

CCC Procedure	Complex Control Center Operations			Number: MSO-P-0004	
Complex Control Center	Approved by: SIC	Initial Issue Date: 07/03/12	Page: 1 of 11	Revision: 12 Eff Date: 01/11/24	

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PURPOSE

To establish the procedures and responsibilities for the console operations employees working in the Complex Control Center (CCC) at the Kennedy Space Center (KSC).

SCOPE AND APPLICABILITY

This procedure applies to all personnel in the CCC. Those employees represented by a Collective Bargaining Agreement (CBA) should refer to their CBA for provisions that may apply to their assigned classification. Should a conflict arise between this procedure and the appropriate CBA, the CBA shall prevail.

PROCESS**1. COMPLEX CONTROL CENTER OPERATIONS**

The CCC is a 24-hour a day, 7 day a week, 365 day a year command and control room which serves as the central point of contact for all Power, Water, Propellant and HVAC facility systems at KSC. The CCC provides remote monitoring and remote control of over 150,000+ facilities systems or pieces of equipment. The CCC generates and issues all switching orders and work permits for any work on electrical systems at KSC and processes over 1000 electrical outages per year. CCC console operators shall perform their job duties as required in accordance with all hyperlinked CCC Desk Instructions included in this procedure.

2. CCC CONSOLE OPERATOR RESPONSIBILITIES

All console operators in the CCC shall perform their duties in accordance with CCC Desk Instruction CCC-I-0001, "Console Operator Responsibilities."

[CCC-I-0001, CCC Console Operator Responsibilities](#)

3. CCC MANNING SCHEDULE PROCESS

Manning schedules shall be prepared two weeks ahead of time and posted in the CCC as well as saved on-line in the CCC Manning Schedule folder on the CCC Share Drive. Schedules shall be prepared in accordance with CCC Desk Instruction CCC-I-0002, "CCC Manning Schedules."

[CCC-I-0002, CCC Manning Schedules](#)

4. CCC OVERTIME FORECASTING PROCESS

Overtime Forecasts shall be prepared two weeks ahead of time and are filed in the Manager's office and saved on-line in the CCC Manning Schedule folder on the CCC Share Drive. Schedules shall be prepared in accordance with CCC Desk Instruction CCC-I-0003, "Overtime Forecasting."

[CCC-I-0003, CCC Overtime Forecasting](#)

5. CCC CONSOLE TRAINING AND CERTIFICATION PROCESS

All console operations personnel shall obtain and maintain a minimum of three console certifications. Re-certifications shall take place every 12 months after initial certification. Training and Certification of console operations shall be done in accordance with CCC Desk Instruction CCC-I-0004, "CCC Console Training and Certification Process."

[CCC-I-0004, CCC Console Training and Certification Process](#)

6. CCC POWER FLUCTUATION / LIGHTNING STRIKE CHECKLIST PROCESS

In the event of an unexpected dip, surge in or loss of power supplied to Kennedy Space Center electrical systems resulting in a power disturbance to one or more BOSS maintained facilities, or in the event of a confirmed lighting strike reported by the Test Team (NTD, JSTC, etc.), Console operations personnel shall complete the Power Fluctuation/Lighting Strike Checklists in accordance with CCC Desk Instruction CCC-I-0005, "CCC Power Fluctuation / Lightning Strike Recovery Checklist Process."

[CCC-I-0005, CCC Power Fluctuation/Lighting Strike Checklists](#)

7. CCC BFF COMPLEX ALARM RESPONSE

All BFF alarms received on both the Power and Utilities consoles in the CCC shall be responded to and reported in accordance with CCC Desk Instruction CCC-I-0007, "CCC BFF Alarm Response."

[CCC-I-0007, CCC BFF Complex Alarm Response](#)

8. CCC DAILY POWER AND UTILITY SYSTEMS STATUS REPORTS

CCC personnel shall prepare and distribute daily Power and Utility Systems Status reports for critical systems monitored via KCCS in the CCC in accordance with CCC Desk Instruction CCC-I-0008, "CCC Daily Power and Utility Systems Status Reports."

[CCC-I-0008, CCC Daily Power and Utility Systems Status Reports](#)

9. PERSONAL LEAVE TIME / APPROVAL PROCESS

CCC Personnel shall request and receive approval for use of personal leave time in accordance with CCC Desk Instruction CCC-I-0009, "CCC Personal Leave Time Approval Process."

[CCC-I-0009, CCC Personal Leave Time Request/Approval Process](#)

10. CCC SYSTEMS ELECTRONIC TIE-IN LOG (SETI) USAGE

The Systems Electronic Tie-In Log (SETI) is a web-based application available to all personnel that work in the CCC to be used for the purpose of operational communications. Console operations personnel in the CCC shall utilize the SETI log in accordance with CCC Desk Instruction CCC-I-0010, "CCC Systems Electronic Tie-In Log Usage."

[CCC-I-0010, CCC Systems Electronic Tie-In Log \(SETI\) Usage](#)

11. CCC MAXIMO WORK ORDER PROCESSING

When working Maximo Work orders written for console support of Major Processing Tasks, Integrated Tests, Hazardous Operations, Test Plans, Software Integration Tests, Etc, Console operations personnel in the CCC perform their work tasks in accordance with CCC Desk Instruction CCC-I-0011, "CCC Maximo Work Processing."

[CCC-I-0011, CCC Maximo Work Order Processing](#)

12. CCC SWITCHING ORDER AND WORK PERMIT PROCESSING

When working tasks that require electrical system Switch Orders and/or Work Permits, Power Console Operations personnel in the CCC perform their work tasks in accordance with CCC Desk Instruction CCC-I-0012, "CCC Switching Order and Work Permit Process".

[CCC-I-0012, CCC Switching Order and Work Permit Process](#)

13. CCC OUTAGE IMPACTING AND OUTAGE PROCESSING

When impacting and processing electrical and utility system outages, Console Operations personnel in the CCC perform their work tasks in accordance with CCC Desk Instruction CCC-I-0013, "CCC Outage Impacting and Outage Processing"

[CCC-I-0013, CCC Outage Impacting and Outage Processing](#)

14. POWER SYSTEMS MAP BOARD MAINTENANCE AND UPDATES

The Power Systems Map Board in the CCC shall be operated and maintained in accordance with the CCC Desk Instruction CCC-I-0014, "Power System Map Board Maintenance and Updates".

[CCC-I-0014, Power Systems Map Board Maintenance and Updates](#)

15. EVALUATION OF FEEDER LOAD BEFORE LOAD SHARING

The evaluation of feeder loads before load sharing in the CCC shall be performed in accordance with the CCC Desk Instruction CCC-I-0016, "Evaluation of Feeder Loads Before Load Sharing".

[CCC-I-0016, Evaluation of Feeder Loads Before Load Sharing](#)

16. UPDATING ELECTRICAL IMPACT SHEETS IN SHAREPOINT

The updating of electrical impact sheets in SharePoint shall be performed in accordance with the CCC Desk Instruction CCC-I-0017, "Updating Electrical Impact Sheets In SharePoint"

[CCC-I-0017, Updating Electrical Impact Sheets In SharePoint](#)

17. ASSIGNING EQUIPMENT ID'S TO ELECTRICAL EQUIPMENT

The assigning of new equipment ID's for all new Load Break Switches (LBS), Vacuum Fault Interrupters (VFI), Automatic Transfer Switches (ATS), Uninterruptible Power Supplies (UPS) and Electrical Manholes\Handholes at Kennedy Space Center shall be performed in accordance with the CCC Desk Instruction CCC-I-0018, "Assigning Equipment ID's To Electrical Equipment"

[CCC-I-0018, Assigning Equipment IDs To Electrical Equipment](#)

18. OUTAGE IMPACT ISSUE TRACKER

The Outage Impact Issue Tracker is a tool used concurrently by the BOSS outage coordinators, system engineers, supervision and console operators to track issues and status of issue resolution related to impacting outage requests. The use of the Outage Impact Issue Tracker by console operations personnel shall be done in accordance with CCC Desk Instruction CCC-I-0021, "Outage Impact Issue Tracker."

[CCC-I-0021, Outage Impact Issue Tracker](#)

19. CCC SSPF SCIENCE ANNEX ALARM RESPONSE

All Space Station Processing Facility (SSPF) Science Annex alarms received on the Utilities consoles in the CCC shall be responded to and reported in accordance with the CCC Desk Instruction CCC-I-0022, "CCC SSPF Science Annex Alarm Response."

[CCC-I-0022, CCC SSPF Science Annex Alarm Response](#)

20. VALVE CONFIGURATION MATRIX

The Valve Configuration Matrix Form, Maximo and the SETI Log are used to track and document water valve configurations on BOSS maintained water systems. The use of the Valve Configuration Matrix by console operations personnel shall be done in accordance with CCC Desk Instruction CCC-I-0023, "Valve Configuration Matrix."

[CCC-I-0023, Valve Configuration Matrix](#)

21. CCC NGR AND VFI FAULT RESPONSE CHECKLIST

Power console operators, in the event a fault occurs on the electrical system associated with either the Orsino or C5/C5A substation when Neutral Grounding Resistor's (NGR's) are switched "IN" to the circuit of the affected substation, shall complete the NGR and Vacuum Fault Interrupter (VFI) Fault Response Checklist. The use of the NGR and VFI Fault Response Checklist by console operations personnel shall be done in accordance with CCC Desk Instruction CCC-I-0024, "CCC NGR and VFI Fault Response Checklist."

[CCC-I-0024, CCC NGR and VFI Fault Response Checklist](#)

22. CCC KENNEDY DATA CENTER ALARM RESPONSE

Console operators, when responding to alarms received from the Kennedy Data Center (KDC) at Kennedy Space Center, shall do so in accordance with CCC Desk Instruction CCC-I-0025, "CCC Kennedy Data Center Alarm Response."

[CCC-I-0025, CCC Kennedy Data Center Alarm Response](#)

23. CRITERIA FOR STARTING A CHILLER AT THE UTILITY ANNEX ON THE EPP

Console operators, when receiving a request from the Utility Annex plant operators to either (1) start or swap a chiller; or (2) To start a Chiller when the Emergency Power Plant (EPP) is acting as the primary power source, shall provide denial or approval to do so in accordance with CCC Desk Instruction CCC-I-0026, "Criteria For Starting A Chiller At The Utility Annex On The Emergency Power Plant."

[CCC-I-0026, Starting A Chiller At The Utility Annex on the EPP](#)

24. KCCS SCREEN I-NOTE CHECKLIST

At least one time per week, a certified power console operator (JSEP and/or JBEP) shall use form CCC-F-0027A (KCCS Power Screen I-Note Checklist) and a certified utility console operator (JBFX, JBAC and/or JBPN) shall use CCC-F-0027B (KCCS Utility Screen I-Note Checklist) to conduct a complete review of all existing I-notes on either the KCCS utility or KCCS power screens in accordance with CCC Desk Instruction CCC-I-0027 "KCCS Screen I-Note Checklist."

[CCC-I-0027, KCCS Screen I-Note Checklist](#)

25. FREEZER AND COOLER ALARM RESPONSE

All Freezer and Cooler alarms received on the Utilities Consoles in the CCC shall be responded to and reported in accordance with the CCC Desk Instruction CCC-I-0028, "Freezer and Cooler Alarm Response."

[CCC-I-0028, Freezer and Cooler Alarm Response](#)

26. CRITERIA FOR STARTING AN IACP CHILLER WHEN USS-119 IS SINGLE-ENDED

Console Operators, when receiving a request from the IACP operators to start a chiller, and Substation USS-119 in in a single-ended configuration, shall provide denial or approval to do so in accordance with CCC Desk Instruction CCC-I-0029, "Criteria For Starting A Chiller At The IACP When Substation USS-119 Is Single-Ended"

[CCC-I-0029, Criteria For Starting A Chiller At The IACP When Substation USS-119 Is Single-Ended](#)

27. CCC ODMS REPORTING REQUIREMENTS

Console Operators, when reporting any alarms, issues, calibrations, scheduled outages, etc. for any ODMS unit monitored on KCCS, shall perform such notifications in accordance with CCC Desk Instruction CCC-I-0030, "CCC ODMS Reporting Requirements"

[CCC-I-0030, CCC ODMS Reporting Requirements](#)

28. CCC MOBILE LAUNCHER ODMS ALARM RESPONSE REQUIREMENTS

Console Operators, when receiving Mobile Launcher ODMS alarm on the console shall respond in accordance with CCC Desk Instruction CCC-I-0032, "CCC Mobile Launcher ODMS Alarm Response Requirements".

[CCC-I-0032, CCC Mobile Launcher ODMS Alarm Response Requirements](#)

29. IMPLEMENTATION OF SWITCHING RESTRICTIONS

Power Console Operators shall implement the required switching restrictions for all Launches and Static Fire tests at KSC and CCAFS, as defined in the "Summary of Switching Restrictions for the CCC Power Console" located at the following CCC Share Drive location: [Switching Restrictions For CCC Power Console](#)

30. SPACEX LAUNCH CONTINGENCY HVAC SUPPORT

HVAC Console Operators shall implement the required facility configurations and facility HVAC securing requirements defined in MSO-I-0004, "BOSS-SPACEX Launch Contingency Support" in the event of a launch abort when a Falcon CRS is launched from Pad A at Kennedy Space Center (KSC). This includes HVAC Console operators, prior to a Falcon CRS launch, configuring all facility equipment using KCCS Screen UAA to select all Air Handlers and de-select all chilled water pumps for K6-0900 (Launch Control Center), K6-0848 (VAB Low Bay East/West) and K6-0794 (TPSF) and de-select all equipment for all other areas of the VAB, OPF, Logistics, C3PF, UTIL, LES, PCC and VABR. HVAC console operations personnel shall perform these configuration tasks using form CCC-F-0001, "HVAC Console Falcon CRS Launch Support Checklist."

[CCC-F-0001, HVAC Console Falcon CRS Launch Support Checklist](#)

RECORDS

The following records are retained by the organizations listed below:

Record	Responsible Organization
Systems Electronic Tie-In Log	Complex Control Center

ROLES AND RESPONSIBILITIES

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

Spaceport Integration Center Manager: Ensures compliance at the Spaceport Integration Center level to the requirements stated in this procedure.

Complex Control Center Staff: Ensures performance of console operations duties in accordance with this procedure.

REFERENCE DOCUMENTS

The following documents are referenced in this procedure:

Document Number	Title
CCC-I-0001	CCC Console Operator Responsibilities
CCC-I-0002	CCC Manning Schedules
CCC-I-0003	CCC Overtime Forecasting
CCC-I-0004	CCC Console Training and Certification Process
CCC-I-0005	CCC Power Fluctuation/Lightning Strike Checklist Process
CCC-I-0007	CCC BFF Alarm Response
CCC-I-0008	CCC Daily Power and Utility Systems Status Reports
CCC-I-0009	CCC Personal Leave Time Request/Approval Process
CCC-I-0010	CCC Systems Electronic Tie-In Log (SETI) Usage
CCC-I-0011	CCC Maximo Work Order Processing
CCC-I-0012	CCC Switching Order and Work Permit Process
CCC-I-0013	CCC Outage Impacting and Outage Processing
CCC-I-0014	Power Systems Map Board Maintenance and Updates
CCC-I-0016	Evaluation of Feeder Loads Before Load Sharing
CCC-I-0017	Updating Electrical Impact Sheets In SharePoint
CCC-I-0018	Assigning Equipment ID's To Electrical Equipment
CCC-I-0021	Outage Impact Issue Tracker
CCC-I-0022	CCC SSPF Science Annex Alarm Response

Document Number	Title
CCC-I-0023	Valve Configuration Matrix
CCC-I-0024	CCC NGR and VFI Fault Response Checklist
CCC-I-0025	CCC Kennedy Data Center Alarm Response
CCC-I-0026	Criteria For Starting A Chiller At The Utility Annex On The EPP
CCC-I-0027	KCCS Screen I-Note Checklist
CCC-I-0028	Freezer and Cooler Alarm Response
CCC-I-0029	Criteria For Starting A Chiller At The IACP When USS-119 Is Single-Ended
CCC-I-0030	CCC ODMS Reporting Requirements
CCC-I-0032	CCC Mobile Launcher ODMS Alarm Response Requirements
MSO-I-0004	BOSS-SPACEX Launch Contingency Support
CCC-F-0001	HVAC Console Falcon CRS Launch Support Checklist

ACRONYMS

ATS – Automatic Transfer Switch
BFF – Booster Fabrication Facility
BOSS – Base Operations and Spaceport Services Contract
CBA – Collective Bargaining Agreement
CCAFS – Cape Canaveral Air Force Station
CCC – Complex Control Center
CILC – Commercial Industrial Load Control
EPP – Emergency Power Plant
HVAC – Heating, Ventilation and Air Conditioning
IACP – Industrial Area Chiller Plant
JBAC – Call Sign For HVAC Console
JBEP – Call Sign For Low Voltage Power Console
JBFX – Call Sign For Water Console
JBPN – Call Sign For Pneumatics Console
JSEP – Call Sign For Medium/High Voltage Power Console
JSTC – Call Sign For BOSS Test Conductor
KCCS – Kennedy Complex Control Set
KDC – Kennedy Data Center
KSC – Kennedy Space Center
NGR – Neutral Grounding Resistor
NTD – NASA Test Director
ODMS – Oxygen Deficiency Monitoring System
SETI – BOSS Systems Electronic Tie-In Log
SIC – Spaceport Integration Center
SSPF – Space Station Processing Facility
UA – Utility Annex
UPS – Uninterruptible Power Supply
VFI – Vacuum Fault Interrupter

DEFINITIONS

Power Consoles – The consoles in the CCC that are operated by JBEP and JSEP certified console operators. These consoles utilize the KCCS network to provide remote command and control, as well as remote monitoring for numerous segments of the Kennedy Space Center and portions of the CCAFS 60 Hz power system.

Power Systems Map Board – An electronic single-line, automatically and manually updated, electrical distribution diagram displaying all high voltage feeders, primary switches, transformers and secondary main/tie breakers for Kennedy Space Center.

Switching Order - A sequence of written instructions to perform power system distribution switching (utilizing KSC Form 26-67).

Utility Consoles – The consoles in the CCC that are operated by JBAC, JBFX, JBWC, and JBPN certified console operators. These consoles utilize the KCCS network to provide remote command and control, as well as remote monitoring, of numerous water, HVAC, Compressed air and Pneumatic systems at KSC.

Work Permit: A document (KSC Form 26-400) used to ensure that a system has been de-energized and made safe by a switching order and protective grounds placed as required to perform specified work. It is also used to ensure that, once completed work on an electrical system has ended, all tags and grounds have been removed, and the system has been returned to normal configuration.

REVISION RECORD

The following revisions have been applied to this document:

Revision Number	Change Description	Date
0	Initial Release	07/03/12
1	Added Section 15 “KCCS Emergency Power Plant Screen Instructions”, Section 16 “Evaluation of Feeder Loads Before Load Sharing” and Section 17 “Updating Electrical Impact Sheets In SharePoint”.	04/05/13
2	Changed ARF to BFF in Section 7. Added Section 18 “Assigning Equipment ID’s To Electrical Equipment”, Added Section 19 “Pre-Approved Alternate C5 Substation Feeder Configurations”, Added Section 20 “Console Operation of Lighting Panels Associated With CILC Events” and Added Section 21 “Outage Impact Issue Tracker.”	01/22/14
3	Added Section 22 “SSPF Science Annex Alarm Response”, Added Section 23 “Valve Configuration Matrix” and Added Section 24 “NGR and VFI Fault Response Checklist.” Updated Definitions and Reference Documents.	02/12/15

4	Added Section 25 "KDC Alarm Response" and Section 26 "Criteria For Starting A Chiller At The Utility Annex On the EPP."	07/28/15
5	Added Section 27 "KCCS Screen I-Note Checklist."	01/08/16
6	Added Section 28 "Freezer and Cooler Alarm Response"	06/08/16
7	Added Section 29 "Criteria For Starting A Chiller At The IACP When USS-119 Is Single-Ended"	06/14/16
8	Added Section 30 "CCC ODMS Reporting Requirements"	05/11/17
9	Added Section 31 "Criteria For Starting A Chiller At The Utility Annex During The Temporary Post Hurricane Matthew Configuration At The C5 Substation & Utility Annex"	11/22/17
10	Added Section 32 "CCC Mobile Launcher ODMS Alarm Response Requirements"	11/19/18
11	Converted Procedure from ISC to BOSS document and added new sections for Switching Restrictions and SpaceX Launch Contingency HVAC Support	08/16/19
12	Deleted CCC-I-0015 and CCC-I-0031 references and links. Updated New BOSS Logo & Updated Signatures	01/11/24

DOCUMENT APPROVALS

1/11/2024

X Dori H. Swift

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Manager, Complex Control Center
Signed by: cards