be tested is over 600 volts, nominal, the test equipment will be checked for proper operation immediately before and after this test.

l. Prior to reenergizing equipment, the qualified electrical person will conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.

m. Ground fault circuit interrupters (GFCIs) will be utilized on all temporary power and all extension cords will be heavy duty rated and used in conjunction with GFCIs.

n. Temporary electrical wiring required during construction and major repairs will be installed by a qualified electrician and protected with a circuit breaker or fuses.

o. Temporary wiring and extension cords will be protected from damage, and if damaged or spliced removed from service.

29. Equipment

a. The list below represents <<Company Name>> list of all specialty or heavy equipment (contractor owned, leased, rented, etc.) proposed for use on the contract. Examples of items on the list are forklifts, lulls, cranes, earth moving equipment, and other power industrial trucks.

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1. <<List Equipment Here>>

2. <<List Equipment Here>>

3. <<List Equipment Here>>

b. All operators of equipment are trained. Documentation of training is submitted in accordance with the training and applicable equipment section of this document.

c. <***<Company Name>>*** will ensure equipment has daily and manufacturer's recommended inspections performed.

d. The use of any tool, material, or equipment which is not in compliance with applicable regulatory requirements will be prohibited on the site. Defective equipment will be removed from service and tagged out using KSC Form 20-165 or an equivalent tag to render them inoperable.

30. Excavation

a. All excavation work will conform to the requirements set forth in 29 CFR 1926 Subpart P.

b. ***<<Company Name>>*** will obtain an approved Utility Locate/Excavation Permit Request (KSC Form 26-312) anytime any ground is dug into for any reason at any depth. Permits will remain on site for review for the duration of the permit. Any deviations from the approved excavation routing will be approved in advance. Adherence to excavation permit conditions is mandatory.

c. Workers will hand dig all excavations within 24 inches in all directions of a marked located utility line. Workers will also hand dig a pilot trench when called for on the dig permit for all underground utility work along the centerline of new trenches and down to the elevation of the bottom of the new utility.

d. The pilot trench will be carefully opened to determine the existence and location, if any, of existing active underground utilities which will be protected and kept in service. Machine excavation may proceed only after it is assured that the pilot trench has satisfactorily located and protected all such existing utilities.

e. A record of daily inspections will be maintained at the jobsite.

Note: All soil on KSC and CCAFS is classified as Type C.

f. If any obstructions, interferences, or unforeseen conditions are encountered (e.g., concrete thrust blocks, direct buried cable below grade, or unidentified utilities), excavations will cease and the Project Construction Inspector and CO will be notified.

g. A thrust block is a configured piece of concrete located underground at water and sewer utility piping to prevent movement from line pressure fluctuations. When excavating soil at locations known to contain buried water or sewer lines, DO NOT remove any buried concrete without prior approval.

31. Fall Protection

Elements required in a site-specific fall protection plan are contained in Appendix I Sample Site-Specific Fall Protection Plan

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32. Fire Protection and Prevention

Address here the requirements found in section 3.0 of this document: KSC Fire Prevention for Contractors Handbook.

33. Hand and Power Tools

a. All portable power tools, whether company-furnished or employee-owned, will be maintained in a safe condition and will meet all applicable ANSI Standards (for design and use).

b. Extension cords used for portable power tools will be ground fault (GFCI) protected unless the cord is plugged into a ground fault protected outlet.

c. Powder actuated tools will only be operated by employees who have been trained to operate these tools and verified by the Site supervisor(s) as trained. ***<<Identify here the standard means of identifying the powder levels of loads used. >>***

d. Loads (ammunition) will be stored in locked metal containers (limited to 1000 rounds unless stored in an approved explosive storage area), and only the quantity necessary for the specific job will be taken to the jobsite. Keep all explosive materials away from heat sources.

e. Ammunition will remain in the personal control of the authorized operator. It will never be left unattended at the jobsite. Each authorized operator is personally responsible to keep positive control on all ammunition until unused portions are returned to the locked containers in the storage area. Do not leave ammunition in vehicles for extended periods of time.

34. Hazardous Substances

Asbestos Containing Material (ACM):

The contractor will provide a written asbestos management and abatement implementation plan as an attachment to the SSSP.

As a part of its asbestos abatement plan, the contractor will describe their approach to implementing the requirements of 29 CFR 1926.1101, National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR 61 Subpart M, the Florida Administrative Code (FAC) requirements FAC 62-257, and the Florida Statute (F.S.) 469 Asbestos Abatement and F.S. 376.60 Asbestos Removal Program Inspection and Notification Fee. The plan will at a minimum address:

a. The scope of work to be performed, including work locations, and site plans showing containments, regulated areas, safety placards/notices and sign locations.

b. Verification of all required asbestos work licensing.

c. Method(s) of handling, packaging, labeling, and disposing of ACM.

d. Pre-work hazard assessment and description of engineering controls, work practices, and selection of PPE.

e. Employee training.

f. Plan for project and employee exposure monitoring.

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g. Approach to coordinating abatement planning with KSC Environmental Health, Fire Services, and any resident government or contractor organization.

h. Approach to coordinating pre-work containment inspections and post abatement clearance with KSC Environmental Health.

Steel Structure Maintenance (Abrasive Blasting/Surface Preparation/Spray Painting):

The contractor will provide a written Toxic Metal Health and Safety plan as an attachment to the SSSP.

As a part of its Toxic Metal Health and Safety plan, the contractor will describe its approach to implementing the requirements of 29 CFR 1926 Subpart Z, as applicable. The plan will address:

a. Employee training.

b. The scope of work to be performed, including work locations and site plans, showing containments, regulated areas, safety placards/notices and sign locations.

c. Pre-work hazard assessment and description of engineering controls, work practices, and selection of PPE. Include negative hazard assessments and objective data for exemption from monitoring requirements, if applicable.

d. Plan for project and employee exposure monitoring as well as contamination (emissions) control measures (i.e., protecting government personnel/equipment or doffing of protective clothing).

e. Approach to coordinating pre-work containment inspection with KSC Environmental Health.

Concrete and Masonry Work Involving Exposure to Silica Dusts

When work requirements have a potential for producing silica dust from drilling, grinding or mechanically abrading concrete and mortar, the contractor will describe its approach to manage silica dust exposure hazards as a part of its SSSP. The description will at a minimum include:

a. The scope of work to be performed, including work locations, site plans, and controlled work areas, safety placards/notices and sign locations.

b. Pre-work hazard assessment and description of engineering controls, work practices, and selection of PPE.

c. Plan for project and employee exposure monitoring.

35. Hearing Loss Prevention and Hazardous Noise

When work requirements have a potential for exposure to hazardous noise, the contractor will describe its approach to manage noise exposure hazards as a part of its SSSP. The description will at a minimum include:

a. Approach to implementing the requirements of the OSHA noise standard and KSC noise exposure limits of KNPR 1820.3.

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b. Employee training and education regarding noise hazards and protection measures.

c. The scope of work to be performed, including noise hazard sources, safety placards/notices and sign locations.

d. Pre-work hazard assessment and description of engineering controls, work practices, and selection of PPE.

e. Plan for project and employee exposure monitoring. >>

f. If high noise may impact resident workers, describe plans to eliminate or minimize the effects on these adjacent workers.

36. Hot Work Permits

a. <***<<Company Name>>*** will obtain a KSC Hot Work Permit(s) from Kennedy Fire Services prior to any:

(1) Hot work for demolition, modification, or new construction that includes welding, cutting, burning, open flame and heat producing operations, soldering, heat sealing, or any spark producing operation (e.g., grinding). (KSC Form 2-271)

(2) Hot work for roof construction or repair using “tar kettle” or “torch down” operations (KSC Form 2-272).

b. ***<<Company Name>>*** will work with the project CO to obtain all applicable hot work permits.

c. ***<<Company Name>>*** understands that the Fire Inspector who issues the permit will perform an onsite inspection and briefing prior to issuing the permit and will inspect the site periodically to ensure hot work requirements are being met and prior to any permit renewal.

d. ***<<Company Name>>*** will comply with all requirements identified on the permit and have the permit posted in a visible and accessible area on the jobsite to employees and inspectors for the duration of operations for which it was issued.

e. All combustible material will be cleared from the hot work area. Fire resistant guards, curtains, or shields will be used where appropriate.

f. All combustibles (trash, debris, wood, etc.) will be removed daily.

g. All flammable liquids and propane cylinders will be removed from roofs at the end of each work day.

h. Flammable gas containers will be of the approved safety type with spark arresting screen in filler neck, cap and vent cap intact, and an attached HMIS label with correct information.

i. The fire watch (where applicable by permit) will be familiar with fire watch duties and will be trained to operate the approved fire extinguishers.

j. A fire watch will monitor all areas where hot work has been performed for the minimum time specified in the permit after hot work is stopped. This includes breaks, lunch, and end of shift.

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k. ***<<Company Name>>*** will maintain onsite the type and number of fire extinguishers identified in the permit that is required for the type of work and size of the area of work being performed.

37. Industrial Hygiene

a. *<<Describe your approach that provides employees with an environment in which occupational health hazards are identified, evaluated, and eliminated or controlled in such a manner that personnel do not suffer adverse health effects as a result of their employment. The description will include at a minimum:*

(1) Method(s) used to conduct workplace inspections and review of operations/procedures to identify hazardous material and physical agents.

(2) Method(s) to ensure SDS for materials used in the workplace are reviewed to identify health hazards, symptoms of exposure, and requirements for safe use of the material.

*(3) Method(s) to e*nsure contractor employees are aware of hazardous materials and physical agents that may cause injury or illness in the work area, understand the requirements for safe work with these materials and agents, and know what actions to take in an emergency (e.g., chemical spill or release).

b. Personnel exposures to chemical or physical agents will at all times be restricted to levels below regulated exposure limits and as low as reasonably achievable.

38. Ladders and Stairways

a. ***<<Company Name>>*** will ensure that each employee using ladders is trained on recognizing the fall hazards, proper placement, use and construction of, maximum intended load and the standards of 29 CFR 1926.1052 and 1053 as applicable (see training certifications).

b. Ladders

(1) Ladders will be inspected daily and prior to each use and any found to have structural defects will be “tagged out” and remove from the jobsite.

(2) Employees working on ladders will always maintain three points of contact with the ladder, (e.g., one hand and two feet, two hands and one foot). Employees also will keep the belt buckle or the centerline of the body between the rails and will not overreach, put one foot on the ladder and the other on an adjacent surface or object, or carry material, equipment, or tools by hand up or down a ladder.

(3) When selecting ladders, the job application will always be considered, (e.g., use fiberglass ladders for electrical work, minimum Type I ladders for heavy duty work).

(4) Ensure stepladders are used in the fully opened and locked position and that personnel do not stand, sit, or work on or above the last two steps from the top of a stepladder.

c. Stairs

(1) Stairs will be provided for access to office trailers or other transportable work locations.

(2) All treads will be slip resistant and the nosing will be of non-slip finish.

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39. Lockout/Tagout (Control of Hazardous Energy)

a. ***<<Company Name>>*** will perform all Lockout/Tagout (LOTO) actions in accordance with 29 CFR 1910.147 and KNPR 8715.3, Volume 1.

b. ***<<Company Name>>*** will evaluate the system or equipment and develop written LOTO procedures performing work requiring LOTO on NASA systems/equipment. The lockout procedures shall include at a minimum:

(2) Notification of all affected personnel who work in the area where LOTO is in effect that power is being removed.

(3) Specific procedural steps in sequential order for shutting down the system/equipment energy sources (energy isolation device). An orderly shutdown must be utilized to avoid any increase in hazards to employees as a result of the energy termination.

(4) Identify all the LOTO devices that will be used energy isolation device where they will be applied ensuring all isolation (de-energized) from the relevant energy source(s).

(5) Identify the employee(s) that will affix the LOTO devices for each energy isolating device.

c. The written LOTO procedure(s) will be coordinated with the project CO and KSC Institutional Safety Office (SA-E2) prior to any work being done.

d. Equipment capable of being locked out will be locked out prior to performing maintenance or any other activity potentially putting personnel at risk.

e. If equipment lockout cannot be accomplished, the actions identified in the Electrical Safety section of this document apply.

f. <***<<Company Name>>*** will coordinate all facility outages through the project CO.

g. When LOTO is required for more than one employee working on a system or equipment, each employee will place a lock and tag (multiple lockout device) on the equipment. When the work is completed, locks and tags will be removed and the equipment re-energized in accordance with the written lockout/tagout procedure.

h. <***<<Company Name>>*** will use KSC Form 20-195, KSC Lockout/Tagout Tag to control hazardous energy. The tags will be obtained from the project Safety Specialist. This tag is the only tag authorized for lockout/tagout on KSC. The lockout locks used by ***<<Company Name>>*** will only be used for that purpose.

i. <***<<Company Name>>*** will be responsible for providing any additional equipment (multiple lockout devices, valve covers, chain lengths, etc.) or any other compliant device for lockout of a hazardous energy source.

j. <***<<Company Name>>*** will document tag use on the Lockout Lock and Lockout Tag Inventory Record (KSC Form 28-915). These forms are available from the Safety Specialist assigned to the contract.

k. A LOTO Control Record will be used to document use of tags. Tags will be used only once then destroyed. At the end of the contract work, ***<<Company Name>>*** will return any unused tags and a copy of the completed LOTO Control Record to the project Safety Specialist.

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l. No employee will affix or remove the LOTO device of another employee. A LOTO lock and tag will only be removed by the authorized employee that installed it. However, when circumstances dictate no other alternative, the following procedures will be followed and documented by the site supervisor:

(1) The site supervisor or a member of management will be the minimum level authorized to remove a subordinate's LOTO lock and tag. The site supervisor or manager removing the LOTO lock and tag will personally ensure the energizing of the system does not pose a hazard to other employees.

(2) Determine the location of the authorized employee that installed the LOTO lock and tag. Call that employee, at home if necessary. Explain the seriousness of the requirement to remove their LOTO lock and tag. If possible, have the authorized employee return to the jobsite and remove the device.

(3) If the employee can be contacted but is unable to return to the jobsite, notify the employee of the intent and rationale to forcibly remove their LOTO lock and tag. If the employee cannot be contacted, they will be informed of the lock removal immediately upon returning to work for the next scheduled shift.

(4) Follow the documented procedure sequence of steps for removal of a LOTO lock and tag that the authorized employee that installed it would have used.

(5) The authorized employee's supervisor that forcibly removed the lock will sign the LOTO log acknowledging the actions taken to remove the LOTO lock and tag. Additionally, the log will be annotated that energy has been restored to the system.

m. The following will be accomplished before beginning a lockout/tagout operation:

(1) Ensure a pre-operations briefing has been performed and the required closeout documentation has been completed and documented.

(2) Ensure all personnel are familiar with the worksite. Conduct a dry run walk through, as necessary.

(3) The presence of a tag on a system or component does not in itself guarantee the equipment is de-energized, but indicates only that the tagged disconnect is not to be operated or reconnected to the energy source. Before performing any work, on electrical systems, employees will use an appropriate test instrument to ensure the circuit is de-energized.

(4) Under no circumstances will a Danger "Do Not Operate" Lockout/Tagout tag be left on normally operating systems or equipment. All tags and locks will be removed prior to restoring power to any systems or equipment. Equipment in test will remain tagged out until ready for return to service.

(5) Tags will be completely filled out using a permanent marker. All entries will be legible.

(6) Prior to installing or removing a Danger "Do Not Operate" Lockout/Tagout tag across an interface of another government/contractor organization, approval will be received from the organization having responsibility for the interface.

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n. ***<<Company Name>>*** will ensure employees are trained in and aware of lockout/tagout requirements as set forth in applicable OSHA standards, KNPR 8715.3, and this document.

Documentation of employee lockout/tagout training is provided (see Training Certification section).

o. ***<<Company Name>>*** will ensure specific procedures and notification requirements are conducted with the Base Operations Support Services Contractor (BOSS) when work includes Electrical Power Transmission/Distribution System Switches. These system switches will not be operated or LOTO performed without specific authorization by the BOSS Power Coordinator.

40. Personal Protective Equipment (PPE)

a. ***<<Company Name>>*** will take all necessary precautions to protect employees and will provide at employer's expense any personnel protective devices and safety equipment required.

b. ***<<Company Name>>*** will assess the worksite to determine if hazards are present which would necessitate the use of PPE. Hard hats, eye protection, safety shoes, respiratory protection, hearing protection, etc. will be used as required.

c. PPE will be used only when other health hazard controls, such as engineering controls, have been shown to be infeasible or inadequate in eliminating or controlling the health hazard.

d. ***<<Company Name>>*** will verify the required written job hazard analysis(or analyses) has/have been performed and that any PPE identified as required based on the analysis is listed.

e. ***<<Company Name>>*** is responsible to ensure that any PPE required is provided, used, and maintained in a sanitary and reliable condition. This includes any employee-owned PPE.

f. Personal Protective Equipment will be stored in a manner to prevent PPE from damage, dust, sunlight, chemical contamination, or extreme temperatures.

g. ***<<Company Name>>*** will ensure that all employees on the job have been trained in the appropriate use of any required personal protective equipment.

h. ***<<Company Name>>*** will document that all employees have received and understood the PPE training provided.

i. Employees will wear approved hard hats as required in the performance of their work. Type G (replaced type A) or E (replaced type B) hardhats as applicable will be used. Type C hardhats will not be used on construction sites at KSC.

k. ***<<Company Name>>*** highly recommends that all employees wear safety toed shoes or boots. Safety toe work shoes may be required depending on the type of work being performed. When there is a potential for injury to the feet, safety type shoes will be worn.

l. Gloves or other acceptable protection appropriate to the task being performed will be worn anytime there is a potential for hand injury. Personnel who perform tasks with knives will wear a non-cut glove (e.g., Kevlar type).

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m. Gloves will not be worn around revolving, rotating, or moving tools or equipment where the glove fabric/material might become caught in the movement of tool blades, discs, or mechanical parts.

n. Fire retardant clothing will be worn for designated tasks that present a potential for arc flash, flash fire, or explosion.

o. When welding, a welding hood with a number 10-12 lens will be worn. Welders on site will wear a hardhat beneath their welding hoods.

41. Process Safety Management

a. <***<<Company Name>>*** employees, when working in areas covered by the OSHA Process Safety Management (PSM) Standard, will receive an employee awareness briefing on PSM prior to any work occurring.

b. ***<<Company Name>>*** will inform all employees of the known potential fire, explosion, or toxic release hazards associated with a facility in which the contract work is to be performed.

c. ***<<Company Name>>*** employees will be briefed on the applicable provisions of the facility emergency action plan. This will be accomplished by a facility safety briefing prior to the commencement of work.

d. ***<<Company Name>>*** will ensure that any new employees brought to the jobsite receive facility safety training prior to entering designated process areas.

e. The project supervisor will ensure that all employees follow the safety rules of the facility including all safe work practices.

f. The project supervisor will inform the project CO, and assigned Safety Specialist of any unique hazards to the facility presented by the contractor's work, or of facility hazards found during the contractor’s work.

42. Radiation Protection

<<Describe your approach to complying with the requirements of KNPR 1860.1 or 1860.2, as applicable. As a part of your description, include:

a. A list of sources of ionizing and non-ionizing radiation.

b. Coordination of source Use/Authorizations with the KSC Radiation Safety Officer.

c. Implementation of safe use requirements described in applicable Use/Authorizations.

NOTE: This is applicable if the contract involves the use of ionizing or non-ionizing radiation producing equipment, devices, materials, or operations such as radiographic projectors, lasers, radiofrequency (RF)/microwave transmitters, XRF (X-ray fluorescent) detection systems, or radioactive materials. Contractors not involved in these activities should enter “N/A” under this section heading. >>

43. Respiratory Protection

RELEASED - Printed documents may be obsolete; validate prior to use.

<<Describe your approach to complying with the requirements of the OSHA respiratory protection program, 29 CFR 1910.134.

a. Include a pre-exposure assessment of hazardous operations or processes that require use of respiratory protection PPE and how selected the respirators are to be used.

b. Define exposure monitoring plan in accordance with the applicable requirements of 29 CFR 1926.1000 and demonstrate the proper selection of respiratory PPE.

c. Identify that records will be maintained at the worksite and will be available for government inspection.

d. Define plans for use of KSC facility breathing air systems (d. through g., as applicable).

e. Define approach for ensuring that connectors used in contractor-supplied breathing air systems are incompatible with connectors present on either KSC gas systems or on contractor supplied systems that are used to supply non-respirable gases.

f. Include written certifications to show the contractor-provided breathing air system have been recently inspected and meet Grade D breathing air standards. Alternately, discuss approach for on-site testing of contractor-supplied breathing air by the Government.

g. Explain approach to tag or label connector ends of all lines and flexible hoses of contractor-provided breathing air or non-respirable gas distribution systems. The tags or labels will clearly identify the contents of the lines or hose. >>

44. Rollover Protection for Mobile Equipment

a. Special purpose equipment without rollover protection devices will not be allowed on the construction site.

b. Seatbelts will be utilized on any equipment that is in operation to include when in transit from one location to another on or off KSC.

45. Scaffolding

a. External Reference: 29 CFR 1926 Subpart L provides OSHA regulations for scaffold assembly, operations, inspections, and disassembly.

b. ***<<Employee Name>>*** is ***<<Company Name>>***'s designated competent person (scaffolding) for the erection and inspection of any scaffolding systems on this project.

c. Scaffolding inspection will be documented and available to employees that access the scaffold. ***<<A recommended documentation process includes a tag attached to the scaffold that shows the inspector's name and date/time of each inspection. >>***

d. No material will be stored on scaffold decks. Material staged on the scaffold deck for immediate installation or use that is not installed or used will be removed from the scaffold when work is stopped for the day.

e. Documentation of employee scaffold user training is provided as part of the safety training section of this document.

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46. Steel Erection

The contractor will have a Steel Erection Plan that includes a complete final copy of specifications and drawings issued for construction by the design PE and a preconstruction conference and site inspection held between the erector and the contractor and others such as the project engineer and fabricator to develop and review the site-specific erection plan.

a. A Steel Erection Plan will include site lay out drawings detailing at a minimum:

(1) Access roads into and through the jobsite for safe delivery and movement of cranes, derricks, trucks, and other necessary equipment, the material to be erected methods for vehicular and pedestrian control.

(2) A firm, properly graded, drained area, readily accessible to the work, with adequate space for safe storage of materials and safe operation of the erector's equipment.

b. A Steel Erection Plan will additionally include the following elements:

(1) Material deliveries, staging, storage.

(2) Coordination with other trades and construction activities.

(3) Crane and derrick selection and placement.

(4) Site prep and path for overhead loads.

(5) A pre-plan of all overhead hoisting and operations.

(6) Critical lift plans including rigging supplies and equipment.

(7) An erection sequence including guying, bracing, bridging, anchor rod and anchor bolt mods, columns and beams (including joists and purlins), connections, decking, ornamental and miscellaneous iron.

(8) A description of the fall protection procedures that will be used in compliance with 29CFR 1926.761.

(9) Special procedures for hazardous non-routine tasks.

(10) A certification for each employee who has received training for performing steel erection operations as required by 29CFR 1926.761.

(11) A list of qualified and competent persons.

(12) A description of procedures that will be utilized in the event of rescue or emergency response.

(13) A list of the designated qualified and competent persons in steel erection.

(14) A description of procedures that will be utilized in the event of rescue or emergency response.

47. Elevating and Rotating Work Platforms

RELEASED - Printed documents may be obsolete; validate prior to use.

a. General Requirements for Elevating Work Platforms (EWP) (***include only applicable parts)***

(2) If a request to evaluate a "field modification" is submitted to the manufacturer and a response is not received within a reasonable time period, a Professional Engineer will be assigned to evaluate the unit and calculate a process to modify the unit, adding the necessary fall protection devices necessary to safely use the lift.

a. Operations
b. Work Practices

b. Inspection and Maintenance

(3) Where elevating and rotating work platforms are used daily on more than one shift, they will be examined at the beginning of each shift and if defects are found they will be immediately reported and corrected.

a. Training and certification records will be available upon request

48. Welding and Cutting Operations

a. Only employees properly trained and certified to operate welding and torch equipment will operate such equipment.

b. A KSC Hot Work Permit(s) will be obtained from Kennedy Fire Services prior to any hot work for demolition, modification, or new construction that includes welding, cutting, burning, open flame and heat producing operations, soldering, heat sealing, or any spark producing operation (e.g., grinding). (KSC Form 2-271)

c. Cylinders will be legibly marked with either the chemical or trade name of the gas contained. Cylinder labeling/marking will be on the shoulder of the cylinder (***or list other means if this is not practical)*** and marked by a means which is not easily removed.

49. Working over or Near Water

50. Work Zone Maintenance of Traffic (MOT)

a. Work on this project will include work that will be accomplished on or within 15 feet of the roadway. A work zone safety Management of Traffic (MOT) plan is in accordance with pre-designed plans found in FDOT Design Standard for Traffic Control through Work Zones; Index 600. All MOT planning and implementation will be done in accordance with Florida Department of Transportation standards.

b. All employees working within 15 feet of a roadway or street will wear reflective vests compliant with ANSI/ISEA 107 – 2004 Class 2 High-Visibility Safety Apparel. Class 3 is required for flaggers performing work at night.

c. ***<<Company Name>>*** person managing traffic control set up is trained to the intermediate or advanced MOT level. The Intermediate/Advanced trained MOT person will verify/ensure the control zone is correctly set up prior to the start of each work day.

d. Training certification is included in the training section of this SSSP.

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APPENDIX D: SSSP SECTION REQUIREMENTS CHECKLIST

SITE-SPECIFIC SAFETY & HEALTH PLAN REQUIREMENTS CHECKLIST (MANDATORY)	YES	NO
General Information	X	
Voluntary Protection Program Policy	X	
Contractor Employee Training	X	
Accident/Incident (Mishap/Class Call) Reporting	X	
Weather Policy	X	
Clothing	X	
Construction Site Safety	X	
Controlled Areas	X	
Drinking Water	X	
Evacuation (Facility or Area)	X	
First Aid & Medical	X	
Hazard Communications	X	
Heat Stress	X	
Housekeeping	X	
Inspections (Contractor Worksite)	X	
Inspections (KSC Safety Representative)	X	
Job Hazard Analysis	X	
Maximum Work Hour Policy	X	
Pre-Task Meetings	X	
Safety Meetings	X	
Safety Systems (Permanently Installed)	X	
Sanitary Condition and Facilities	X	
Temporary Structures, Trailers and Work Areas	X	
Vehicle Operations	X	

SAMPLE

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SITE-SPECIFIC SAFETY & HEALTH PLAN REQUIREMENTS CHECKLIST (PROJECT SPECIFIC)	YES	NO
Confined Space Entry (Permit Required and Non-Permitted)		
Cranes and Lifting Operations		
Demolition		
Dive Operations		
Electrical Safety		
Equipment		
Excavation		
Fall Protection		
Fire Protection and Prevention		
Hand and Power Tools		
Hazardous Substances (Working With or Removing)		
Hearing Loss Prevention and Hazardous Noise		
Hot Work Permits (ID Type:)		
Industrial Hygiene		
Ladders and Stairways		
Lockout/Tagout (Control of Hazardous Energy)		
Personal Protective Equipment (PPE)		
Process Safety Management		
Radiation Protection		
Respiratory Protection		
Rollover Protection for Mobile Equipment		
Scaffolding		
Steel Erection		
Elevating and Rotating Work Platforms		
Welding and Cutting Operations		
Working Over or Near Water		
Work Zone Maintenance of Traffic (MOT)		

SAMPLE

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APPENDIX E: SAMPLE KSC FORM 28-750NS, CONFINED SPACE HAZARD EVALUATION REQUEST

KSC/CCAFS Confined Space Hazard Evaluation Request

Complete this request and submit to MESC Work Control using Submit by Email button below or send to IHA-022
Call 867-2400 for assistance

Space Identification

Space Name	Type	Facility Number	Facility Name

Has this space been evaluated before? ☐Yes ☐No ☐Unknown
If yes, identify report number and date or attach the report.

Location/Area

Organizations

Controlling Organization	Controlling POC / Mail Code	Controlling POC Phone Number
Requesting Organization	Requesting POC / Mail Code	Requesting POC Phone Number
Entering Organization	Entering POC / Mail Code	Entering POC Phone Number

Space Description

Function/Use	General Description (including approximate size and shape)

Entry Control Method	Entry Configuration	Entry Point Size and Number
	☐Horizontal ☐Vertical	

Entry Tasks

List and briefly describe the anticipated work performed within the space (entry tasks)

Possible Hazards

Hazards of the space and of the work within or near the space. Check boxes where applicable

Potential Hazards	Space	Work
Engulfment		
Entrapment		
Atmospheric		
Low/high Oxygen		
Flammable gas/Vapor		
Toxic gas/Vapor		
Welding fumes		
Dust/Fibers		
Comments		

Potential Hazards	Space	Work
Materials		
Flammable		
Corrosive/Reactive		
Radioactive/Ionizing		
Sludge/Residue		
Comments		

Potential Hazards	Space	Work
Physical/Configuration		
Poor lighting		
Electric shock/Arc flash		
Work at heights/Fall		
Noise		
Sharp objects		
High pressure gas		
Equip Auto Start-up		
Hot environment		
Mechanical action		
Weather		

Prepared by	Organzation	Phone	Date

KSC FORM 28-750 NS 08/13 (1.0) PREVIOUS EDITIONS ARE OBSOLETE. Validate prior to use.

NRRS 8/23.A.1
Page 1 of 1

SAMPLE

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SAMPLE KSC FORM 16-287, CONFINED SPACE ENTRY PERMIT AUTHORIZATION

KSC/CCAFS Confined Space Entry Permit/Authorization
Assessment form for all confined space entries

Entry Permit No.

Entry Permit Action	Date / Times
Start	
Auto-Expiration	
Cancellation with Entry Supervisor Initials	

√ *Follow company procedure for final disposition of this documentation*

Rescue and Emergencies
- ☐ Call 911 or (cellular) 867-7911 for emergencies
- ☐ Call 861-6718 or 853-9253 to advise FS of entry
- ☐ Required at confined space
- ☐ Other Rescue Service

911 or 867-7911 (cellular)

Confined Space Information
Space Name:
Facility:
CS POC Org:
Type Space:
Controlling Contractor:
Description:

Entry Information
Entering Org:
Phone:
Purpose of entry:
Attendant(s):
Authorized Entrant(s):
(use Entry Log on back of posted hardcopy as needed)

Hazards of Space & Entry
(Check hazard & identify source/contributor)
Previous Content:
☐ Hot Work: Type
☐ Inside space ☐ Outside space

Potential Hazards	Contributor / Source
☐ Engulfment	
☐ Entrapment	
Atmospheric	
☐ O_2 Deficiency / Enrichment	
☐ Flammable	
☐ Toxic	
☐ Dust / Fibers	
Materials	
☐ Flammable	
☐ Corrosive / Reactive	
☐ Radioactive	
☐ Biological	
☐ Sludge / Residue	

Potential Hazards (Cont.)	Contributor / Source
Physical / Configuration	
☐ Poor lighting	
☐ Poor communication	
☐ Noise	
☐ Hot / Cold; Surf / Environment	
☐ Slip / Trip	
☐ Protrusions / Sharp objects	
☐ Working at heights	
☐ Falling Objects	
☐ Electric shock / Arc flash	
☐ Equip. start-up / Mechanical action	
☐ High pressure gas	
☐ Restricted movement	
☐ Weather	

Atmospheric Conditions

Parameter	Limits	Time				Test By: Equipment / Cal Due
		Conc.	Conc.	Conc.		
Oxygen	19.5 - 23.5%					
LFL	10%					
CO	25 ppm					
H_2S	1 ppm					

Industrial Hygiene Signature (if applicable): Name / Phone:

Additional Atmospheric Monitoring Requirements	Details
☐ Continuous	
☐ Periodic,	
☐ If ventilation changes	
Method of detecting hazard	
☐ Re-entry, each	
☐ If change suspected (All data to be attached)	

Comments:

Hazard Controls / PPE *(Check entry requirements and methods to control/eliminate the identified hazard. Fill-in if applicable and as needed)*

Ventilation	Respiratory Protection	Lighting	Other PPE	Rescue / Fall Protection
☐ Mechanical temporary	☐ Cartridge	☐ Portable light, area	☐ Garment,	☐ Verbal Comm,
☐ Electric	☐ Half-Face (NPR)	☐ Permanent light	☐ Boots,	☐ Signal Comm,
☐ Engine / Fuel	☐ Full-Face (NPR/PAPR)	☐ Natural light	☐ Welding hood	☐ Body harness
☐ Natural	☐ SCBA	☐ Flashlight	☐ Gloves,	☐ Anchor point
☐ Fixed ventilation	☐ Airline (SAR)	☐ Lightstick, corded	☐ Eye protection	☐ Tripod, available
☐ Flow	☐ Dust Mask	☐ Exterior light	☐ Hearing protection	☐ Wristlet; ☐ Anklet
☐	☐		☐ Arc flash protection	☐

Entry / Exit	Isolation / LOTO system / method	Other Entry Requirements:
☐ Access ladder	☐ Electrical	
☐ Body harness / Entry tripod	☐ Pneumatic	
☐ Raised platform	☐ Piping	
☐ Barriers	☐ Mechanical	
☐ Pre-task briefing	☐ Hydraulic	

CS Classification (General / Initial)	OSHA Standard
☐ Permit Space	1910.146
☐ Permit Space	1926.1200
☐ Non-Permit Space	1910.146
☐ Telecom Manhole/Vault	1910.268
☐ Electrical Manhole/Vault	1910.269
☐	

Other CS Standards
- ☐ KNPR 1840.19 *Industrial Hygiene Programs*
- ☐ KNPR 8715.7 *Construction Contractor S&H*
- ☐ APOSH 91-25 *Confined Spaces*

Entry Class. / Reclassification
- ☐ PRCS entry
- ☐ APPS entry
- ☐ Temp NP entry
- ☐ N-PS entry
- ☐ TCCS entry
- ☐ EPCS entry
- ☐

Note:
- All OSHA standards apply to organizations performing work at Spaceport. Omission of standards on this form does not imply inapplicability to workers and their work conditions.
- This permit is void / canceled: if conditions change to an extent that the hazards are no longer adequately controlled, at the time of the stated expiration at the end of the permitted task, or otherwise canceled by the entry supervisor.
- Any problems encountered during an entry must be noted on, or attached to the permit, and reported to your safety and health office.
- All entrants, attendants and entry supervisors must follow the confined space entry procedures of their employer.

Other OSHA Standards Applied to Entry:
☐ 29 CFR 1910.147 Lock-out/Tag-out ☐ 29 CFR 1910.134 Respiratory Protection ☐ 29 CFR 1910.252 Welding ☐

Safety Signature (if applicable): Authorizing Entry Supervisor Signature:
Name / Phone: Entry Supervisor Name(s) / Phone:

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SAMPLE

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SAMPLE KSC FORM 16-287, CONFINED SPACE ENTRY LOG

Confined Space Entry Log

appended to KSC/CCAFS Confined Space Entry Permit/Authorization

...for tracking assignment changes and Attendant use in tracking Authorized Entrants.

- **Required Use for Permit Spaces with entries following**
  - **Permit Confined Space entry (29 CFR 1910.146 or 29 CFR 1926.1200) or**
  - **Alternate Procedures Permit Space entry (29 CFR 1910.146)**
- *Best Practice Use for Confined Spaces with entries following*
  - *Telecommunications (29 CFR 1910.26)*
  - *Electrical Manholes and Vaults (29 CFR 1910.26)*

Confined Space Entry Start & End Record:

Space Identification	Entry Date	Entry Start Time	Entry Supervisor (initials)	Entry End Time	Entry Supervisor (initials)

Entry Supervisor Record *record all changes of Entry Supervisor*

Name	Phone	Assignment Start Time	Assignment End Time

Attendant Record *record all changes of Attendant*

Name	Assignment Start Time	Assignment End Time

Authorized Entrant Record *record all entries and exits for accurate knowledge of current entrants.*

Name	In time	Out time	In time	Out time	In time	Out time	In time	Out time

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APPENDIX F: SAMPLE KSC FORM 50-101, LIFT PLAN

Kennedy Space Center Lift Plan for Construction Contractors

This document is for use by construction contractors performing work for Kennedy Space Center. It is recommended for all lifts and will satisfy the lift planning requirements in accordance with OSHA and NASA regulations. A lift plan is mandatory when: 1) lifting personnel with a crane, 2) the load exceeds 75% of the crane's capacity in a given configuration, 3) the lift requires more than one crane. For further assistance, please contact the KSC Institutional Safety Office at 867-SAFE.

1. Company Name	Name and Signature of Person Preparing this Lift Plan	2. Date
3. Project Name and Job Location		
4. Load Description		
5. Crane Description - Type, Manufacturer, Model Number (multiple crane lifts require separate plan for each crane)		
6. Lift Description (attach diagram of lift and load placement)		

Load			**Crane** (continued)		
7. Load Condition (describe)			27. Radius at Set-down		ft
8. Known Center of Gravity? (attach diagram)			28. Capacity at minimum boom angle / maximum radius (attach copy of actual load chart used)		lbs
9. Source of Load Weight (attach a copy of drawings, calculations, bill of lading, etc.)			29. Maximum load on crane FOR THIS LIFT (Gross Load from Block 20)		lbs
10. Load Weight Empty		lbs	30. Percentage of the crane's rated capacity in this configuration		%
11. Weight of Load Contents / Fluids		lbs	**Jib / Fly**		
12. Weight of Auxillary Block		lbs	31. Erected Stowed Stored		
13. Weight of Main Block		lbs	32. If jib / fly is used: Length = Angle =		
14. Weight of Lifting Beam (See Block 50)		lbs	33. Rated capacity of jib / fly from chart =		
15. Weight of Slings / Shackles / Other Rigging (See Blocks 42 thru 52)		lbs	34. Weight of Jib if installed but not in use		lbs
16. Deduction for Jib / Fly (if applicable) (See Block 34)		lbs	**Crane Setup / Other Considerations**		
17. Weight of Hoist Rope (if applicable)		lbs	35. Soil conditions / level / underground hazards / crane mat required?		
18. Weight of Axillary Head / Rope (if applicable)		lbs	36. Outriggers (full / partial) / pads / matting / on rubber? ☐Yes ☐No		
19. Additional Deductions (list if applicable)		lbs	37. Buildings, equipment, or structure to lift / swing over?		
20. Gross Load (Add Block 10 thru 19)		**lbs**	38. Travel required? ☐Yes ☐No		
Crane			39. Working quadrants / swing restrictions?		
21. Boom Configuration			40. High voltage / electrical hazards / other hazards?		
22. Boom Length		ft	41. Other Considerations? (head room, winds, taglines, traffic, etc.) Add to Block 6		
23. Counterweight		lbs	**Rigging**		
24. Boom angle at Pick-up		°	42. Slings (number, size, type)		
25. Radius at Pick-up		ft	43. Slings rated capacity per configuration (see Block 45)		
26. Boom angle at Set-down		°	44. Total Weight of slings		lbs

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Rigging (continued)			**Required Attachments**
45. Hitch (vertical, basket, choker) Sling Configuration Angle		°	53. Load placement diagram showing location of pick & final place points ☐
46. Shackles (number, size)			54. Rigging diagram with sling angles, expected loads, and load CG ☐
47. Shackles rated capacity			55. Photocopy of actual load charts used to calculate crane capacity ☐
48. Total Weight of Shackles		lbs	56. Rigging certifications ☐
49. Spreader Beam / Other rigging required? (type, size, capacity)			57. Rigging load limit charts (Safe Working Load Limit) ☐
50. Weight of Spreader Beam / Other Rigging		lbs	58. Crane certification (Annual/Daily Checklist) ☐
51. Connection to Load Capacity Each (lugs, bollards, pad eyes, none)			59. Operators certification ☐
52. Total Weight of all rigging (Add lines 44, 48, 50 and 51)		lbs	60. Rigger qualification document(s) ☐
			61. Narrative of lift procedures (See item 6) ☐
			62. Source of load weight (See Items 8 & 9) ☐
			63. Others

I certify that all information contained herein has been reviewed for accuracy and correctness.

Submitting Official Signature	**Name and Title**	**Date**

Instructions for Kennedy Space Center Lift Plan for Construction Contractors

1. Name of contractor performing the lift. Include name of person preparing this lift plan.
2. Date lift plan was prepared.
3. Project name and actual location of lift.
4. Describe the load and any special considerations.
5. Self-explanatory.
6. Brief description of pickup and placement of load. Attach diagrams as necessary.
7. Describe the load and any special considerations (e.g., dry, solid, filled with liquid, empty, stable, unstable, etc.).
8. Is the load's center of gravity known? If so where is it documented? Attach diagram. **(On Lift Plan Worksheet)**
9. Document the source of load weight (e.g., drawings, calculations, bill of lading, etc.).

10. - 18. Self-explanatory. **(On Lift Plan Worksheet)**

19. List all additional deductions and weights.
20. Add Block 10 through Block 19. **(On Lift Plan Worksheet)**
21. Describe boom configuration. Refer to manufacturer's terminology.

22. - 27. Self explanatory. **(On Lift Plan Worksheet)**

28. Crane's rated capacity at minimum boom angle / maximum radius. Figure worst case between pick and place.
29. Copy Gross Load from Block #20.
30. Block #29 divided by Block #28.
31. Check to indicate jib / fly erected, stowed, or stored off the crane.
32. If the Jib is used, enter the length of the boom in feet and the angle in degrees. **(On Lift Plan Worksheet)**
33. List the Jib capacity from the Fly from chart.
34. The weight of the jib if it is installed on the boom but is not being used during the lift. **(On Lift Plan Worksheet)**
35. Describe site, soil, stability conditions and any underground hazards or concerns.
36. Describe outrigger setup and required matting if applicable. **(On Lift Plan Worksheet)**
37. Describe considerations for buildings, structures, or equipment which will be under the load during the lift.
38. Describe crane travel with load on the hook if required.
39. Describe planned crane working quadrant(s) and any swing restrictions.
40. Describe any electrical hazards or concerns in close proximity to the crane.
41. Describe other considerations of note such as restricted head room, use of taglines, reduced wind limitations, traffic control, etc.
42. Describe slings to be used.
43. In the planned configuration, list the maximum rated capacity the sling can lift in lbs. **(On Lift Plan Worksheet)**
44. The weight of the sling to be used.
45. The type of hitch to be used and its sling configuration angle (choker, vertical, basket). **(On Lift Plan Worksheet)**
46. Describe shackles to be used, number and size.
47. The maximum rated capacity each shackle can lift in lbs.
48. The total weight of all shackles used.
49. List Spreader beam / other rigging used. State type, size, and capacity.
50. Self explanatory.
51. Self explanatory. **(On Lift Plan Worksheet)**
52. The total weight of all rigging that will be used.

53. - 63. Self explanatory.

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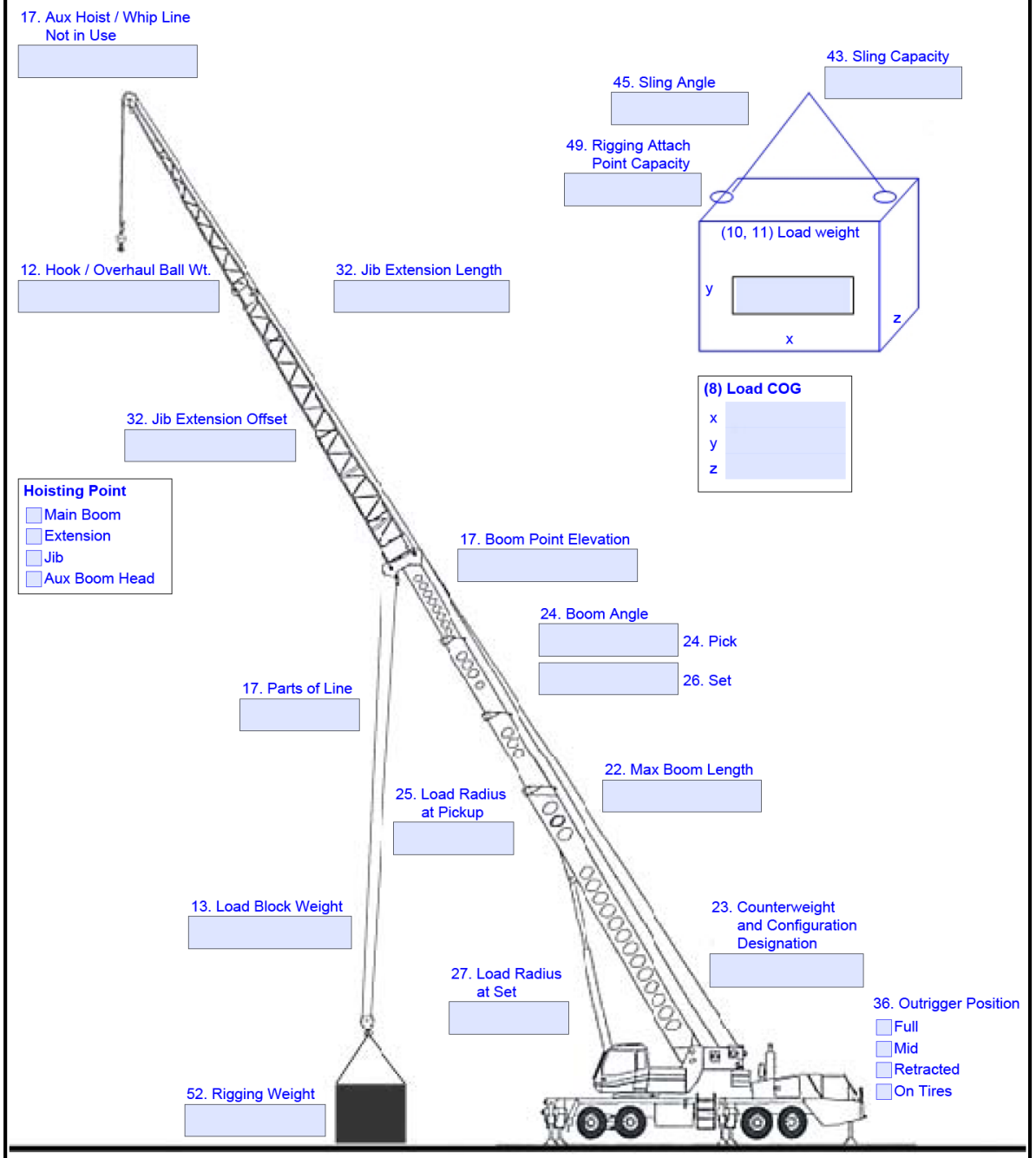
Lift Planning Worksheet



Refer to operator's manual and all notes and warnings for crane-specific information

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APPENDIX G: SAMPLE JHA

Company: Company X **Project Name: Refurbish HQ Building** **Contract Number: NNK1012345A**		**Work Process:** **General Construction Operations Work**
Task	**Hazard Description**	**Preventive Control Measures**
Operating machinery, equipment, and powered hand tools.	• Unqualified or untrained operators. • Flying debris, dust, wood chips, or metal shavings getting into the eyes. • Loose clothing pulled into moving parts. • Electrical shock hazards • Motion hazards (e.g., rotating devices, cutting, or shearing blades). • Injury from slips, trips, falls, and dropped materials (e.g., water, oil, or dust).	• Only qualified and authorized personnel operate equipment. Know and utilize the manufacturer's operating, maintenance, and safety procedures. • Conduct visual check of equipment and examine all powered tools for proper safeguards (e.g., blade guards, shields, or stops). Use PPE as required (e.g., ear protection, goggles, face shield, safety shoes, work gloves). • Do not wear loose clothing, neck ties, etc. • Check electrical cords for three prongs to ensure there is a ground. Use Lockout/Tagout (LOTO) as required. Keep cords and hoses away from heat, oil, and sharp edges. Do not allow doors to shut on cords or hoses. Never carry a power tool by the cord or yank the cord to disconnect it from the power receptacle. Tag all damaged tools as "Danger – Do Not Use or Operate". • Keep fingers and hands away from pinch point areas. Ensure work area has adequate spacing and lighting. • Maintain proper footing and balance while operating machinery. • Clean work place, equipment, and tools
Working with sharp cutting objects, blades/knives, tools, etc.	• Cuts, lacerations, amputations, and punctures.	• Ensure cutting blade surfaces are maintained. Maintain correct posture/position while cutting. Cut out and away from the user's body. Stow sharp/pointed tools in properly when not in use.

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Using liquid fueled equipment.	• Inhaling toxic fuel vapors. • Fire or explosion. • Fuel spilled onto clothing, body, or eyes.	• Have adequate ventilation to prevent fume build up • Allow equipment to properly cool before re-fueling. Use approved fuel containers for stowing and service. Use grounding/bonding when required. • Where fuel may splash/drip during transfer, wear chemical splash goggles. Ensure a shower/eyewash station is readily available.
Working with or near noisy machinery or equipment	• Noise induced hearing loss or tinnitus (ringing)	• Conduct noise survey. Place sound barrier before using equipment. Use reduced noise equipment. Maintain equipment noise control features. Wear the proper PPE when operating the machinery.
Pneumatic tools using compressed air.	• Eye injury, lacerations, punctures, and amputations.	• Ensure trained personnel use the equipment. Follow manufacturer's instructions when operating equipment. Use the manufacturer's recommended air pressure. Wear required eye protection.
Power up and power down operations.	• Injury due to movement of equipment, electrical malfunction, improper operation, or cuts, burns, etc. from tools during operation.	• Ensure equipment is mounted and secured properly. Inspect wiring, controls, and avoid moving parts or sharp edges on equipment or tools. Follow manufacturer's instructions when operating equipment.
Welding and cutting using portable gas units. Includes brazing, oxy/acetylene, etc.	• Exposure of oxygen cylinders and fittings to oil or grease, creating a fire or explosion hazard. • Pointing welding/cutting torches at a concrete surface causing flying fragments of concrete. • Inhalation of toxic fumes or vapors from welding metals or alloys. • Fires, explosions, severe eye and skin burns, and injuries from welding operation in the proximity of combustible solids, dust, gases, air, and chemicals.	• Never use grease, cleaning solvents, or other flammable material on an oxygen valve, regulator or piping. Ensure hoses are visually checked for wear, oil/grease before use. • Follow manufacturer's procedures with respect to the sequence of operations in lighting, adjusting, and turning off torch flame. • Identify and use required PPE. • Shut off gas and oxygen when not in use. Open valves slowly. Ensure proper ventilation. Purge hoses only in open spaces away from ignition sources. When welding/brazing a cylinder, ensure it is free of all gases, oils, flammables. Do not use flame within 50 feet of flammables. Receive a hot work permit. Use PPE to minimize skin burns; e.g., pants that will cover tops of

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		boots, flame resistant gloves, apron, leggings, certified welding/cutting goggles/face helmet. If required, ensure respirator is used.
Operation using portable electric welding units.	• Electrical shock. • Inhalation of toxic fumes or vapors from welding metals or alloys. • Fires, explosions, severe eye and skin burns, and other injuries from welding operation that is in proximity of combustible solids, dust, gases, air, and chemicals.	• Ensure circuits are de-energized and components are grounded. Inspect switches, power cables, electrode holders for damage. • Wear certified welding and cutting goggles or face helmet as required. If required, ensure proper respirator is provided. • Use PPE to minimize skin burns, e.g., steel-toed boots, pants which cover tops of boots, flame resistant gloves, apron, and leggings. Inspect area for tripping hazards. Only a certified welder is authorized to use equipment and perform task. Assure that personnel are adequately trained and good housekeeping is practiced
Materials handling (manual) and moving.	• Personnel injuries due to load handling. • Load Variables: load distribution, weight, size, shape, shift of the load in the container, and center of gravity. • Work Place Layout: degree of movement required, obstacles, distances moved, and direction of movement • Individual Physical Variables: strength, mobility, fatigue, and motor functions. Pre-existing injuries - strains, sprains, hernias, fractures, and bruises.	• Wear all required PPE properly (e.g., safety shoes/boots, leather work gloves). • Perform pre-inspection of item to be handled to determine number of persons required to assist. Consider size/shape of object being lifted. • When using a hand truck, and secure all items • Perform inspection of area for environmental hazards such as slipping and tripping hazards. • Execute proper lifting techniques. • Train employees on personal limitations.
Crane Operations: load testing, inspection and certification.	• Unknown conditions allowing the crane to fail causing injury to personnel and damage to property.	• Verify load test data on crane and that the required preventive maintenance inspections (PMI) have been conducted. Conduct “Daily” inspection of crane and components prior to lift; giving special attention to the hook, hoist rope, sheaves, rope guides, and cable winding on drum. Verify the certification of the crane operator, riggers and flagman.

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Inspect slings, spreader bars, shackles, and all other rigging to be used.	• Rigging failure if damaged, not certified, or misused. Slips, trips, and back strain potential for personnel inspecting the rigging.	• Verify/document load test dates on and visually inspect all rigging. Assure that rigging selected matches rigging identified. If inspection requires moving the rigging, use proper lifting techniques and use additional persons when needed.
Relocating or transporting the portable crane.	• Electrocution from overhead power lines and equipment damage from overhead bridges, etc.	• Ensure security vehicles and equipment are clear of route; front, side, and rear. Secure required permits to convoy before move date. Front and rear escorts with security to provide safe traffic control along convoy streets and traffic light intersections. The route of travel shall be cleared before date of convoy, e.g., clearance of all electrical, phone, cables, and traffic signals/wires. Convoy will have electric company traveling with it to raise/reposition wires and signals on the approved route and it will not exceed maximum approved speed.
Crane lifting operations.	• Injury or equipment damage due to falling/dropped material or collision with equipment or personnel. Electrocution and equipment damage from overhead power lines, etc.	• Perform operations per procedure; ensure proper field of view is adequate or have crew with radio communications directing the crane operation. Ensure warning lights are operational, load is properly positioned, and personnel are cleared from area. Be aware of the crane parameters and the space restrictions in the lift path. For portable cranes, ensure the outriggers are fully extended on a stable surface.
Working outdoors	• Can result in heat related illnesses such as heat syncope, heat exhaustion and heat stroke.	• hydration before and during work activities, water supply near workers, work breaks depending on conditions, effort, and other risk factors.
Working at night or where no or limited natural light is present.	• Unsafe or incorrect action from reduced light. Evacuation or escape challenges.	• Provide adequate area lighting or supplemental lighting that may include task lighting to provide safe escape and adequate illumination for visual task.

Areas of Emphasis:

1. Analyze task and understand technical requirements for selection of proper tools, materials, and placement of operating equipment.
2. Always follow the manufacturer's instructions when operating equipment.
3. Preventive Maintenance Inspections (PMI) will be accomplished on all operated equipment in the performance of work.
4. Ensure the proper selection of protective gloves for use with solvents/chemicals; for determination of respiratory protective equipment when an inhalation hazard exists; for assessment of ergonomic hazards; assessment of noise hazards; and assessment of heat stress hazards.

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5. Ensure updates of JHA when any new equipment, operations, or processes are to be performed that are not already described in this JHA.

Contractor Site Superintendent Review & Approval: _____	**Date:** _____
Contractor Site Safety Officer Review & Approval: _____	**Date:** _____

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APPENDIX H: SAMPLE KSC FORM 26-312, SAMPLE UTILITY LOCATE/EXCAVATION PERMIT REQUEST

Utility Locate / Excavation Permit Request

1. Date	2. Master Planning Site Plan Number	3. Project (PCN) No.	4. Work Order Number	5. Check One ☐ Permit to Dig ☐ Locate Only / No Digging
6. Requester's Name **(REQUIRED)**	7. Email **(REQUIRED)**	8. Phone Number **(REQUIRED)**	9. Fax Number **(REQUIRED)**	
10. Requester's Company **(REQUIRED)**		11. Mail Code / Address		
12. Technical Contact **(REQUIRED)**	13. Email **(REQUIRED)**	14. Phone Number **(REQUIRED)**	15. Fax Number **(REQUIRED)**	
16. KSC NASA Contact Name **(REQUIRED)**		17. Email **(REQUIRED)**	18. Phone Number **(REQUIRED)**	
19. Building Number **(REQUIRED)**	20. Grid Number **(REQUIRED)**	21. Secondary Location (Building Number / Additional Info.) **(REQUIRED)**		
22. Estimated Start Date **(REQUIRED)**		23. Estimated End Date **(REQUIRED)**		
24. Emergency request justification ***(if required)***				
25. Reason for permit / Statement of work **(REQUIRED)**				

MAP / SKETCH, WITH AREA TO BE LOCATED / EXCAVATED CLEARLY MARKED, IS ATTACHED (REQUIRED)

See next page for completion and process instructions.

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Instructions

Please complete as many fields as possible.

NOTE: ALL FIELDS INDICATING "(REQUIRED)" MUST PROVIDE INFORMATION.

Block 1	Date submitted.
Block 2-4	Provide related Site Plan, PCN or Work Order Numbers.
Block 5	Check one. If you are NOT going to dig, but need an underground utility locate, check "Locate Only".
Block 6-18	Enter the name, email address, phone, fax number, company name, and address of the person who will be receiving this permit including KSC NASA Contact for Project.
Block 19-20	Enter the building number where work will be performed (or closest building number).
Block 21	Enter additional information as necessary.
Block 22	Enter the date excavation is expected to begin.
Block 23	Enter the date excavation is expected to be complete. Permit will be closed on this date. End date may not be longer than one year from the start date.
Block 24	If excavation is of an emergency nature and requires priority, enter justification.
Block 25	Enter a description of why this permit is being requested, i.e., what work will be performed and why.

REQUIRED: ATTACH A MAP/SKETCH WITH AREA TO BE LOCATED/EXCAVATED CLEARLY MARKED.

1. Email, fax or hand-carry this request, along with a map, drawing or sketch to the Excavation Permit Request (EPR) Administrator using the contact information below.
2. You may contact the EPR Administrator using the contact information below if you have any questions on the dig permit process.
3. **The Excavator is required to contact BOTH authorities to schedule utility locates:**
   1) Locator support for KSC managed utilities: Ryan Ostarly 321-289-2372 or Jeff McDowell 321-749-4840
   2) Locator support for City Gas owned natural gas line: Sunshine One-Call at 800-432-4770 or 811 (cell).
   For Natural Gas locate, it is recommended that you create an account and request at www.online811.com
4. **The Excavator is required to obtain signature of KSC Excavation Permit Inspector (EPI) only:**
   You must schedule a KSC Excavation Permit Inspector (EPI) to meet with you on site for the KSC utility locate and to obtain the required signature from the KSC EPI on this permit. Requester should notify the EPR Administrator when excavation is complete.
5. Permits may be extended for up to one year by calling the EPR Administrator, but all permits will be closed upon expiration unless notified.

EPR Administrator

Location	**KSC OSB I, K6-1096, Room 2113 N1**
Mail Code	**ISC-4325**
Phone	**(321) 867-2406**
Fax	**(321) 867-1175**
Email	**KSC-ISC-DIGPERMIT@mail.nasa.gov**

Emergency requests will be processed on a real time basis
through the ISC Duty Office 861-5050, Fax (861-1627)
or Email - KSC-ISC-DutyOffice@mail.nasa.gov

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APPENDIX I. SAMPLE SITE SPECIFIC FALL PROTECTION PLAN

1. General

a. ***COMPANY NAME*** shall identify and mitigate all work-related fall hazards and has established methods to protect the employees from those fall hazards.

b. Fall protection is required at all times within six (6) feet of an unprotected edge with a fall hazard of four (4) feet or more. Where required, full body harnesses meeting OSHA and ANSI/ASSE requirements shall be used.

c. ***COMPANY NAME*** shall have a Fall Protection Program Administrator (FPPA) or team, name competent person(s) (fall protection), and use a qualified person(s) (fall protection), as required, by the applicable NASA regulations and OSHA Standards. On this project, these designated persons are:

(1) Fall Protection Program Administrator: ***EMPLOYEE NAME***

(2) Fall protection competent person(s): ***EMPLOYEE NAME(S)***

(3) Fall protection qualified person(s): ***EMPLOYEE NAME(S)***

d. The FPPA shall identify the competent and qualified persons listed above.

2. Training

a. All employees working at elevations shall receive training in recognition of fall hazards, hazard mitigation, and the proper use and inspection of fall protection equipment from a competent person (fall protection).

b. The employee training, described above, shall be certified in writing by the employer.

c. The latest certification documentation shall be maintained by the employer and include the name of the employee, the date of the training, areas trained in, and the signature of the training instructor and/or the employer.

d. The designated competent person (fall protection), conducting training, shall be qualified in the following areas:

(1) The nature of fall hazards in the work area.

(2) The correct procedures for installing, inspecting, and disassembling fall protection systems.

(3) The use and operation of fall protection systems to be used.

(4) Each employee's role in the safety monitoring system, if this system is to be used.

(5) The limitations on the use of mechanical equipment on low-slope roofing jobs.

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(6) The correct procedures for the handling and storage of equipment and materials and installation of overhead protection.

(7) Each employee's role in this fall protection plan.

(8) The OSHA fall protection standard.

e. If ***COMPANY NAME*** verifies and accepts training provided by another employer, the certification shall indicate the date ***COMPANY NAME*** determined the prior training was adequate rather than the date the training was performed.

3. Retraining of Employees

a. Employees suspected of not having the understanding or skills required shall be retrained.

b. Other circumstances that require retraining include:

(1) Changes in the workplace that make earlier training obsolete.

(2) Changes in the types of fall protection systems used.

(3) Observed inadequacies in an employee's use or understanding of fall protection systems.

4. Fall Protection Equipment

a. All new fall protection equipment shall meet the applicable ANSI/ASSE Z359 code at the time of purchase. (5)

b. Fall protection equipment shall be used according to manufacturer instructions. Only a qualified person may change the instructions, and those changes shall be documented prior to use and maintained until the equipment is removed. (5)

c. Equipment not designed for fall protection use shall not be used without prior approval of a qualified person, documented, and be labeled "For Fall Protection Use Only."(5)

d. Fall protection equipment shall meet all OSHA, applicable ANSI/ASSE, and manufacturer requirements for use, and be properly stored when not in use.

e. All fall protection equipment shall be inspected by the user before each use and detailed inspected by a competent person (fall protection) annually in accordance with applicable regulatory standards or per manufacturer's recommendations, whichever is more stringent.

f. Detailed inspections of fall protection equipment shall be documented and meet the following criteria:

(1) All fall protective equipment to include safety harnesses, drop lines, lifelines, fall arrest Self-retracting lanyards, as well as positioning lanyards, ladder safety climb, and rigid rail sleeves (e.g., skates, rope grabs) shall be inspected to the manufacturer's or approved engineering specifications.

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(2) All equipment shall have a manufacturer's serial number on it (e.g., tag, webbing) or it shall be serialized by using a method not destructive to the equipment.

(3) Maintenance servicing shall only be completed by the manufacturer's approved service technician, trained to repair and service their equipment.

(4) A documented equipment tracking system that uses the method identified from 4.f (2) above shall be used.

(5) Any fall protection equipment that is missing an inspection tag or is past due for annual inspection shall be immediately removed from service.

5. List of Attachments

a. List of identified fall hazards.

b. List of all protection methods to be used to protect employees from the identified fall hazards.

c. List of controls, limitations, constraints, and procedures to be used with the fall protection methods.

d. Site specific fall rescue plan

e. List of employees trained and authorized to work in areas where fall protection is required.

f. Written certification of fall protection training for each employee.

g. A signature page where every employee authorized to work under the plan signs to indicate that they have read and understood the plan.

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APPENDIX J: SAMPLE KSC FORM 28-1230A, ASBESTOS ABATEMENT PRE-WORK INSPECTION CHECKLIST

ENVIRONMENTAL HEALTH
Asbestos Abatement Pre-Work Inspection Checklist

ADMINISTRATIVE DATA

Facility #:	Facility Name:	IH Task:	
Requester:	Mail Code:	POC:	POC Phone:
Project / WON #:	Abatement Contractor:		

Site/Location:

VISUAL INSPECTION DATA	Satisfactory YES	NO	N/A
1. Access control barriers and signs properly posted	☐	☐	☐
2. Critical barriers installed / sealed ☐ Floors, walls & ceilings ☐ Edges, vents & penetrations sealed & water tight ☐ Entry/egress curtains, flaps, airlocks ☐ Glovebags sealed/smoke tested	☐	☐	☐
3. Negative air pressure units operating ☐ -0.02" obtained ☐ Pressure monitors / alarms working ☐ Neg pressure glovebag	☐	☐	☐
4. HVAC system isolation adequate ☐ Shut down and sealed off ☐ AHU/ducts isolated	☐	☐	☐
5. Electrical hazards de-energized, and locked out / tagged out	☐	☐	☐
6. Showers/decontamination systems adequate ☐ Hot water, soap, towels available ☐ Waste water filtered & drained into sanitary sewer	☐	☐	☐
7. Adequate materials, supplies and tools on site ☐ Waste containers / bags ☐ HEPA Vacuum ☐ Airless sprayer	☐	☐	☐
8. Personal protective equipment available for use ☐ NIOSH approved respirators ☐ Disposable coveralls, gloves, & work boots	☐	☐	☐
9. Contractor supervisor / competent person Name and Company: _____	☐	☐	☐
ENVIRONMENTAL COMPLIANCE	**YES**	**NO**	**N/A**
10. Quantity ACBM planned for removal _____ SF _____ LF _____ CF	☐	☐	☐
11. FDEP notification required (RACM > 160SF, 260LF or 35CF) If YES, indicate method of document verification below ☐ Copy provided on site by Abatement Contractor ☐ Copy on file with EH&S Program Office	☐	☐	☐
PRE-WORK INSPECTION RECOMMENDATIONS	**YES**	**NO**	**N/A**
12. IH concurrence to proceed Date: _____ IH: _____	☐	☐	☐

Comment:

SAMPLE

KSC FORM 28-1230A NS (10/10)

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APPENDIX K: SAMPLE KSC FORM 28-1231A, ASBESTOS ABATEMENT CLEARANCE INSPECTION CHECKLIST

ENVIRONMENTAL HEALTH
Asbestos Abatement Clearance Inspection Checklist

ADMINISTRATIVE DATA			
Facility #:	Facility Name:	IH Task:	
Requester:	Mail Code:	POC:	POC Phone:
Project #:	Abatement Contractor:		
Site/Location:			

VISUAL INSPECTION DATA	YES	NO	N/A
1. All Visible Dust, Debris, or Residue Removed from Work Area?	☐	☐	☐
☐ Floors and drains			
☐ Walls, windows, doors			
☐ HVAC or other mechanical equipment			
☐ HVAC ducts			
☐ Pipes, valves, or fittings			
☐ Lights and/or overhead fixtures			
☐ Decon area, showers, equipment load out areas			
☐ Other surfaces, tools, or equipment			
2. ACM Waste Properly Removed from Site?	☐	☐	☐
☐ Waste containers properly labeled			
☐ Waste materials wet			
☐ Waste container exterior surfaces clean			

SAMPLE

CERTIFICATION OF CLEANLINESS / RE-OCCUPANCY	YES	NO	N/A
3. Satisfactory Visual Inspection (per ASTM-E1368 Guidelines)?	☐	☐	☐
4. Clearance Air Samples Satisfactory (<0.01 f/cc via NIOSH Method 7400)?	☐	☐	☐

CLEARANCE INSPECTION RECOMMENDATIONS	YES	NO	N/A
5. Concurrence to Remove Critical Barriers?	☐	☐	☐
By: _____ **Date:** _____			
6. Concurrence to Remove Access Controls/Reoccupy Area?	☐	☐	☐
By: _____ **Date:** _____			

Comment :

KSC FORM 28-1231A NS (10/10)

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SAMPLE

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APPENDIX L: SAMPLE KSC FORM 2-271, HOT WORK PERMIT

Hot Work Permit

Permit Shall Not Exceed 30 Days

Company Name / Permit Number	Date / Time Permit Issued / Date Permit Expires
Facility Number / Area	
Supervisor / Operator's Name (See Note #1) / Phone Number	☐Welding ☐Grinding ☐Torch ☐CAD ☐Other
Supervisor / Operator's Signature	Permit Authorizing Individual / Name and Phone Number

On-site inspection required by Permit Authorizing Individual before issuing permit.

Item		Yes	N/A
1.	Operator affirms they are properly trained to operate hot work equipment.		
2.	Operator affirms hot work equipment has been inspected and is in safe operating condition.		
3.	Operator shall maintain good housekeeping practices throughout operation.		
4.	Fire Extinguishers shall comply with NFPA 10. Extinguishers shall be inspected daily prior to hot work, located within 20 feet of hot work site, and their use is understood. Type: ☐10 lbs. ABC ☐1 1/2 gal. water ☐15 lbs. CO^2 ☐Other		
5.	Flammable liquids and gases shall be relocated a minimum distance 50 feet from hot work. If impractical to relocate, ensure they are safely protected or do not perform hot work.		
6.	Combustible materials shall be relocated a minimum distance of 35 feet from hot work. If impractical to relocate, ensure they are safely protected or do not perform hot work.		
7.	Operator shall ensure all hazardous dust, lint, and oily deposits are removed.		
8.	Operator shall visually inspect and ensure that all enclosures, chases, ducts, walls, floor openings and adjacent areas have been safely protected.		
9.	Operator shall ensure all equipment, containers, pipes, hoses have liquids drained, pressure released, vapors purged, gas valves shut off, etc.		
10.	Operator shall provide the appropriate safety barriers and warning signs as required.		
11.	Operator shall ensure detection systems (including HVAC) are safed, covered, or protected before hot work begins; and systems shall be restored to service daily.		
12.	Fire suppression systems shall remain operational (unless otherwise permitted).		
13.	No hot work in explosive or oxygen enriched atmospheres. Perform air sampling as required.		
14.	All fire watch personnel shall read and understand the requirements of this permit. Fire watch personnel shall be present throughout the hot work operation and 30 minutes after completion. If evacuation is required, report hot work operations to Fire Incident Commander.		
15.	All Hot Work shall stop 24 hours before scheduled launch and not resume until 8 hours after launch.		
16.	**For New Construction or Demolition:** A pre-task briefing shall be conducted at the beginning of any hot work task. Hot work operators and fire watches shall be present and the contents of this permit and potential hazards shall be addressed.		

In the event of FIRE OR EMERGENCY call 911 or cell phone - 321-867-7911.
For permit renewal call the Duty Office at 861-5050.

Additional Comments

(Note #1): If Operator cannot complete work, all new operators shall read and initial next to appropriate boxes and sign this checklist below, indicating full understanding of safety procedures and requirements.

Alternate Operator Signature / Date / Alternate Operator Signature / Date

Code References: *NFPA 51B Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations, NFPA 101 Life Safety Code, NFPA 1 Uniform Fire Code, OSHA 1910.252, OSH 1926.352. NASA-STD-8719.11 Safety Standard Fire Protection.*

KSC FORM 2-271 09/12 (1.0) PREVIOUS EDITIONS ARE OBSOLETE. Validate prior to use. NRRS1/78.F.2
Page 1 of 1

SAMPLE

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APPENDIX M: SAMPLE KSC FORM 2-272, TAR KETTLE OPERATION HOT WORK PERMIT

Tar Kettle Operations
Hot Work Permit

Organization/Company Name	Permit Number	Date/time of permit issue	Date/time permit expires
Facility/Area			
Supervisor/Operator's Name	Phone Number	Contractor Site Safety Agent	Contractor Site Safety Agent
Supervisor/Operator's Signature		Permit Authorizing Individual	Name and Phone Number

		Y	N	N/A
1.	On-site inspection by Permit Authorizing Individual before tar kettle permit is issued.	☐	☐	☐
2.	Supervisor or Site Safety shall perform a DAILY SITE WALK DOWN to ensure personnel are complying with fire guidelines and regulations, and shall ensure the following:			
	a. All fire extinguishers inspected daily prior to start of any tar kettle.	☐	☐	☐
	b. Inspect tar kettle area and roof sites daily following guidelines of hot work permit..	☐	☐	☐
	c. Insure fire watch has been assigned and briefed.	☐	☐	☐
3.	Operator affirms area shall be CLEANED AFTER EACH SHIFT (ground and roof areas).	☐	☐	☐
4.	Tar kettle shall be operated in a controlled area. The are shall be identified by the USE OF BARRIERS. "NO SMOKING" in operational area.	☐	☐	☐
5.	Tar kettle shall be placed not less than 20 feet from the structure. A noncombustible sturdy barrier 8 feet high & 4 feet beyond each side of kettle is required if closer than 20 feet.	☐	☐	☐
6.	LPG tank or tanks shall be placed NO LESS THAN 20 ft. from structure and secured.	☐	☐	☐
7.	LPG tank or tanks shall be placed NO LESS THAN 20 ft. from TAR KETTLE and secured.	☐	☐	☐
8.	Operator affirms all connections have been checked prior to start up of the tar kettle.	☐	☐	☐
9.	Operator affirms all piping are in compliance with applicable codes.	☐	☐	☐
10.	Tar kettles SHALL NOT BLOCK EXITS, means of egress, gates, roadways or entrances, without AHJ approval.	☐	☐	☐
11.	NO flammables within 50 ft. (except LPG tanks), or combustibles within 35 ft. of tar kettle.	☐	☐	☐
12.	STORAGE of stock shall be maintained no less than 50 feet from the tar kettle/burner equipment. One days working stock is permitted no less than 10 feet of the tar kettle.	☐	☐	☐
13.	The tar kettle shall be MANNED AT ALL TIMES while in use and for 30 minutes after the burner has been shut down.	☐	☐	☐
14.	Operator affirms tar kettle shall be SHUT DOWN while refueling.	☐	☐	☐
15.	MINIMUM OF THREE (3) 20 lbs. multipurpose fire extinguishers shall be provided. Two extinguishers shall be placed within 25 feet of tar kettle, minimum of one extinguisher shall be placed on the roof.	☐	☐	☐
16.	Operator affirms all skimmed material shall be placed on a NONCOMBUSTIBLE SURFACE and material shall be broken-up to prevent heat buildup.	☐	☐	☐
17.	Supervisor or Site Safety shall ensure personnel working on roof are aware of requirements, and shall be briefed daily on how to EVACUATE THE ROOF DURING AN EMERGENCY.	☐	☐	☐
18.	**In the event of FIRE OR EMERGENCY call 911 or cell phone - #321-867-7911.**			

Additional Comments

Code References: NFPA 241 *Standard for Safeguarding Construction, Alteration, and Demolition Operations*, NFPA 101 *Life Safety Code*, NFPA 51B *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work.*

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Page 1 of 1

SAMPLE

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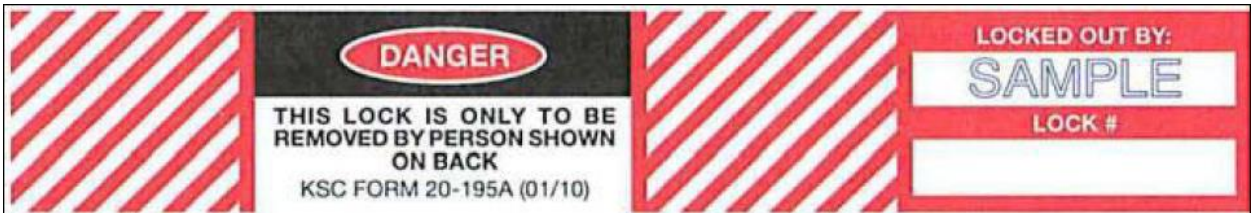
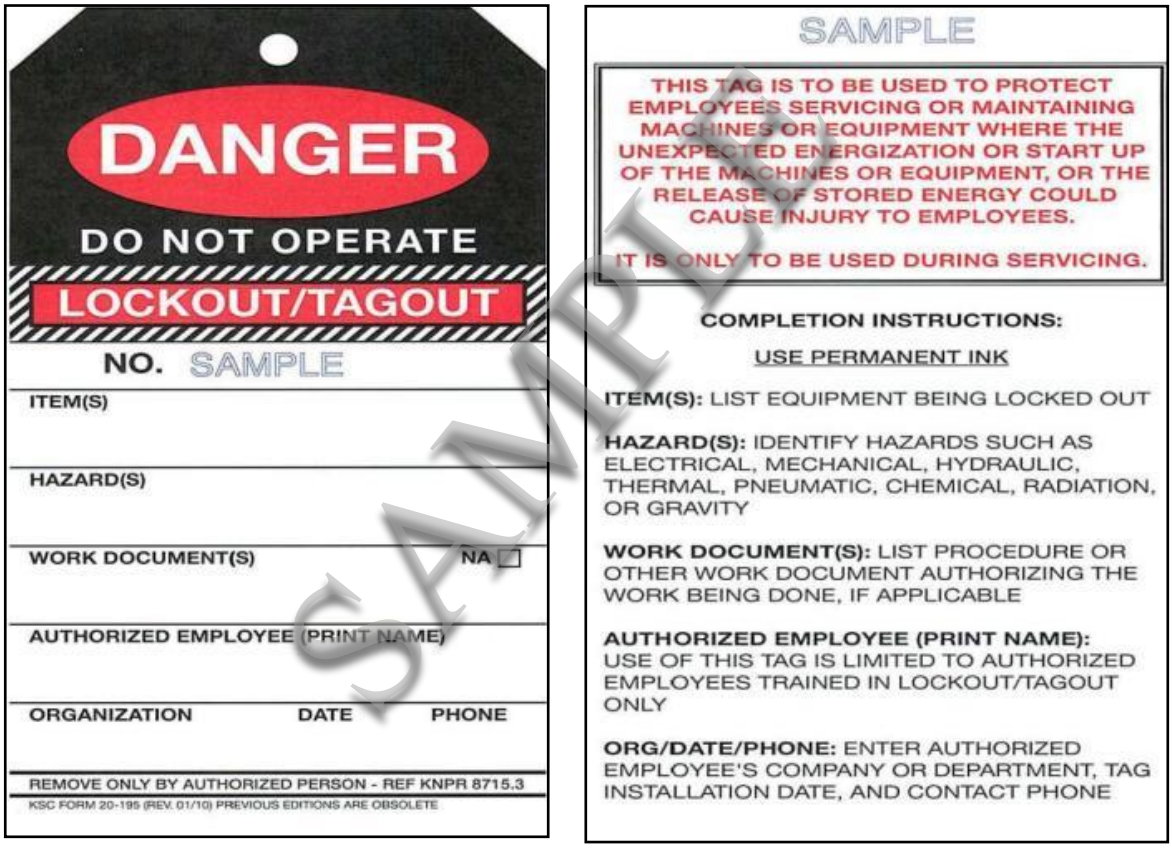
APPENDIX N: SAMPLE KSC FORM 20-195A, LOCKOUT/TAGOUT TAG IDENTIFIER



APPENDIX O: SAMPLE KSC FORM 20-195, LOCKOUT/TAGOUT TAG



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APPENDIX P: KSC FORM 28-915 NS, LOCKOUT LOCK AND LOCKOUT TAG INVENTORY RECORD

Lockout / Tagout
Control Record
(for KSC Form 20-195)

Tag Numbers Received	Tag Numbers Issued Out	Tags Issued to (Name & Shop / Facility)	Tag Numbers Lost or Destroyed

SAMPLE

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Submit by Email

NRRS 8/103
Page 1 of 1

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APPENDIX Q: SAMPLE KSC FORM SSR-001, SAFETY STATISTICS RECORD

Safety Statistics Record		Month and Year	Rev (add Revision Number, if submitting updates)
Company	Contract Number	Number of Personnel (Full and Part Time)	

Section I. Injury/Illness Summary	Month	Fiscal Year	Section I. NMIS Case Numbers
A. Number of Work-hours Worked			
B. Number of Days Away Cases			
C. Days Away From Work Injury Illness Rate			
D. Number of Days Away			
E. Days Away Severity Rate			
F. Number of OSHA Recordable Other Cases			
G. Number of Restricted Duty Cases			
H. Number of First Aid Cases			
Section II. Motor Vehicle Accident Summary			**Section II. NMIS Case Numbers**
A. Number of Miles Driven			
B. Number of Reportable Motor Vehicle Accidents			
C. Vehicle Accident Frequency			
D. Estimated Damage Costs ($XX.X K)			
E. Final Damage Costs ($XX.X K)			
Section III. Property Damage Summary			**Section III. NMIS Case Numbers**
A. Number of Property Damage Mishaps			
B. Estimated Damage Costs ($XX.X K)			
C. Final Damage Costs ($XX.X K)			
Section IV. Natural Phenomenon and Weather Conditions Damage Summary			**Section IV. NMIS Case Numbers**
A. Number of Natural Phenomenon and Weather Condition Mishaps			
Section V. Close Call Summary			**Section V. NMIS Case Numbers**
A. Number of Close Calls			
B. Record Close Call NMIS case numbers here			
Section VI. Comments			

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NRRS 1/120.B.2
Page 1 of 2

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INSTRUCTIONS FOR COMPLETING THE SAFETY STATISTICS RECORD

The Safety Statistics Record (SSR) is submitted monthly to the appropriate contractor interfaces no later than the 15th day of the following month that is being reported.

Number of Personnel (Full and Part Time) - Enter the total number of persons (contractor and major subcontractors) working any element of the contract.

Section I. Injury/Illness Summary

A. Number of Work-hours Worked - Enter the total monthly work-hours worked and update the fiscal year total. Work-hours consist of all persons (contractor and major subcontractors) working any element of the contract, including full-time and part-time employees.

B. Number of Days Away Cases - Enter the number of all Days Away cases incurred during the month and update the fiscal year total. For new Days Away cases from previous months, update the fiscal year total. For new Days Away cases from previous fiscal years, update the year-end SSR (September YYYY) and submit when updates occur. Days Away is defined in 29 CFR 1904.

C. Days Away From Work Injury Illness Rate - The monthly and fiscal year Days Away From Work Injury Illness rate is calculated by: [(Number of Days Away cases X 200,000) ÷ work hours].

D. Number of Days Away - Enter the number of all Days Away incurred for the month and update the fiscal year total. Days Away shall include days from new injury/illness cases occurring during the month and from cases where the injury/illness occurred in a previous month but the employee incurred additional days away in the present month. For days away from previous fiscal years, update the year-end SSR (September YYYY) and submit whenever updates occur.

E. Days Away Severity Rate - The monthly and fiscal year days away severity rate is calculated by: [(Number of days away X 200,000) ÷ work hours].

F. Number of OSHA Recordable Other Cases - Enter the number of monthly OSHA Recordable Other cases and update the fiscal year total. OSHA Recordable Other is defined in 29 CFR 1904.

G. Number of Restricted Duty Cases - Enter the number of monthly Restricted Duty cases and update the fiscal year total. Restricted duty is defined in 29 CFR 1904.

H. Number of First Aid Cases - Enter the number of monthly First Aid Cases and update the fiscal year total. Ref. NPR 8621.1.

Section II. Motor Vehicle Accident Summary

A. Number of Miles Driven - Enter the monthly GSA/Government vehicle miles driven and update the fiscal year total.

B. Number of Reportable Motor Vehicle Accidents - Enter the number of monthly GSA/Government vehicle accidents which damage cost is equal to or greater than twenty thousand dollars and update the fiscal year total. For damage cases from previous fiscal years, update the year-end SSR (September YYYY) and submit whenever updates occur.

C. Motor Vehicle Accident Rate - The monthly and fiscal year Motor Vehicle Accident Rate is calculated by [(number of vehicle accidents X 1,000,000) ÷ miles driven].

D. Estimated Damage Cost - Enter the total monthly vehicle estimate damage cost and update the fiscal year total.

E. Final Damage Cost - Enter the total monthly vehicle final damage cost and update the fiscal year total.

Section III. Property Damage Summary

A. Number of Property Damage Mishaps - Enter the number of monthly property damage mishaps incurred (mishaps cost equal to or greater than twenty thousand dollars) and update the fiscal year total.

B. Estimated Damage Cost - Enter the total monthly estimated property damage cost and update the fiscal year total.

C. Final Damage Cost - Enter the total monthly final property damage cost and update the fiscal year total.

Section IV. Natural Phenomenon and Weather Condition Damage Summary

A. Number of Natural Phenomenon and Weather Condition Cases - Enter the number of monthly cases caused by natural phenomenon and weather condition and update the fiscal year total. Reference NPR 8621.1 for definition.

Section V. Close Call Summary

A. Number of Close Calls - Enter the number of monthly close calls and update the fiscal year total. Ref. NPR 8621.1.

Section VI. Comments - Enter comments that would clarify any reported information. NASA organizations shall report the number of NASA aircraft flight hours and any aircraft damage in this section.

Notes

1. All reportable mishaps shall have their NMIS case number recorded in the column to the right of each section. Each vehicle and property damage NMIS case shall have their damage amounts recorded in either the Estimated Damage Cost or the Final Damage Cost section.
2. For all vehicle and property estimated damage cases, once final damage cost have been assessed, reduce the SSR fiscal year estimated damage cost by the original estimated cost and increase the SSR fiscal year final damage cost by the final damage cost.
3. Injuries and lost time days resulting from participation in recreational activities while on-duty shall be included in the appropriate sections of this report.
4. Injury/illness lost days shall be reported for a maximum of 180 days away from work. You are not required to keep track of the number of calendar days away from work if the injury or illness resulted in more than 180 calendar days away from work.

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Page 2 of 2

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APPENDIX R: SAMPLE KDP-F-3645, NASA DIRECT CONSTRUCTION CONTRACTOR MISHAP REPORT

NASA Direct Construction Contractor Mishap Report

NOTE: Fill In All Known Blocks And Submit Within Four Hours

INCIDENT DETAILS

1. DATE OF INCIDENT
2. TIME OF INCIDENT
3. GENERAL LOCATION *(Building, Area, Facility, etc.)*
4. EXACT LOCATION *(street, floor, room, etc.)*
5. RESPONSIBLE ORGANIZATION
6. CONTRACT NUMBER
7. ORG. FILE NUMBER
8. ORGANIZATION POINT OF CONTACT
9. MAIL CODE
10. PHONE
11. MISSION AFFECTED, IF KNOWN
12. PROGRAM IMPACT, IF KNOWN (Describe impact in terms of delay, cost adjustment, etc.)
13. INCIDENT DESCRIPTION *(Do not use actual names, include in the description the sequence of events, extent of injury or property damage, cause, etc., if known.)*

IMPACT SUMMARY

14. CHECK ALL OUTCOMES FROM THIS EVENT THAT ARE KNOWN FACTS *(Do not check any box that indicates any future potential or outcome.)*

- ☐ FATALITY
- ☐ PERMANENT DISABILITY
- HARDWARE
- ☐ 3 OR MORE PEOPLE HOSPITALIZED
- ☐ 1 OR 2 PEOPLE HOSPITALIZED
- ☐ LOSS OF CONSCIOUSNESS
- ☐ FULL LOST WORKDAY(S)
- ☐ RESTRICTED WORKDAY(S)
- ☐ MEDICATION OR MEDICAL TREATMENT ADMINISTERED
- ☐ INJURY OR ILLNESS
- ☐ FIRST AID ONLY WAS ADMINISTERED
- ☐ CLOSE CALL
- ☐ SERIOUS DAMAGE TO AIRCRAFT OR SPACE HARDWARE
- ☐ SERIOUS DAMAGE TO FLIGHT OR GROUND SUPPORT
- ☐ UNEXPECTED DAMAGE DUE TO TEST FAILURE
- ☐ DAMAGE ESTIMATE OVER $1,000,000
- ☐ DAMAGE ESTIMATE BETWEEN $250K AND $1M
- ☐ DAMAGE ESTIMATE BETWEEN $25K AND $250K
- ☐ DAMAGE ESTIMATE BETWEEN $1K AND $25K
- ☐ DAMAGE ESTIMATE UNDER $1K
- ☐ AFFECTED PRIMARY OBJECTIVE(S) OF MISSION
- ☐ SIGNIFICANT PROGRAM IMPACT
- ☐ HIGH VISIBILITY *(internal or external to NASA)*

15. LEVEL OF POTENTIAL FOR THIS EVENT OR CLOSE CALL *(Using reasonable judgment, check the boxes which you believe have a HIGH probability of occurring under similar conditions.)*

- ☐ FATALITY
- ☐ PERMANENT DISABILITY
- ☐ 3 OR MORE PEOPLE HOSPITALIZED
- ☐ FULL LOST WORKDAY(S)
- ☐ POTENTIAL DAMAGE ESTIMATE OVER $250,000
- ☐ POTENTIAL DAMAGE ESTIMATE UNDER $250,000
- ☐ SERIOUS DAMAGE TO AIRCRAFT OR SPACE HARDWARE
- ☐ SERIOUS DAMAGE TO FLIGHT OR GROUND SUPPORT HARDWARE
- ☐ UNEXPECTED DAMAGE DUE TO TEST FAILURE
- ☐ AFFECT PRIMARY OBJECTIVE(S) OF MISSION
- ☐ SIGNIFICANT PROGRAM IMPACT)
- ☐ HIGH VISIBILITY *(internal or external to NASA)*

PERSON INVOLVED IN INJURY OR ILLNESS

16. NAME *(Last, First MI)*
17. ORGANIZATION
18. CONTRACT NUMBER
19. JOB TITLE/OCCUPATION
20. SUPERVISOR'S NAME *(Full Name)*
21. SUPERVISOR'S ORGANIZATION
22. SUPERVISOR'S MAIL CODE
23. SUPERVISOR'S PHONE
24. AGE
25. SEX ☐ Male ☐ Female
26. SHIFT WORKED ☐ 1st ☐ 2nd ☐ 3rd
27. CONTINUOUS DUTY HOURS
28. YEARS OF EXPERIENCE ☐ Under 1 ☐ Under 5 ☐ Under 10 ☐ Over 10
29. INJURY OR ILLNESS ☐ INJURY ☐ ILLNESS
30. FROM PRE-EXISTING ☐ YES ☐ NO
31. FATALITY?
32. DATE OF DEATH
33. PERMANENT DISABILITY?
34. # OF FULL LOST WORKDAYS
35. # OF RESTRICTED WORKDAYS
36. INJURY TYPE(S) *(e.g., Abrasion, Burn, Concussion, Laceration, etc.)*
37. AFFECTED BODY PART(S) OR BODY SYSTEM(S)
38. BRIEF MEDICAL DIAGNOSIS
39. MEDICAL TREATMENT ADMINISTERED

- ☐ TREATMENT OF INFECTION
- ☐ APPLICATION OF ANTISEPTIC
- ☐ 2ND OR 3RD DEGREE BURN(S)
- ☐ CUT AWAY DEAD SKIN
- ☐ POSITIVE X-RAY DIAGNOSIS
- ☐ APPLICATION OF SUTURES
- ☐ USE OF BUTTERFLY ADHESIVE
- ☐ REMOVAL OF FOREIGN OBJECT(S
- ☐ USE OF HEAT THERAPY
- ☐ ADMISSION TO HOSPITAL FOR MORE THAN OBSERVATION
- ☐ REMOVAL OF OBJECT IN WOUND
- ☐ USE OF PRESCRIPTION MEDICATION
- ☐ HOT OR COLD SOAKING/COMPRESS THERAPY
- ☐ USE OF WHIRLPOOL BATH THERAPY
- ☐ FIRST AID ONLY

40. OTHER MEDICAL TREATMENT ADMINISTERED

EQUIPMENT/PROPERTY DAMAGED

41. CLASS OF EQUIPMENT/PROPERTY DAMAGED

- ☐ FLIGHT HARDWARE
- ☐ GROUND SUPPORT EQUIPMENT
- ☐ FACILITY
- ☐ PRESSURE VESSEL
- ☐ MOTOR VEHICLE
- ☐ AIRCRAFT
- ☐ OTHER

42. ESTIMATED COST OF ALL DAMAGED ITEMS

- ☐ OVER $1,000,000
- ☐ BETWEEN $250K AND $1M
- ☐ BETWEEN $25K AND $250K
- ☐ BETWEEN $1K AND $25K
- ☐ UNDER $1,000

43. # OF ITEMS DAMAGED
43. SPECIFIC ITEM(S) DAMAGED

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Page **1** of **7**

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INCIDENT REPORT SUBMITTER

44. SUBMITTED BY *(Full Name)*	45. ORGANIZATION	46. MAIL CODE	47. PHONE	48. DATE	49. TIME

INCIDENT CAUSES

50. WHAT WAS THE ROOT (DIRECT) CAUSE	51. WHAT OBJECTS OR SUBSTANCES WERE INVOLVED	52. WHAT ACTIVITIES OR UNSAFE ACTS WERE IN PROGRESS

CONTRIBUTING FACTORS

53. CONTRIBUTING FACTORS (*Summarize any factors that contributed to the occurrence of the incident*)

INITIAL CORRECTIVE ACTION

54. **INITIAL** ACTION TAKEN *(Summarize the initial action(s) taken to prevent reoccurrence of the incident)*

55. DATE INITIATED	56. DATE COMPLETED	57. PERSON TAKING ACTION *(Full Name)*	58. ORGANIZATION	59. MAIL CODE	60. PHONE

PLANNED CORRECTIVE ACTION

61. **PLANNED** ACTION TO BE TAKEN *(Summarize any planned action to be taken to prevent reoccurrence of the incident.)*

62. EST. START DATE	63. EST. COMPL.	64. PERSON TAKING ACTION *(Full Name)*	65. ORGANIZATION	66. MAIL CODE	67. PHONE

68. **PLANNED** ACTION TO BE TAKEN *(Summarize any additional planned action(s) to be taken to prevent reoccurrence of the incident.)*

69. EST. START DATE	70. EST. COMPL.	71. PERSON TAKING ACTION *(Full Name)*	72. ORGANIZATION	73. MAIL CODE	74. PHONE

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Instructions

Complete the initial written report for mishaps and close calls and submit to the CO, COTR and KSC Institutional Safety within four hours of the incident occurrence. A completed investigation and final report shall be submitted within ten working days of the incident unless an extension through Institutional Safety has been requested. Retain a copy for your own files.

DETAILS

1. DATE OF INCIDENT – Enter date of the incident in MM/DD/YYYY format. Example: 6/1/2001.
2. TIME OF INCIDENT – Enter time of incident using 24-hour clock. Example: 09:30 for 9:30AM/14:15 for 2:15 PM.
3. GENERAL LOCATION – Identify the building, area, or facility where the incident occurred.
4. EXACT LOCATION – Describe the exact location of the incident. Example: Third floor, far west corridor.
5. RESPONSIBLE ORGANIZATION – Enter complete name of organization that is reporting the incident.
6. CONTRACT NUMBER – When the organization is a contractor, enter the contract number.
7. ORGANIZATION FILE NUMBER – Assign file number using your organization's unique four-character code, the mishap number (sequential) using four digits, and the fiscal year using two digits. Example: EGB1-0001-89.

8 - 10. ORGANIZATION POINT OF CONTACT, MAIL CODE, PHONE – Identify person to contact at the organization.

11. MISSION AFFECTED – Enter the name or number of the mission, program, or project affected by the mishap. Examples: STS-32; Delta 181.
12. PROGRAM IMPACT – Describe the effect on the mission, program, or project in terms of delay or significant cost adjustment. Example: Two-week launch delay.
13. INCIDENT DESCRIPTION – Describe the event including information about the extent of damage and/or injury, conditions that led to the mishap, and cause if known at this time. Specify location of facility where medical treatment was provided. DO NOT include names of persons or personal medical information.

IMPACT SUMMARY

14. ACTUAL OUTCOMES – Mark every checkbox that represents current facts about the incident.
15. LEVEL OF POTENTIAL – Mark every checkbox that represents likely outcomes for the incident.

PERSONNEL INVOLVED IN INJURY OR ILLNESS

16. NAME – Indicated the name of the injured individual.
17. ORGANIZATION – Identify the organization of the injured individual.
18. CONTRACT NUMBER – When the organization is a contractor, enter the contract number.
19. JOB TITLE/OCCUPATION – Describe the job position of the injured individual. Example: Technician

20-23. SUPERVISOR'S NAME, ORGANIZATION, MAIL CODE, & PHONE – Provide identifying information about the supervisor of the injured individual.

24. AGE – Indicate the age of the injured individual.
25. SEX – Indicate the gender of the injured individual.
26. SHIFT WORKED – Indicate the work shift of injured individual.
27. CONTINUOUS DUTY HOURS - Self-explanatory.
28. YEARS OF EXPERIENCE – Indicate the years experience of the injured individual.
29. INJURY OR ILLNESS – Symptoms acquired in 1 work shift = injury, greater than 1 work shift = illness.
30. FROM PRE-EXISTING – Indicate if the injury is associated with a pre-existing injury or condition.
31. FATALITY? – Did the incident result in a fatality ?
32. DATE OF DEATH – If the incident resulted in a fatality, indicate date of death.
33. PERMANENT DISABILITY? – Did the incident result in a permanent disability to the injured individual ?
34. # OF FULL LOST WORKDAYS – If the injury resulted in time lost from work, indicate how many days.
35. # OF RESTRICTED WORKDAYS - If the injury resulted in work restrictions, indicate how many days.
36. INJURY TYPE(S) – Indicate the type of injury to the individual (Abrasion, Burn, Strain/Sprain etc.
37. AFFECTED BODY PART(S) or BODY SYSTEM(S) – Indicate what body part(s) were affected by the incident.
38. BRIEF MEDICAL DIAGNOSIS – Indicate the initial medical diagnosis of the injured individual.
39. MEDICAL TREATMENT ADMINISTERED – Mark each box that represents treatment administered to the injured individual. Mark the checkbox for "First Aid Only" if only First Aid treatment was administered to the individual.
40. MEDICAL TREATMENT ADMINISTERED – Describe any treatment not included in box #39.

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EQUIPMENT/PROPERTY DAMAGE

41. CLASS OF EQUIPMENT/PROPERTY DAMAGED – Mark every checkbox that represents the type of damaged.
42. ESTIMATED COST OF ALL DAMAGED ITEMS – Mark one checkbox that represents the initially estimated cost of the damage including labor costs. Provide Final Cost in follow-up report.
43. # OF ITEMS DAMAGED – Indicate the number of items damaged in the incident.
43. SPECIFIC ITEM(S) DAMAGED – Identify or describe the damaged items from box #41.
Example: If the class indicated in box #41 is Flight Hardware, then the specific item could be "Orbiter/Avionics."

INCIDENT REPORT SUBMITTER

44-47. SUBMITTED BY, ORGANIZATION, MAIL CODE, & PHONE – Provide identifying information about the person filling in this form.
48-49. DATE & TIME – Enter the date and time when the form is filled in.

INCIDENT CAUSES

50. ROOT CAUSE – Indicate the root (direct) cause of the incident (see Attachment A for list).
51. OBJECTS OR SUBSTANCES INVOLVED – indicate what objects or substances were involved in the incident.
52. ACTIVITIES OR UNSAFE ACTS IN PROGRESS – Indicate any activities or unsafe acts that involved in the incident.

CONTRIBUTING FACTORS

53. CONTRIBUTING FACTORS – Indicate any factors that contributed to the occurrence of the incident. (see Attachment A for list)

INITIAL CORRECTIVE ACTION

54. INITIAL ACTION TAKEN – Indicate what initial steps have been taken to prevent the reoccurrence of the incident.
55. DATE INITIATED – Indicate the date the corrective action was initiated.
56. DATE COMPLETED – Indicate the date the corrective action was completed.
57-60. PERSON TAKING ACTION, ORGANIZATION, MAIL CODE, & PHONE - Provide identifying information about the person taking the initial corrective action.

PLANNED CORRECTIVE ACTION

61. PLANNED ACTION TO BE TAKEN – Indicate any planned actions to prevent the reoccurrence of the incident.
62. ESTIMATED START DATE – Indicate the estimated start date for any planned corrective actions.
63. ESTIMATED COMPLETION – Indicate the estimated completion date for any planned corrective actions.
64-67. PERSON TAKING ACTION, ORGANIZATION, MAIL CODE, & PHONE – Provide identifying information about the person performing the planned corrective action.
68. PLANNED ACTION TO BE TAKEN – Indicate any planned actions to prevent the reoccurrence of the incident.
69. ESTIMATED START DATE – Indicate the estimated start date for any planned corrective actions.
70. ESTIMATED COMPLETION – Indicate the estimated completion date for any planned corrective actions.
71-74. PERSON TAKING ACTION, ORGANIZATION, MAIL CODE, & PHONE – Provide identifying information about the person performing the planned corrective action.

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NASA Direct Construction Contractor Mishap Report
Attachment A: Root Cause and Contributing Factor List

COMMUNICATION: General
COMMUNICATION: Paging Warning Inadequate
COMMUNICATION: Problem Reporting/Tracking Inadequate
COMMUNICATION: Schedule Conflict
COMMUNICATION: Task Coordination/Planning Inadequate
COMMUNICATION: Task Supervision Inadequate
COMMUNICATION: Test Team Briefing Inadequate
ELECTRIC COMPONENT: Energized Machinery
ELECTRIC COMPONENT: Fuse/Substation/Bus Panel
ELECTRIC COMPONENT: Power Line/electrical Wiring
ENVIRONMENTAL/MATERIAL CONTROL: Confined Spaces
ENVIRONMENTAL/MATERIAL CONTROL: General Air Contamination
ENVIRONMENTAL/MATERIAL CONTROL: Skin Exposure To Materials
EQUIPMENT FAILURE: Design Deficiency
EQUIPMENT FAILURE: General
EQUIPMENT FAILURE: Maintenance
EQUIPMENT FAILURE: Material Defects
EQUIPMENT FAILURE: Material Failure
ERGONOMIC INJURY: Carpal Tunnel Syndrome
FIRE/EXPLOSION: Chemical Change
FIRE/EXPLOSION: Fuel/Oxidizer Near Ignition Source
FIRE/EXPLOSION: General
FIRE/EXPLOSION: High Heat Source
FIRE/EXPLOSION: Pressure Release/Implosion
HANDLING: Design Deficiency
HANDLING: Deviation from Procedure
HANDLING: General
HAZARDOUS OPERATION: Arrangement
HAZARDOUS OPERATION: Deviation from Procedure
HAZARDOUS OPERATION: General
HAZARDOUS OPERATION: Improper Clothing
HAZARDOUS OPERATION: Improper Guarding
HAZARDOUS OPERATION: Improper Illumination
HAZARDOUS OPERATION: Improper Protection
HAZARDOUS OPERATION: Improper Ventilation
HAZARDOUS OPERATION: Unsafe Equipment
HUMAN FACTORS: Distraction
HUMAN FACTORS: Fatigue
HUMAN FACTORS: General

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NASA Direct Construction Contractor Mishap Report
Appendix A: Root Cause and Contributing Factor List

HUMAN FACTORS: Lack of Attention
HUMAN FACTORS: Lack of Authority
HUMAN FACTORS: Lack of Experience
HUMAN FACTORS: Misjudgment of Conditions
HUMAN FACTORS: Safety Violation
HUMAN FACTORS: Working Environment
MACHINERY: Machine Welders
MACHINERY: Metal Grinding/Finishing
MACHINERY: Metal Shaping/Forming/Assembly
MACHINERY: Non-metal Grinding/Finishing
MACHINERY: Non-metal Shaping/Forming/Assembly
MANUAL ARC & GAS WELDER, CUTTER, OR BRAZER
MANUALLY ASSEMBLED/DISASSEMBLED: Clamps
MANUALLY ASSEMBLED/DISASSEMBLED: Connectors
MANUALLY ASSEMBLED/DISASSEMBLED: Fasteners
MANUALLY ASSEMBLED/DISASSEMBLED: Other Parts
MATERIAL HANDLING: Crane/Hoist/Conveyor/Transfer Line
MATERIAL HANDLING: Manual Material Handling
MATERIAL HANDLING: Power Material Handling Vehicle
NATURAL PHENOMENON: Earthquake
NATURAL PHENOMENON: General
NATURAL PHENOMENON: Hail
NATURAL PHENOMENON: Lightning
NATURAL PHENOMENON: Rain
NATURAL PHENOMENON: Wind
ORGANIZATIONAL DEFICIENCY: Expired Certification
ORGANIZATIONAL DEFICIENCY: General
ORGANIZATIONAL DEFICIENCY: Lack of Certification
ORGANIZATIONAL DEFICIENCY: Lack of Training
OTHER: Other
PERSONNEL CARRIERS: Highway Vehicle
PERSONNEL CARRIERS: Mobile Work Platform
PERSONNEL CARRIERS: Support Vehicle
PORTABLE TOOLS: Non-powered
PORTABLE TOOLS: Powered
PROCEDURE: General
PROCEDURE: Procedure Deficiency
PROCEDURE: Requirements Inadequate
PROCEDURE: Technical Data Deficiency

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NASA Direct Construction Contractor Mishap Report
Appendix A: Root Cause and Contributing Factor List

TOXIC MATERIAL: Design Deficiency
TOXIC MATERIAL: General
TOXIC MATERIAL: Improper Handling
WALKING WORK SURFACE: Elevated Surfaces
WALKING WORK SURFACE: Floor And Wall Opening
WALKING WORK SURFACE: Floor Surface
WALKING WORK SURFACE: Ladders
WALKING WORK SURFACE: Stairs

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