

OPERATIONAL AGREEMENT

between
Lockheed Martin Space
Orion Program
and
PAE-SGT Partners, LLC, Base Operations and Spaceport
Services (BOSS)

**Joint Operations of the Launch Abort System Facility
Industrial Operating Zone HVAC System**

ORION-KSC-FAC-015

Revision – Final
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Introduction

- 1.1. This Operational Agreement (OA) establishes the roles and responsibilities between Lockheed Martin Space and PAE-SGT Partners, LLC, Base Operations and Spaceport Services (BOSS) regarding the Operations, Maintenance, Engineering, and User (OMEU) of the HVAC system in the Industrial Operating Zone (IOZ) of the Launch Abort System Facility (LASF), building M7-0777. The intent of this document is to provide the business policy in order to operate and maintain the LASF IOZ HVAC System, Program Model Numbers: K61-2967, LASF IOZ HVAC.
- 1.2. The document establishes the basis for BOSS to successfully provide quality service for Sustaining Engineering, Operations and Maintenance of the LASF IOZ HVAC while minimizing impact to Lockheed Martin Space, in order to protect the Lockheed Martin Space assets and ensure a continued production environment is maintained.
2. Scope
 - 2.1. This OA is to define the LASF IOZ HVAC technical requirements and operational parameters, scheduled and unscheduled maintenance, and notifications and response.
 - 2.2. This OA applies to all HVAC equipment and controls required to maintain environmental conditions within the LASF (see Attachment I).
3. Definitions
 - 3.1. Scheduled Maintenance includes preventive maintenance (PMs), predictive testing and inspection, scheduled repair projects, programmed maintenance, replacement of obsolete items, and restoration/modernization associated with building systems/components.
 - 3.2. Unscheduled Maintenance includes corrective maintenance, trouble calls and breakdown repairs.
 - 3.3. Emergency Conditions are situations that would render flight hardware or personnel safety at risk.
4. IOZ Cleanliness Standards
 - 4.1.1. LASF IOZ High Bay cleanliness shall be maintained per the Lockheed Martin Space IOZ Contamination Control Plan (LM-ORN-0149)
5. Security and Access
 - 5.1.1. LASF access shall be per the Lockheed Martin Space IOZ Security / Access Plan (LM-ORN-0024).
 - 5.1.2. IOZ entry requires check-in at the Orion Operations Desk in the O&C building following Lockheed Martin Space protocol. Shop personnel can pre-coordinate entry by calling the O&C Operations Desk at 321-867-7525 in advance of travel to the LASF.
 - 5.1.3. LASF IOZ access for scheduled maintenance will be coordinated with Lockheed Martin Space through the BOSS maintenance schedule at all times. Lockheed Martin Space will be provided the BOSS maintenance

schedule a minimum of two weeks in advance of scheduled maintenance activity to provide for security coordination. Scheduled maintenance that will adversely impact Orion Production operations within the LASF IOZ as determined by Lockheed Martin Space may be performed off shift or on weekends as required; Lockheed Martin Space will support access to the LASF IOZ for off shift work.

- 5.1.4. Unscheduled maintenance when Lockheed Martin Space is unavailable during non-work hours shall be authorized through the BOSS Spaceport Integration Center (SIC) and execution of the BOSS/ Lockheed Martin Space call tree maintained by JSTC.
- 5.1.5. Lockheed Martin Space will authorize a KSC issued Task Key (KH-122) for access to the IOZ mechanical equipment rooms. The Task Key shall be used for nominal maintenance access. The issued Task Key shall be maintained in a locked and controlled cabinet at all times when not in use in the Industrial Area Chiller Plant (IACP).
- 5.1.6. The Mechanical Room shall be available for access at any time for authorized scheduled and / or unscheduled maintenance. The Mechanical Room shall be locked at all times when access is not required. The lock shall be the same lock series (KH-122) as authorized by Lockheed Martin Space. A placard shall be applied adjacent to the access door lock denoting location of the Task Key (in the IACP) as maintained per the previous paragraph.
- 5.1.7. A log of LASF IOZ access Task Key usage shall be maintained at the IACP.
- 5.1.8. Emergency and emergent condition access into the LASF IOZ (except for West Mechanical Room) shall be denoted in the LASF IOZ HVAC Log book located at the O&C IOZ Operations Desk. Detail shall include as a minimum:
 - Reason for entry
 - Time of entry
 - Action taken
 - Time of exit

6. Scheduled maintenance

- 6.1. BOSS shall be responsible for all scheduled maintenance of the IOZ HVAC system.
- 6.2. Scheduled maintenance shall be coordinated with the Lockheed Martin Space Orion Facilities Manager.
- 6.3. Scheduled maintenance will be integrated into the Lockheed Martin Space Production Master Schedule by Lockheed Martin Space.
- 6.4. Scheduled maintenance shall not adversely affect ongoing Orion Production operations within the LASF IOZ.
- 6.5. BOSS shall be responsible for the system operations.

7. Unscheduled maintenance

- 7.1. BOSS shall be responsible for all unscheduled maintenance of the LASF IOZ HVAC system.
 - 7.2. Unscheduled maintenance due to failures or anomalies that render the system un-operational or at high risk shall have immediate response within 30 min. Notification via BOSS SIC to the primary Lockheed Martin Space Facilities Manager and the BOSS Facility Manager or alternant (see Attachment II) shall be made as soon as possible.
 - 7.3. Notification of an emergency or emergent condition and requirement for entry / work shall be per Attachment II. The Lockheed Martin Space prime point of contact is the Lockheed Martin Space Facility Manager.
 - 7.4. BOSS shall develop a plan in the event of a failure to ensure the LASF IOZ and its contents are protected. The primary consideration for protection shall be the Spacecraft elements, Test Hardware, and Tooling.
 - 7.5. BOSS shall be responsible for the system operations during unscheduled maintenance activities to ensure safe and effective maintenance processes.
8. System Modifications and Configuration Control
 - 8.1. From time to time modifications / additions may be required on the HVAC system. LM may desire to implement such changes to the system however in all cases configuration changes will be vetted in advance through the existing BOSS Electronic Work Request (EWR) System. An EWR will ensure changes are documented, any additional monitoring is captured and, if necessary, approved by the Configuration Control Board (CCB) prior to implementation. A Customer Payload Requirements Document (PRD) may also be submitted along with the EWR to change the environmental operating conditions within the IOZ.
 - 8.1.1. User/requester shall contact the BOSS Facility Manager (FM) with the requested change. If unavailable, the user/requester shall contact the BOSS SIC at 861-5050 with the requested change.
 - 8.1.2. The FM submits an EWR with the requested change. Specific environmental control conditions need to be provided in this EWR. If routed through the SIC, an EWR will be submitted by the SIC and the SIC will notify the Utilities Console, JBAC, of the requested change.
 - 8.1.3. If the change is within the limits of the established range (see section 10.1 below), JBAC will notify the BOSS HVAC System Engineer (SE) of the change requested. If the request is outside the established range, JBAC will require approval by the SE before proceeding with implementation.
 - 8.1.4. The BOSS SE will notify the NASA HVAC System Engineer of the requested change and discuss any operational issues associated with the changes at that time.
 - 8.1.5. If CCB approval is required, the CCB reviews/approves the request or calls a meeting for technical community and user discussion.
 - 8.1.6. If within limits or after approval by SE and CCB for changes outside the established limits, WM will issue a work order and will notify the IACP Operator to perform the requested change.
 - 8.1.7. The IACP Operator will make the necessary changes, update the Payload Rounds sheet, note changes on the IACP white board and coordinate with

the Controls SE to update the alarms and warnings for the parameters changed. Changes will be documented in the SETI log.

8.2. BOSS may desire to perform system modifications for reasons such as energy efficiency, hardware updates, obsolesce. etc. BOSS shall coordinate with Lockheed Martin Space for all system modifications including software updates / changes. All modifications to the system shall be managed and approved through the BOSS Configuration Control Board (CCB) by way of an EWR.

8.2.1. System Modifications and Configuration Control changes shall be coordinated with the LM Orion Facilities Manager.

9. LASF High Bay Environmental Configuration

9.1. The LASF High Bay environmental configuration is established for temperature, humidity, particulate, and building pressurization per Lockheed Martin Space requirements. Below are the established requirements for the IOZ.

LASF IOZ ENVIRONMENTAL PARAMETER ESTABLISHED LIMITS			
TEMPERATURE	HUMIDITY	PRESSURE	PARTICULATE
71°F ± 6° F	30%<RH<60%	N/A	ISO 14644-1 Class 8.5 Note: No monitoring requirements through Andover System

9.2. The HVAC system environmental configuration may be changed to suit varied operational requirements as determined by Lockheed Martin Space. Lockheed Martin Space shall request through the Facility Manager or SIC for implementation of the desired changes as outlined in section 8.1 above.

9.3. BOSS may change system environmental configuration outside of parameters as delineated in paragraph **Error! Reference source not found.** above with prior coordination and approval from Lockheed Martin Space in order to support BOSS performed maintenance.

9.4. BOSS may change system environmental configuration within specification to prepare for impending outside environmental change affects.

10. System Operation

10.1. BOSS shall be responsible for the day-to-day system functional operation. The day-to-day system operation may include changing temperatures, switching between air handlers, adjusting building pressurization and system airflow rates, changing humidity levels, etc.

10.2. Lockheed Martin Space shall be responsible for any setup and location of the system particle counter instruments (if required).

10.3. BOSS shall monitor the system functional operation at all times from the IACP.

10.4. Operation of the East Bi-Parting Door and/or West Vertical Door shall be coordinated with IACP at 321-867-8623 or 321-867-8639 prior to operations.

11. Emergency Response

11.1. In the event a system malfunction or failure that may change the established environmental condition of the LASF IOZ, BOSS shall take immediate action (30 minute response) to correct or mitigate the failure.

- 11.2. BOSS shall provide notification to Lockheed Martin Space of system out of condition issues and failures as per the BOSS / Lockheed Martin Space Emergency notification list (Attachment II).
 - 11.3. System out of condition issues and failures detected by Lockheed Martin Space shall be communicated to BOSS immediately per the BOSS / Lockheed Martin Space Emergency notification list and/or the SIC at 321-861-5050
12. Natural Disaster HVAC System Preparations and Operation
- 12.1. Lockheed Martin Space and BOSS shall prepare and respond as determined by their individual approved plans.
 - 12.2. The LASF IOZ HVAC system shall be set to operate at the nominal set points or as determined by Lockheed Martin Space depending upon the emerging conditions.

