OPERATIONAL AGREEMENT

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

Joint Operations of the O&C Building Industrial Operating Zone HVAC System

ORION- KSC-FAC-011
Revision – Final
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1. Introduction
   1.1. This Operational Agreement (OA) establishes the roles and responsibilities between Lockheed Martin Space and BOSS regarding the Operations, Maintenance, Engineering, and User (OMEU) of the Industrial Operating Zone (IOZ) HVAC system in building M7-355 (Operations and Checkout).
   1.2. The intent of this document is to provide the business policy in order to operate and maintain the IOZ HVAC System, Program Model Numbers: K60-0624-02, IOZ HVAC and K61-3784 -001, IOZ HVAC Chilled Water Loop.
   1.3 The document establishes the basis for BOSS to successfully provide quality service for Sustaining Engineering, Operations and Maintenance of the IOZ HVAC while minimizing impact to LM, in order to protect the LM assets and ensure a continued production environment is maintained.

2. Scope
   2.1. This OA is to define the 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 IOZ (see Attachment I) inclusive of the equipment and controls in the offline areas (i.e. Liebert conditioning units and roof top self contained units).
   2.3. The West Mechanical Room (Southwest corner of the IOZ) contains ancillary equipment (pumps, water heaters, boilers, etc) which are integral to the entire O&C building and are not a part of the scope of this document. Please refer to the applicable drawings for equipment jurisdictional boundaries.

3. Definitions
   3.1. Scheduled Maintenance includes preventive maintenance (PM), 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.

4. IOZ Cleanliness Standards
   4.1. IOZ cleanliness shall be maintained per the Lockheed Martin Space IOZ KSC-FO-042 Clean Zone Operating Procedure.
5. Security and Access
   5.1. IOZ access shall be per the Lockheed Martin Space IOZKSC-FO-004 Security Access Plan.
      5.1.1. IOZ entry requires check-in at operations desk and follow LM protocol.
      5.1.2. IOZ access for scheduled maintenance will be coordinated with LM 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.

5.1.3. LM will authorize a KSC issued Task Key (KH-122) for access to the IOZ. The Task Key shall be used for emergency or emerging condition requiring immediate access during LM off shift periods only. 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).

5.1.4. The West Mechanical Room shall be available for access at any time for authorized scheduled and / or unscheduled maintenance. The West 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.

5.1.5. A log of IOZ access Task Key usage shall be maintained at the IACP.

5.1.6. Emergency and emergent condition access into the IOZ (except for West Mechanical Room) shall be denoted in the IOZ HVAC Log book located at the IOZ Operations Desk. Detail shall include as a minimum:

5.1.6.1. Reason for entry
5.1.6.2. Time of entry
5.1.6.3. Action taken
5.1.6.4. Time of exit

6. Drop Mitigation and Foreign Object Elimination
   6.1. All personnel accessing the IOZ shall comply with KSC-FO-016 Drop Mitigation Plan and KSC-FO-017 FOE Plan.

7. Scheduled maintenance
   7.1. BOSS shall be responsible for all scheduled maintenance of the IOZ HVAC system.
   7.2. Scheduled maintenance shall be coordinated with the Lockheed Martin Space Orion Facilities Manager.
   7.3. Scheduled maintenance shall be integrated into the Lockheed Martin Space Production Master Schedule.
   7.4. Scheduled maintenance shall not adversely affect ongoing Orion Production operations within the IOZ.
   7.5. BOSS shall be responsible for the system operations.

8. Unscheduled maintenance
   8.1. BOSS shall be responsible for all Unscheduled maintenance of the IOZ HVAC system.
   8.2. Unscheduled maintenance due to failures or anomalies that render the system un-operational or at high risk shall have immediate response (30 min). Notification via BOSS trouble call desk to the primary Lockheed Martin Space contacts shall be made as soon as possible.

8.3. 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 Facility Manager listed in Attachment II.
8.4. BOSS shall develop a plan in the event of a failure to ensure the IOZ and its contents are protected. The primary consideration for protection shall be the Spacecraft elements, Test Hardware, and Tooling.
8.5. BOSS shall be responsible for the system operations during Unscheduled maintenance activities to ensure safe and effective maintenance processes.

9. System Modifications and Configuration Control
9.1. 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.
9.1.1. User/requester shall contact the BOSS Facility Manager (FM) with the requested change. If unavailable, the user/requester shall contact the BOSS Spaceport Integration Center (SIC) at 861-5050 with the requested change.
9.1.2. 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.
9.1.3. 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.
9.1.4. 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.
9.1.5. If CCB approval is required, the CCB reviews/approves the request or calls a meeting for technical community and user discussion.
9.1.6. 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.
9.1.7. 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.
9.2. 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.

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

10. IOZ Environmental Configuration

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

IOZ ENVIRONMENTAL PARAMETER ESTABLISHED LIMITS			
TEMPERATURE	**HUMIDITY**	**PRESSURE**	**PARTICULATE**
71°F ± 6° F	35%<RH<60%	0.05"± 0.02" W.C.	Maximum 100,000 count at 0.5 micron size Maximum 700 count at 5 micron size

10.2. The HVAC system environmental configuration may be changed to suit varied operational requirements as determined by LM. Lockheed Martin Space shall request through the Facility Manager or SIC for implementation of the desired changes as outlined in section 9.1 above.

10.3. BOSS may change system environmental configuration outside of parameter limits as delineated in section 9.2 above with prior coordination and approval from LM in order to support BOSS performed maintenance.

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

11. System Operation

11.1. 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.

11.2. LM shall be responsible for the setup and location of the system particle counter instruments. Location of particle counter instruments shall be recorded in the System Log Book located at the Operations Desk in the IOZ to enable the periodic maintenance of the instruments. LM shall notify the IACP at 321-867-8623 or 321-867-8639 prior to particle counter relocation.

11.3. BOSS shall monitor the system functional operation at all times from the IACP and/or IOZ control stations.

11.4. Operation of the East Vertical Door, West Vertical Door, Air Lock Door, and Horizontal Receiving Door shall be coordinated with the IACP at 321-867-8623 or 321-867-8639 prior to operations.

12. HVAC System Log Book

12.1. The HVAC System Log Book shall be used by Lockheed Martin Space and BOSS to record activity, status, configuration, and any work on the HVAC system.

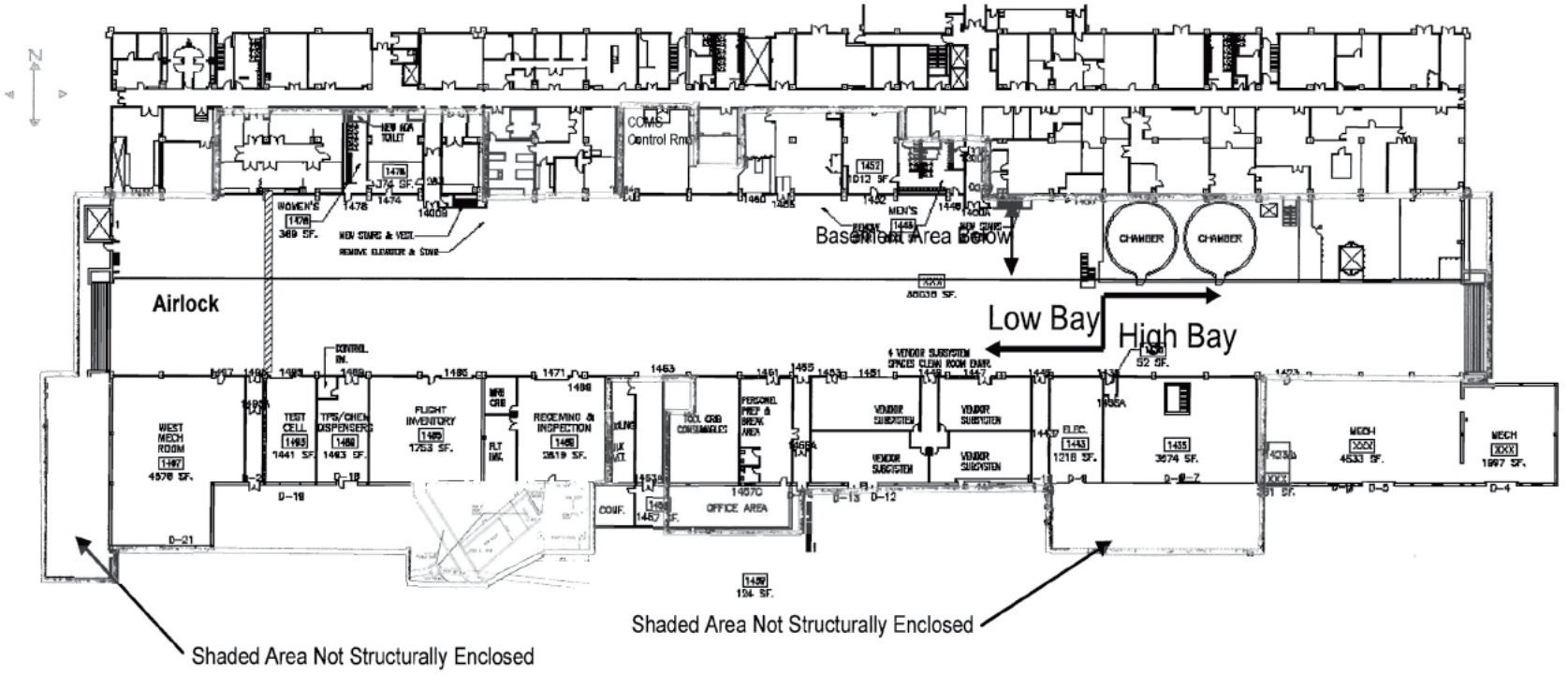
12.2. The HVAC System Log Book is located at the IOZ Operations Desk inside of the IOZ.

13. Emergency Response
    13.1. In the event a system malfunction or failure will or may change the established environmental condition of the IOZ, BOSS shall take immediate action (30 minute response) to correct or mitigate the failure.
    13.2. BOSS shall provide notification to Lockheed Martin Space of system out of condition issues and failures as per the BOSS / LMSSC Emergency notification list (Attachment II).
    13.3. System out of condition issues and failures detected by LMSSC shall be communicated to BOSS immediately per the BOSS / LMSSC Emergency notification list and/or the KSC Response Desk at 321-861-5050

14. Natural Disaster HVAC System Preparations and Operation
    14.1. LM and BOSS shall prepare and respond as determined by their individual approved plans.
    14.2. The IOZ HVAC system shall be set to operate at the nominal set points or as determined by LM depending upon the emerging conditions.

15. DPU Trailer Monitoring
    15.1. The DPU trailer located on the south side of M7-0355 will be monitored for temperature and humidity from the IACP. Any alarms will be reported to the IOZ Operations Desk.
    15.2. Operations and maintenance of the DPU trailer are the responsibility of Lockheed Martin Space.

ATTACHMENT I
IOZ Boundaries



Red envelope is IOZ boundary