

P, I, PLAN, DOI: Procedure	Title: BOSS TEMPERATURE & ENERGY MANAGEMENT PROGRAM (TEMP) PROGRAM			Document Number: ENG-P-0002	
Unit Issuing: ENG- FSEU	Approved by: ENG	Initial Issue: 23 Jun 2014	Page 1 of 9	Revision: 3 Effective Date: 03 Nov 2020	

SUBJECT **BOSS TEMPERATURE & ENERGY MANAGEMENT PROGRAM (TEMP) PROGRAM**

PURPOSE

To establish a standardization to operate Base Operations and Spaceport Services (BOSS) contract assigned facilities in an energy efficient manner by defining temperature set points for facility space types and to identify and maintain temperature schedule changes. Executive Order 13693 – Planning for Federal Sustainability in the Next Decade and [KSC-PLN-8553](#), *Kennedy Space Center 5 Year Sustainability Plan*, has established specific measurements to ensure that continuous progress is being made to reduce energy consumption, keep utility costs down while reducing the environmental impact. This process is authorized by the BOSS Performance Work Statement (PWS) 4.1.1.2.8

SCOPE AND APPLICABILITY

This procedure applies to all BOSS personnel performing work under contract 80KSC018C0017 at the Kennedy Space Center (KSC). This procedure applies to BOSS maintained facilities.

PROCESS

The BOSS contract goal is to provide comfortable and functional work spaces within its facilities using the least amount of energy derived from the burning of fossil based fuels as possible. To help achieve this goal, the Temperature & Energy Management Program (TEMP) Procedure establishes temperature set points for space types, identifies temperature schedule(s) and describes the process to change a temperature schedule.

1. CONDITIONED SPACE POLICY

Facilities that have conditioned space will be programmed and assigned a Heating, Ventilating, and Air-Conditioning (HVAC) schedule that is suitable by type of space and by the HVAC system configuration. The schedule and temperature/humidity requirements will be documented and maintained in the TEMP Report.

2. TEMP REPORT

The TEMP Report is the repository that identifies condition space requirements for a facility and its space. The TEMP report identifies the facility, room numbers, space type, temperature parameters, occupied/unoccupied modes along with Saturday, Sunday and holiday schedules. The TEMP Report will be maintained on the [BOSS EMO SHAREPOINT Site](#). Soon to be moved to <https://boss.ksc.nasa.gov/FSEU/MBR/MS/TEMP/Forms/AllItems.aspx>

2.1. Office/Administrative Space Temperature Requirements

- 2.1.1. The space temperature requirements are derived from the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 55-2017; “Thermal Environmental Conditions for Human Occupancy.”
- 2.1.2. The general cooling space temperature set point is established as 74°F to 78°F during occupied mode and at 80°F for unoccupied mode.
- 2.1.3. The general heating space temperature set point is established as 68°F to 72°F during occupied mode and at 60°F for unoccupied mode.
- 2.1.4. Relative Humidity will be maintained below 60%.
- 2.1.5. Depending on the facility, the space and the mission of the facility; the HVAC may be off during the winter months and set at 80° during the summer months for the weekends and holidays.

2.2. Data Center Space Temperature Requirements

- 2.2.1. The space temperature requirements are derived from ASHRAE Standard 90445 ; “Environmental Guidelines for Datacom Equipment” expanded the recommended temperature range at the inlet of the server to 65°F to 80°F.
- 2.2.2. Many data centers traditionally have set their temperatures colder than what is needed. As a result, many data centers can save energy simply by raising the thermostat.

2.3. High Bay Space Temperature Requirements

- 2.3.1. The space temperature set point is established as 71°F $\pm$ 6° for high bays. See [KPL-PLN-50007](#), *KSC Payload Facility Contamination Control Requirements Plan*, and [KPL-PLN-50008](#), *Payload Facility Contamination Control Implementation Plan*, for additional information.

FIGURE 1: TEMPERATURE REQUIREMENTS BY SPACE TYPE

The condition space types along with the temperature/humidity requirements are in the following table below:

Space Type	Occupied Space (F°)		Unoccupied Space(F°)	
	Cooling set point	Heating set point	Cooling set point	Heating set point
General Office/Admin	76 ± 2°	70 ± 2°	80°	60°
Data Center – inlet of the server	65 - 80°	65 - 80°	65 - 80°	65 - 80°
Laboratory*				
High Bays	71 ± 6°	71 ± 6°	71 ± 6°	71 ± 6°

* Per Design Requirements

3. SCHEDULE CHANGE REQUEST

If there is a need to deviate from this policy, the submitter will need to do the following:

- Complete TEMP Schedule Change Request Form [ENG-F-0040](#) and email the request to the assigned Facility Manager.

FIGURE 2: TEMP SCHEDULE PROCESS FLOW

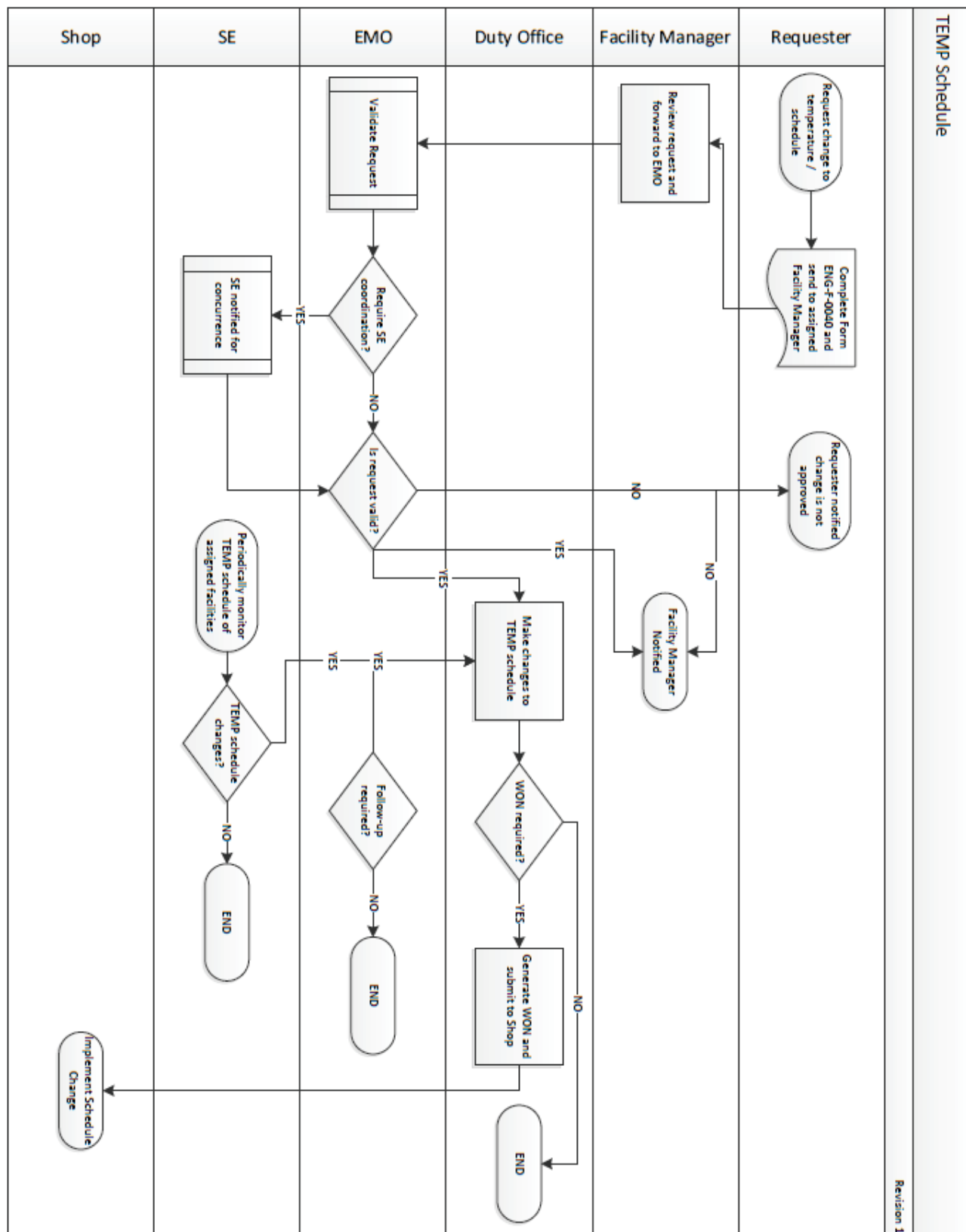
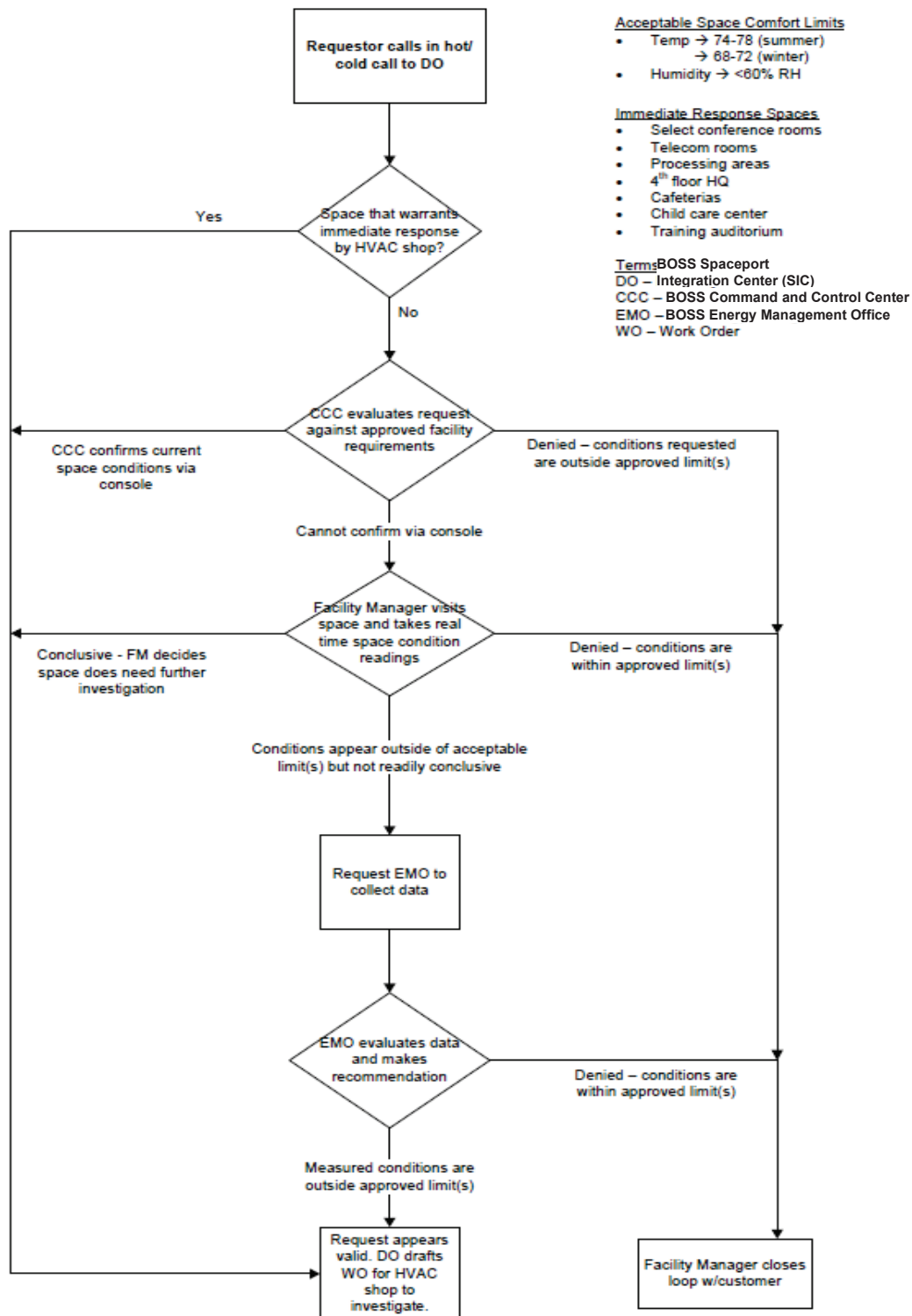


FIGURE 3: HOT/COLD CALL



RECORDS

The following records are retained by the organizations listed below:

Record	Responsible Organization
ENG-F-0040, TEMP Schedule Change Request Form	Energy Management Office

AFFECTED DIVISIONS/OFFICES

Engineering Services
FSEU and OM&E
Information Technology
Laboratories

ROLES AND RESPONSIBILITIES

BOSS Program Manager: Ensures BOSS compliance to the requirements stated in this procedure. Reviews and approves or disapproves waiver requests written against this standard.

Division Manager: Ensures compliance within the Division to the requirements stated in this procedure.

Manager: Ensures compliance at the department level to the requirements stated in this procedure.

Commissioning Agent (Cx Agent): Conducting energy audit/assessments, obtaining temperature/Relative Humidity (RH) measurements, validating to the TEMP report and reporting findings and recommendations.

Energy Management Office: Reviewing TEMP Schedule Change Requests ([ENG-F-0040](#)) for approval and may perform field assessment and data collection relating to space temperature/RH conditions.

Facility Managers: Monitoring (via reports and site visits) buildings to ensure equipment is operating properly and occupant compliance is established.

Mission Support Branch: Updating the TEMP Report when approved schedules are changed; Generating Work Order Number (WON) for TEMP schedule changes to be completed.

System Engineers: Properly maintaining all building mechanical systems and ensuring temperature and RH controls are set within the policy.

REFERENCE DOCUMENTS

The following documents are referenced in this procedure:

Document Number	Title
Executive Order 13693	Planning for Federal Sustainability in the Next Decade
KSC-PLN-8553	KSC Sustainability Plan
ASHRAE 55-2017	Thermal Environmental Conditions for Human Occupancy
ASHRAE 90445	Environmental Guidelines for Datacom Equipment
KPL-PLN-500007	KSC Payload Facility Contamination Control Requirements/Plan
KPL-PLN-500008	KSC Payload Facility Contamination Control Implementation Plan
ENG-F-0040	TEMP Schedule Change Request Form

ACRONYMS

ASHRAE	American Society of Heating, Refrigeration & Air-Conditioning Engineers
AUDRIS	Automated Utility Database Reporting and Information System
BOSS	Base Operations and Spaceport Services (BOSS) contract
EMO	Energy Management Office
HVAC	Heating, Ventilating and Air-Conditioning
KSC	Kennedy Space Center
PWS	Performance Work Statement
RH	Relative Humidity
TEMP	Temperature & Energy Management Program
WON	Work Order Number

DEFINITIONS

Automated Utility Database Reporting & Information System (EMO): Web based utilities data collection and reporting tool.

Conditioned Space: Space within a building provided with heated or cooled air, or both (or surfaces); and, where required, with humidification or dehumidification means, to maintain conditions for an acceptable thermal environment.

Data Center: is a facility used to house computer systems and associated components, such as telecommunications and storage systems. It generally includes redundant or backup power supplies, redundant data communications connections, environmental controls (e.g., air conditioning, fire suppression) and various security devices.

Occupied Space: Defined as areas are regularly occupied (at or near full capacity) during a given time of day and week; typically referred to as normal business hours for a given space.

Set Point: A pre-established temperature level for a given space to ensure occupant comfort, efficient use of energy, and to responsibly manage the physical asset.

Space Conditions: Defines the typical occupancy of the space for the purpose of determining what the heating and cooling needs are and determining the associated temperature set points.

Unoccupied Space: Defined as spaces that are not normally occupied (i.e. night time, weekends and holidays) during a given time of the day and week.

Utilities: In this case, utilities refer to electric, natural gas, steam, and water.

REVISION RECORD

The following revisions have been applied to this document:

Revision Number	Change Description	Date
0	Initial Release	06/23/14
1	Removed Executive Order 13514 references and updated with new Executive Order 13693, which went into effect March 19, 2015	04/06/15
2	Updated to BOSS	12/30/2019
3	Minor revision - remove ref to FAM-P-2018	03 NOV 2020

DOCUMENT APPROVALS

11/14/2020

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