STARTUP, RESET, OPERATE, AND SHUTDOWN MCS AND UPS SYSTEMS

TANK FARM PLANT OPERATING PROCEDURE

USQ # EV-17-1593-S, Rev. 5

CHANGE HISTORY (≤ LAST 5 REV-MODS )

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
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<tr>
<td>M-8</td>
<td>09/25/2018</td>
<td>Operations request</td>
<td>Added an attachment &quot;EPN's Inhibited per TO-600-060 Evaporator Shutdown&quot;</td>
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<tr>
<td>M-7</td>
<td>04/12/2018</td>
<td>Changes found in Periodic Review process</td>
<td>Added Signature Sheet to procedure due to the operator and SM initials in table 2 Updated records section to include Table 2 and signature sheet</td>
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<tr>
<td>M-6</td>
<td>03/19/2018</td>
<td>Operations request - 242A MCS RC3/RC2/RC1 Sampler removal impacts</td>
<td>Table 1 replaced &quot;NO FLUSH&quot; WITH &quot;MONTRING&quot;</td>
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<tr>
<td>M-5</td>
<td>12/20/2017</td>
<td>Operations request</td>
<td>Steps 5.6.1 and 5.7.1 Changed ACU-2 to 242A-VT-AC-002 and ACU-1 to 242A-VT-AC-001</td>
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<tr>
<td>M-4</td>
<td>11/21/2017</td>
<td>Operations request</td>
<td>Struck out Step 4.2.1.1&quot; NOTIFY Shift Manager that MCS will be Shut Down.&quot; and Step 4.2.1.2 &quot;ENSURE Shift Manager is aware that MCS monitoring of TK-A-350 and TK-244-A will be unavailable during MCS shutdown.&quot; Added NOTE prior to step 4.2.1.3 Modified Step 5.7.1 for flexibility.</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for the initial Start Up, Reset, Operation, and Shutdown of the 242-A Evaporator Monitoring and Control System (MCS) and Uninterruptible Power Supply (UPS) System.

1.2 Scope

This procedure applies to the MCS System and UPS System and associated components at the 242-A Evaporator.

For Startup or Shutdown, if some components will not be shut down or started, sections in this procedure may be performed or skipped as necessary to complete required configuration.

For reset or correction of offline and failed MCS components, Section 5.11 can be performed independently without performance of Sections 5.1 through 5.10.

2.0 INFORMATION

2.1 Terms and Definitions

- MCS - Monitoring and Control System
- UPS - Uninterruptible Power Supply
- CDCM - Configurator Display Control Module
- D/3 - The third (3) generation of Distributed control computer systems manufactured by GSE Process Solutions, Inc. This software runs the 242-A Evaporator Monitor and Control System
- DCM - Display Control Module (CDCM or DCM0)
- OCM - Operator Control Module (OCM0 or OCM1)
- EPN - External Point Number
- LOOP-EXC - EXC stands for excitation. The LOOP-EXC is the power source for the 8000 I/O cabinets
- WORKSTATION – Either a DCM or OCM computer used as an Operator Human Machine Interface (HMI).
2.2 General Information

2.2.1 Additional information can be found in Attachment 1.

2.2.2 Operator entries or commands to start up the system and load the micros and computers are issued at the DCM or OCM workstations. The Micros can only be loaded from the CDCM, or from DCM.

2.2.3 Once the D/3 systems (Evaporator MCS) are operating, the alarm printer (PR-CR-1) should always be on.

2.2.4 General Function 43 performed on one of the OCM or DCM Consoles inhibits alarms for EPNs shown on Faceplates 90, 91, and 92. General Function 43 must be followed by General Function 14 command to reset the alarm system.

2.2.5 General Function 14 performed on one of the CDCM Consoles regenerates the lists of Active Alarms. (For a list of all EPNs inhibited by General Function 43, see Faceplates 90, 91, and 92 on the MCS system).

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Compliance with DOE–0359, Hanford Site Electrical Safety Program is required when working with this procedure.
4.0 PREREQUISITES

4.1 Performance Documents

The following documents may be needed to perform this procedure:

- TO-600-530, Inhibit MCS Alarms at the 242-A Evaporator

4.2 Field Preparations

4.2.1 IF performing shut down of MCS, PERFORM the following:

4.2.1.1 NOTIFY software Engineer that MCS will be Shut Down AND REQUEST assistance.

4.2.1.2 ENSURE that any planned MCS shutdown activity and its impacts (inability to monitor Tank Farm alarms, data, etc.) are fully understood before proceeding.

NOTE - Performance of Table 2 not required for planned facility electrical outages.

4.2.1.3 ISSUE temporary inspections rounds per Table 2 for the duration of the outage.
5.0 **PROCEDURE**

**NOTE** - Normally in a shutdown, both OCM’s are shutdown. In the situations of troubleshooting, correcting a malfunctioning keyboard control, the software Engineer adding or deleting from a program, or per direction of the Shift Manager, either OCM may be shutdown and restarted.

- Sections 5.1 through 5.12 may be skipped, worked independently, or in any logical order, as the field conditions dictate, to achieve the required configuration.

5.1 **Shut Down the OCM0 and/or OCM1**

5.1.1 **CLICK** on “ConMan” located in the Task Bar on the bottom left screen of the OCM to be shutdown.

5.1.2 **CLICK** on the “File” menu item located in the ConMan window.

5.1.3 **CLICK** on “Exit”.

5.1.4 **CLICK** on “Yes” located in the “Exit D/3 Console Manager” pop-up window containing the message “This will terminate the Console Manager... Continue?”

5.1.5 **REPEAT** Steps 5.1.1 through 5.1.4 for all other ConMan icons in the Task Bar on the bottom left screen.

5.1.6 **CLICK** on the “Start” button located in the Task Bar on the bottom left screen.

5.1.7 **CLICK** on “Shutdown”.

5.1.8 **IN** the “Shut Down Windows” pop-up window, **SELECT** “Shutdown” **AND** **CLICK** OK.

5.1.9 **WAIT** until the computer powers off.

5.1.10 **TURN OFF** the four screen power buttons located on the front lower right-hand side of the monitors.

5.1.11 **IF** both OCM’s are to be shutdown, **REPEAT** Steps 5.1.1 through 5.1.10.
## 5.2 Shut Down the DCM0

- **5.2.1** CLICK on “ConMan” located in the Task Bar on the bottom left screen.
- **5.2.2** CLICK on the “File” menu item located in the ConMan window.
- **5.2.3** CLICK on “Exit”.
- **5.2.4** CLICK on “Yes” located in the “Exit D/3 Console Manager” pop-up window containing the message “This will terminate the Console Manager... Continue?”
- **5.2.5** REPEAT Steps 5.2.1 through 5.2.4 for all other ConMan icons in the Task Bar on the bottom left screen.
- **5.2.6** CLICK on “START” button located in the Task Bar on the bottom left screen.
- **5.2.7** CLICK on “Shutdown”.
- **5.2.8** IN the dialog box, SELECT “Shutdown” AND CLICK on OK.
- **5.2.9** IF “Shutdown” option not available, PUSH power button on computer box.
- **5.2.10** TURN OFF the DCM0 screen power button located on the front lower right-hand side of the monitor.
5.3 Shut Down the CDCM and PCMs

5.3.1 CLICK on “ConMan” located in the Task Bar on the bottom left screen.

5.3.2 CLICK on the “File” menu item located in the ConMan window.

5.3.3 CLICK on “Exit”.

5.3.4 CLICK on “Yes” located in the “Exit D/3 Console Manager” pop-up window containing the message “This will terminate the Console Manager Continue?”

5.3.5 REPEAT Steps 5.3.1 through 5.3.4 for all other ConMan icons in the Task Bar on the bottom left screen.

5.3.6 CLICK on “START” button located in the Task Bar on the bottom left screen.

5.3.7 CLICK D3 Manager.

NOTE - Username and Passwords are located in the 242-A Master Key Box.

5.3.8 LOGIN to D3Manager.

5.3.8.1 CLICK OK.

5.3.9 RIGHT CLICK PCM1B and select shutdown PCM.

5.3.9.1 CLICK “Yes” when prompted.

5.3.9.2 CLICK Execute.

5.3.9.3 CONFIRM box has green check.

5.3.10 REPEAT Step 5.3.9 for the following:
- PCM0B,
- PCM1A, and
- PCM0A.

5.3.11 EXIT out of D3Manager.

5.3.12 CLICK “Yes” when prompted.

5.3.13 CLICK Start button located in the task bar bottom left of screen.

5.3.14 CLICK on “Shutdown”.
5.3 Shut Down the CDCM and PCMs (Cont.)

5.3.15 **IN** the dialog box, **SELECT** “Shutdown” **AND** CLICK on OK.

5.3.16 **IF** “Shutdown” option not available, **PUSH** power button on computer box.

5.3.17 **TURN OFF** the CDCM screen power button located on the front lower right-hand side of the monitor.

5.3.18 **ENSURE** all power switches for the following are OFF:

- all alarm printers;
- demand printers,
- color copier, and
- Monitors.
5.4 Shut Down PCMs, 8000 I/O, and Ethernet Switches

NOTE - The 8000 I/O Cabinets are located in the MUX Room next to the Control Room.

5.4.1 OPEN the door to PCM 0/1 PCM 4200 cabinet.

5.4.2 ENSURE Power Distribution Unit PDU-A and PDU-B supply switches (16 total) located at bottom of rack are OFF (See Figure 1).

5.4.3 CLOSE the PCM 0/1 PCM 4200 cabinet door.

5.5 Shut Down UPS System

NOTE - The UPS system is located in the MUX Room next to the Control Room.

5.5.1 IF there is a power outage of the evaporator and UPS is to be shut down, PERFORM Steps 5.5.2 through 5.5.5.

5.5.2 PRESS the STOP button on the front of the UPS Panel.

NOTE - The “BYP.OP.” LED should illuminate within approximately 3 seconds.

5.5.3 CHECK that the “BYP.OP.” LED illuminates.

5.5.4 OPEN MCCB-B Battery Cabinet AND PLACE MCCB-B Battery Breaker in the OPEN (OFF) position.

5.5.5 OPEN UPS Remote Isolation Switch panel AND PLACE the following breakers in the OPEN (OFF) position.

- SW1
- SW3.

5.6 Shut Down MUX Room Air Conditioning Units

5.6.1 ENSURE the main rotary switches for MUX Room Air Conditioning Units 242A-VT-AC-001 and 242A-VT-AC-002 are OFF.
5.7 Power Up MCS and UPS Systems

Power Up UPS System

5.7.1 IF directed, PLACE the main rotary switches for MUX Room Air Conditioning Units 242A-VT-AC-001 and 242A-VT-AC-002 to ON.

5.7.2 ENSURE Breaker PNL BD F/CONTROL RM MCS located on MCC-2 in the AMU Room is ON.

5.7.3 START UPS as follows:

5.7.3.1 OPEN MCCB-B Battery Cabinet AND PLACE MCCB-B Battery Breaker in the CLOSE (ON) position.

5.7.3.2 OPEN UPS Remote Isolation Switch panel AND PLACE the following breakers in the CLOSE (ON) position.

• SW1
• SW3.

5.7.3.3 PRESS the START button on the front of the UPS Panel.

Power Up MCS

5.7.4 IF powering up MCS after electrical outage or prolonged shutdown, NOTIFY software Engineer that MCS will be powered up AND REQUEST assistance be available during start-up.

5.7.5 ENSURE circuit breaker switches 1-5, 7-18, 19, 20, 22, 23, 24, 25 and 27 located inside Panel Board F are ON to provide power to PCMs, 8000 I/O, and Control Room outlets.

NOTE - The Network Routers are located in Cabinet PCM 0/1 PCM 4200 in the MUX room.. (ES-M-LANA, ES-M-LANB, ES-M-A, ES-M-B).

5.7.6 ENSURE Power Distribution Unit PDU-A and PDU-B supply switches (16 total) located at bottom of rack are ON.

5.7.7 ENSURE the power switch for the alarm printer (PR-CR-1) located on the back right-hand side of the printer is ON (see Figure 1).
5.7 Power Up MCS and UPS Systems (Cont.)

5.7.8 **ENSURE** ready light located on top left-hand side of the HP Color Laserjet (graphic and M. B. printer) is ON (refer to Figure 3).

5.7.9 **ENSURE** the power button on the LCD screens for each workstation (OCM0 and OCM1) are ON.
5.8 Perform Initial Power Up/Start Up Of CDCM/DCM0 from Disk

Start Up the CDCM

Special Instruction

If all computer units are off, the CDCM must be powered up first.

NOTE - Start up steps are the same for both the CDCM and the DCM0.

5.8.1 PUSH the power button on the CDCM or DCM0 Personal Workstation.

NOTE - After several minutes the windows logon message will be displayed. (Welcome to Windows, Ctl Alt,Del).

5.8.2 WAIT for the Windows Logon window to be displayed.

5.8.3 TYPE “OPERATOR” in the “Username” block.

NOTE - Password is located in 242-A Master Key Box.

5.8.4 TYPE the password in the “Password” block.

5.8.5 PRESS RETURN/ENTER or “OK”.

5.8.6 WAIT for the consoles and keyboard icon to be displayed.

5.8.7 PRESS the SYSTEM STATUS key twice of the CDCM consoles.

5.8.8 CHECK that the CDCM or DCM0 status is RUNNING.

5.8.9 IF status is not RUNNING, NOTIFY Shift Manager and MCS Engineer.

5.8.10 CHECK to see that at least one CDCM ETHERNET or DCM0 ETHERNET link is online.

5.8.11 IF no CDCM ETHERNET or DMC0 ETHERNET link is online, NOTIFY Shift Manager and MCS Engineer before continuing.
5.8 Perform Initial Power Up/Start Up Of CDCM/DCM0 from Disk (Cont.)

**Start Up Remaining MCS Systems**

NOTE - After the CDCM is running, the usual sequence is to next startup DCM0 followed by OCM0, OCM1, and lastly the PCMs.

5.8.12 IF OCM0 or OCM1 is to be started, GO TO Section 5.9.

5.8.13 IF PCMs are to be loaded, GO TO Section 5.10.

5.8.14 IF all operable operator workstations and all PCMs are running, PRESS “GENL FCTN” “14”, and “ENTER” at a console to run the Alarm Regeneration Program.
5.9 Perform Initial Power Up/Start Up Of DCM0, OCM0, and OCM1 from Disk

NOTE - This section is performed only if the power to OCM0 or OCM1 workstation is OFF.

Special Instruction

If all computer units are off, the CDCM must be powered up first per Section 5.8 before the DCM0 can be powered up. The CDCM startup is followed by DCM0, OCM0, OCM1, and PCMs.

5.9.1 IF the power to OCM0 or OCM1 workstation is OFF, PERFORM Steps 5.9.2 through 5.9.18.

5.9.2 IF all computer units are off, ENSURE the CDCM is powered up first per Section 5.8 before powering up the DCM0.

5.9.3 IF OCM0 or OCM1 is under power and its status in the System Status Display is not communicating with a DCM, REBOOT OCM0 or OCM1 per Section 5.11.

5.9.4 PUSH the power button on the front of the OCM0 or OCM1 workstation.

5.9.5 TURN ON the four screen power buttons located on the front lower right-hand side of the monitors.

5.9.6 WAIT for the windows logon window to be displayed.

5.9.7 IF operator is already displayed in the “Username” block, CLICK on the “Password” block.

OR

TYPE “operator” in the “Username” block AND

PRESS TAB.

NOTE - Password is located in 242-A Master Key Box.

5.9.8 TYPE the password in the “Password” block AND

PRESS RETURN/ENTER or “OK”.
5.9 Perform Initial Power Up/Start Up Of DCM0, OCM0, and OCM1 from Disk (Cont.)

5.9.9 WAIT several minutes for the consoles and annunciator panel to be displayed.

5.9.10 IF the consoles and annunciator panel does not display or receive the “Sentinel Initialization” PERFORM the following:

5.9.10.1 CLICK on “Start” located in the Task Bar on the bottom left screen.

5.9.10.2 CLICK on “@CDMC_CONSOLE ANY.com”. (This will bring up the screen)

5.9.11 IF the remaining OCM requires start up, REPEAT Steps 5.9.3 through 5.9.10 for the other OCM.

5.9.12 PRESS the SYSTEM STATUS key twice on one of the OCM consoles being started.

5.9.13 CHECK the DCM0 and CDCM status is RUNNING.

5.9.14 IF status is not RUNNING, NOTIFY Shift Manager and MCS Engineer.

5.9.15 PRESS “quick select 1” once in the SYSTEM STATUS display to view DCM0 details.

5.9.16 NOTIFY Shift Manager and MCS Engineer of any CDCM or DCM0 ETHERNET links that are not online.

5.9.17 IF PCMs will be loaded, GO TO Section 5.10.

5.9.18 IF CDCM, DCM0, DCM1, and all PCMs are running, PRESS “GENL FCTN”, “14”, and “ENTER” at a CDCM console to run the Alarm Regeneration Program.
5.10 Perform Initial Loading of PCMs

**Special Instruction**

The CDCM must be running before the PCMs may be loaded.

5.10.1 **ENSURE** the CDCM is running as follows:

5.10.1.1 **PRESS** the SYSTEM STATUS key twice on any DCM or CDCM console.

5.10.1.2 **IF** the CDCM status is not RUNNING, **START UP** the CDCM per Section 5.8 **AND**

**GO TO** Step 5.10.2.1.

5.10.2 **CHECK** which PCMs require loading as follows:

5.10.2.1 **PRESS** the SYSTEM STATUS key twice on any DCM or CDCM console.

**NOTE** - Any PCMs which require loading will display LOAD-REQ or OFFLINE in red in the status column of the System Status Display.

5.10.2.2 **CHECK** the System Status display for each of the following PCMs:

- PCM0A
- PCM0B
- PCM1A
- PCM1B.

5.10.3 **IF** all PCMs show RUN-SEL or RUNNING, **GO TO** Step 5.10.18.

5.10.4 **IF** all PCMs show a LOAD-REQ status, **GO TO** Step 5.10.6.
5.10 Perform Initial Loading of PCMs (Cont.)

5.10.5 IF any PCM shows status as OFFLINE, **PERFORM** the following for that affected offline PCM.

5.10.5.1 **PRESS** the RESET button located on the front of the affected PCM (refer to Figure 2).

5.10.5.2 **PRESS** the SYSTEM STATUS key twice on any DCM console.

5.10.5.3 **CHECK** status of the affected PCM to be loaded is now LOAD-REQ.

5.10.5.4 **REPEAT** Steps 5.10.5.1 through 5.10.5.3 for all remaining PCMs whose status was OFFLINE in Step 5.10.2.2.

**Load PCMs**

5.10.6 **CLICK** on the “Start” button located in the Task Bar on the bottom left of the CDCM.

5.10.7 **CLICK** on “D/3 Manager”.

5.10.8 **COMPLETE** the entries on this dialog box as follows:

5.10.8.1 **IN** the DCM field, **ENTER** CDCM or DCM0.

5.10.8.2 **IN** the User Name field, **ENTER** “d3manager”.

**NOTE** - Password is located in 242-A Master Key Box.

5.10.9 **TYPE** the password in the “Password” block **AND** **PRESS** RETURN/ENTER or “OK”. (The D3Manager Main Window should now display)

5.10.10 **CLICK** on PCM to be loaded (PCM0A, PCM0B, PCM1A, or PCM1B).

5.10.11 **RIGHT-CLICK** on Selected PCM.

5.10.12 **CLICK** on “LOAD PCM” from pop up box.

5.10.13 **CLICK** on “Execute” from pop up window.
5.10 Perform Initial Loading of PCMs (Cont.)

NOTE - A green check mark on each step will indicate successful completion of that step. This process will take 1 to 2 minutes to complete.

5.10.14 AFTER approximately 2 minutes, ENSURE all steps complete successfully as indicated by a green checkmark on each step.

5.10.15 REPEAT steps 5.10.10 thru 5.10.14 until all PCM’s are loaded.

5.10.16 EXIT “D/3 Manager”.

5.10.17 PERFORM the following actions to verify the status of all PCMs that were just reloaded:

5.10.17.1 PRESS the SYSTEM STATUS key twice on any DCM console.

5.10.17.2 CONFIRM the status of all PCMs is shown as RUN-SEL or RUNNING.

5.10.17.3 IF not all PCMs status are shown as RUN-SEL or RUNNING on the SYSTEM STATUS display, NOTIFY Shift Manager and MCS Engineer before continuing this procedure.

5.10.18 PRESS QUICK SELECT key for each PCM that was just reloaded AND CONFIRM the following:

- PCMs SYNC STATUS is shown as IN SYNC for SCAN, DSCAN, DEVSCAN, SEQEX, and DVQUE
- PCM’s ETHERNET links are online
- All I/O summaries are “OK”.

5.10.19 IF any of the following occur to PCMs that were just reloaded, NOTIFY Shift Manager and MCS Engineer before continuing:

- PCM does not show IN SYNC for SCAN, DSCAN, DEVSCAN, SEQEX, and DVQUE
- PCM ETHERNET links are not online
- All I/O summaries are not “OK”.

5.10.20 PRESS the SYSTEM STATUS key twice on any DCM or CDCM console.

5.10.21 CONFIRM that PCMOA is RUN-SEL and PCMOB is RUNNING.

5.10.22 IF PCMOA is not RUN-SEL, NOTIFY the MCS Engineer.
5.10 Perform Initial Loading of PCMs (Cont.)

5.10.23 CONFIRM that PCM1A is RUN-SEL and PCM1B is RUNNING.

5.10.24 IF PCM1A is not RUN-SEL, NOTIFY the MCS Engineer.

Check Sequence Program Statuses

5.10.25 PRESS GRAPHIC, 43, and ENTER to call up the Program Status graphic.

5.10.26 CHECK that all program statuses are shown as RUNNING or WAIT, and are shown in green.

5.10.27 IF any program status is shown as NOT RUNNING OR TRAPPED, and are shown in red, GO TO 5.10.6 AND

   REPEAT reload of PCM’s one time.

5.10.28 IF the program still does not respond, NOTIFY the MCS Engineer.

Inhibit Shutdown Alarms

5.10.29 PRESS GENL FCTN, 43, and ENTER to inhibit the Shutdown Alarms.

5.10.30 WAIT until screen changes and displays GENERAL FUNCTION 43 IS COMPLETE RUN GENERAL FUNCTION 14.

5.10.31 PRESS GENL FCTN, 14, AND ENTER to regenerate the Alarm list.
5.10 Perform Initial Loading of PCMs (Cont.)

5.10.32 CHECK the 242-A INHIBITED ALARM LOGBOOK for other Alarms which were inhibited before the MCS System was shut down and need to be inhibited again to match the previous System configuration.

5.10.33 IF any Alarms need to be inhibited again to match the previous System configuration, INHIBIT the alarms per TO-600-530.

5.10.34 CHECK devices are positioned per Table 1 - MCS System Control Settings, OR

CHECK devices are positioned as directed by Shift Manager.

5.10.35 IF a device was positioned differently at the direction of Shift Manager than listed on Table 1, PERFORM the following:

5.10.35.1 STRIKEOUT the STATUS of the device in Table 1 AND INITIAL the strikeout.

5.10.35.2 RECORD the actual status in the comment section of Table 1.

5.10.36 IF the P1 Alarm Summary or the P2 Alarm Summary contain alarms that are Inhibited as shown on Faceplates 90, 91, or 92, REBOOT CDCM, DCM0, per Section 5.11 AND RETURN to this step.

5.10.37 NOTIFY Shift Manager that MCS and UPS Systems are restarted.
5.11 Reboot Failed or Offline DCM, OCM, PCM

5.11.1 IF one of the following conditions occur, PERFORM the appropriate steps to restore the units to operating condition;
- One or more of the DCM units (i.e., CDCM, DCM0) are indicated as “OFFLINE” or “STANDBY” on a SYSTEM STATUS display
- OCM0 or OCM1 is not responding or is locked up
- One or more of the PCM units (PCM0B, PCM1A, or PCM1B) are indicating “LOAD-REQ” or “OFFLINE” (failed) on a SYSTEM STATUS display
- Screens are blank and/or time not advancing.

5.11.2 IF DCM or PCM is not operating properly, GO TO Step 5.11.6.

5.11.3 SHUTDOWN affected OCM per Steps 5.1.1 through 5.1.9 AND RETURN to Step 5.11.4,

OR

IF unable to perform a normal shutdown, PRESS AND HOLD the workstation power button until the computer shuts down.

5.11.4 RESTART the affected OCM per Steps 5.9.4 through 5.9.17 AND RETURN to Step 5.11.5.

5.11.5 IF OCM(s) continues to operate abnormally, NOTIFY Shift Manager and MCS Engineer AND EXIT this procedure.

5.11.6 PRESS SYSTEM STATUS key twice on any DCM or OCM console.
5.11 Reboot Failed or Offline DCM, OCM, PCM (Cont.)

NOTE - An affected OCM, DCM, or CDCM system may show “RUNNING” when it may actually be “STANDBY” or “OFFLINE”. Checking System Status” on other console systems can confirm actual status.

5.11.7 IF DCM status accessed in Step 5.11.6 at DCM0 console is “RUNNING”, CHECK CDCM or DCM0 status for “OFFLINE”, “STANDBY”, or “RUNNING”.

5.11.7.1 IF CDCM’s status at DCM console accessed in Step 5.11.6 is “RUNNING”, NOTIFY Shift Manager and MCS Engineer before continuing shutdown/reboot process.

5.11.8 IF PCM0A, PCM0B, PCM1A or PCM1B status is listed as “LOAD-REQ” or “OFFLINE”, GO TO Step 5.11.10.

5.11.9 IF CDCM or DCM0 status shows “OFFLINE” or “STANDBY”, PERFORM the following:

5.11.9.1 SHUTDOWN the CDCM or DCM0 per Steps 5.2.1 through 5.2.8.

5.11.9.2 RESTART the CDCM or DCM0 per Steps 5.8.1 through 5.8.11.

5.11.9.3 PRESS SYTEM STATUS key twice on any DCM or OCM console.

5.11.9.4 IF CDCM or DCM0 continues to indicate “OFFLINE” or “LOAD-REQ”, NOTIFY Shift Manager and MCS Engineer AND EXIT this procedure.

5.11.10 IF a PCM system status display shows “LOAD-REQ” status, RELOAD affected PCM’s) per Steps 5.10.1 through 5.10.31.

5.11.11 PRESS SYTEM STATUS key twice on any DCM or OCM console.

5.11.11.1 IF any PCM continues to indicate “OFFLINE” or “LOAD-REQ”, NOTIFY Shift Manager and MCS Engineer AND EXIT this procedure.
5.12 Test and Adjust Critical Alarm Horns

NOTE - Having all P1 critical alarm horns in service with the volume turned up will result in decibel levels in excess of 100 db. The alarm horns are located inside the D/3 keyboards. A volume adjustment for a horn is located on the top edge of each keyboard. Keeping the volume adjustment below about 1/3 to 1/2 and having the volume on only one keyboard will keep the decibels at acceptable levels.

5.12.1 PERFORM the following:

5.12.1.1 CLICK once with the left mouse button on the console manager “CONMAN” located in the windows taskbar (bottom of monitor).

5.12.1.2 CLICK once with the left mouse button on the small square box located on lower right corner of Console Manager window to turn on alarm test.

5.12.1.3 USING knob on back of appropriate keyboards, ADJUST volume of keyboard as desired.

5.12.1.4 CLICK once with the left mouse button on the small square box located on lower right corner of Console Manager window to turn off alarm test.

5.12.1.5 CLICK once with the left mouse button on the console manager “CONMAN” located in the windows taskbar (bottom of monitor).
5.13 Records

5.13.1 **PERFORM** the following for records identified within this procedure.

5.13.1.1 **RECORD** the number of times the record was generated in applicable column

**OR**

PLACE a check mark (✓) in the N/A column.

5.13.1.2 **SUBMIT** the package for verification of completed records to FWS/OE/Shift Manager.

<table>
<thead>
<tr>
<th>Records Submittal Checklist</th>
<th>Number of times completed</th>
<th>N/A (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.13 Records</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table 2 - Temporary Backside Rounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signature Sheet 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FWS/OE/Shift Manager <strong>SEND</strong> the completed records to the Central Shift Office for records retention.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

________________________ / ______________________ / __________
Signature               Print                   Date

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
# Table 1 - MCS System Control Settings

<table>
<thead>
<tr>
<th>EPN</th>
<th>LOCATION</th>
<th>DESCRIPTION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB-1 ILK 15</td>
<td>G 12/6</td>
<td>PB-1 WT Fac Interlock Bypass</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>PB1-BYPASS</td>
<td>G 12/8</td>
<td>PB1 Shutdown Bypass</td>
<td>BYP-ON</td>
</tr>
<tr>
<td>JGV-SUMP</td>
<td>G 12/10</td>
<td>Pump Room Sump Transfer Control</td>
<td>Off</td>
</tr>
<tr>
<td>HV-SUMP-1</td>
<td>G 12/11</td>
<td>Pump Room Sump Raw Water Valve</td>
<td>CF-CLOSD</td>
</tr>
<tr>
<td>BOT-DUMP</td>
<td>G 12/14</td>
<td>Bottoms Dump Valve Control</td>
<td>Block</td>
</tr>
<tr>
<td>HV-CA1-10</td>
<td>G 12/15</td>
<td>Seal Water Selector</td>
<td>CF-FRW</td>
</tr>
<tr>
<td>FV-EA1-1</td>
<td>G 13/10</td>
<td>Reboiler Steam Flow Valve</td>
<td>Air on</td>
</tr>
<tr>
<td>RC1-PIG</td>
<td>G 14/6</td>
<td>Stm Condensate Sample Pig</td>
<td>MONTRING</td>
</tr>
<tr>
<td>HV-EA1-2</td>
<td>G 14/9</td>
<td>Steam Condensate Divert Valve</td>
<td>CF-NORM</td>
</tr>
<tr>
<td>HV-RC1-3</td>
<td>G 14/10</td>
<td>Steam Condensate Divert Valve</td>
<td>CF-NORM</td>
</tr>
<tr>
<td>HV-CA1-2</td>
<td>G 15/11</td>
<td>Slurry Flush Valves</td>
<td>Manual and Block</td>
</tr>
<tr>
<td>JGV-STMFL</td>
<td>G 15/12</td>
<td>Bottoms Steam Flush JG Valve</td>
<td>Off</td>
</tr>
<tr>
<td>HVEC2/3-1</td>
<td>G 16/7</td>
<td>Vacuum Jets Steam Valve</td>
<td>CF-CLOSD</td>
</tr>
<tr>
<td>FIC-EC3-1</td>
<td>G 16/9</td>
<td>EC2/EC3 Flow Cntrl Valve</td>
<td>Output=100% (Closed)</td>
</tr>
<tr>
<td>FIC-EC1-1</td>
<td>G 17/5</td>
<td>E-C-1 Flow Control Valve</td>
<td>Output=0% (Closed)</td>
</tr>
<tr>
<td>RC2-PIG</td>
<td>G 17/6</td>
<td>Used Raw Water Sample Pig</td>
<td>MONTRING</td>
</tr>
<tr>
<td>PIC-EC1-2</td>
<td>G 17/8</td>
<td>URW Backpressure Regulator</td>
<td>Output=0% (Open)</td>
</tr>
<tr>
<td>EX-C-1</td>
<td>G20/6</td>
<td>Vessel Vent Exhauster</td>
<td>CF-ON</td>
</tr>
<tr>
<td>HV-RC3-3</td>
<td>G44/6</td>
<td>PC Divert Valve</td>
<td>Normal</td>
</tr>
<tr>
<td>RC3-PIG</td>
<td>G44/9</td>
<td>Process Condensate Sample Pig</td>
<td>MONTRING</td>
</tr>
<tr>
<td>HV-CA1-1</td>
<td>G 301/8</td>
<td>Evaporator Feed Valve</td>
<td>CLOSED</td>
</tr>
<tr>
<td>DUMP-ILNK</td>
<td>G 301/12</td>
<td>102-AW Press Interlock Bypass</td>
<td>NOBYPASS</td>
</tr>
</tbody>
</table>

Comments:
Startup, Reset, Operate, and Shutdown MCS and UPS Systems

Table 2 - Temporary Backside Rounds

<table>
<thead>
<tr>
<th>DATE:</th>
<th>TIME:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**CONDENSER ROOM INSPECTION**
No indications of malfunctioning equipment. (Lack of power to indicating lights, abnormal noises from operating equipment, etc.)

**HVAC ROOM INSPECTION**
No indications of malfunctioning equipment. (Lack of power to indicating lights, abnormal noises from operating equipment, etc.)

**HOT EQUIPMENT ROOM INSPECTION** (use viewing window in AMU room for inspection)
No indications of malfunctioning equipment. (Lack of power to indicating lights, abnormal noises from operating equipment, etc.)

**WATER SERVICE BUILDING INSPECTION**
No indications of malfunctioning equipment. (Lack of power to indicating lights, abnormal noises from operating equipment, etc.)

**AMU ROOM INSPECTION** and **MCC BREAKER INSPECTIONS**
No indications of malfunctioning equipment. (Lack of power to indicating lights, abnormal noises from operating equipment, etc.)

- **Recirc Pump P-B-1 (MCC-3 Cubicle A1) DISCONNECT:** OFF*/ON**
- **Tank Condensate pump P-C-100 (MCC-1 Cubicle D1) DISCONNECT:** OFF*/ON**
- **Condensate Recycle Pump P-C106 (MCC-1 Cubicle G6) DISCONNECT:** OFF*/ON**
- **Variable Frequency Drive Slurry Pump P-B-2 VFD:** OFF*/ON**
- **Seal Water Pump P-C-105 (Panel B, Breaker 12) BREAKER:** OFF*/ON**
- **Pump P-RC-1 Steam Condensate Sample Pump (Panel b, Breaker 26) BREAKER:** OFF*/ON**
- **P-C-105A Seal Water Booster Pump (Panel B Breaker 29) BREAKER:** OFF*/ON**

* - Expected position of breakers/disconnects during SHUT DOWN Mode is OFF.
** - Expected position of breakers/disconnects during OPERATION Mode is ON.

<table>
<thead>
<tr>
<th>DATE:</th>
<th>TIME:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

Operators Initials:             
SM Initials:                

Desired Periodicity: ________________
Signature Sheet 1

All personnel performing signature required steps shall enter their printed name, signature, and initials below.

<table>
<thead>
<tr>
<th>Name (Printed First &amp; Last)</th>
<th>Signature</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
Figure 1 – PCM4200
Figure 2 – Top Portion of PCM4200

- PCM A Primary
- PCM B Backup
- Recessed Reset Push Switch
- A-B Selector Toggle Switch
Figure 3 - Control Consoles

**LEGEND**

CDCM - CONFIGURATOR DISPLAY CONTROL MODULE
DCM - DISPLAY CONTROL MODULE
OCM - OPERATOR CONTROL MODULE
PCM - PROCESS CONTROL MODULE
Attachment 1 – Additional Information

1. The 242-A MCS consists of the following hardware devices:
   - Two Printers (PR-CR-1, PR-CR-2) for alarm and report documentation/Graphics
   - Two Display Control Module (DCM) workstations (CDCM, DCM0)
   - Two Operator Control Modules (OCM0, OCM1)
   - Two Process Control Module (PCM) microprocessors with backups (PCM0A, PCM0B, PCM1A, and PCM1B)
   - 11 8000 I/O cabinets for input and output.

2. Field input and output (I/O) signals are connected to the system in the PCM 8000 I/O cabinets. Field I/O signals are distributed among two separate PCMs, PCM0 and PCM1, which provide the interface to the field equipment. The 242-A Evaporator inputs are hardwired to termination strips in the 5 PCM0 8000 I/O cabinets. Some Tank Farm inputs are connected to the PCM0 8000 I/O cabinets but most Tank Farm inputs are hardwired to the 6 PCM1 8000 I/O cabinets. A few evaporator signals are terminated on PCM1.

3. The PCMs, also called microprocessors or micros, are located in cabinet; PCM 0/1 PCM 4200. The Microprocessors are where the process control programs actually run. There are two PCM0 microprocessors (PCM0A and PCM0B) and two PCM1 microprocessors (PCM1A and PCM1B). These microprocessors are configured as redundant units and have identical capabilities. Both microprocessors run continuously with one performing process control functions while the other is held in reserve as the backup microprocessor. In the event the controlling microprocessor fails the backup microprocessor takes over control of the process without loss of control continuity (undergoes a bumpless transfer).

4. The OCM and DCM workstations are the human interface with the Evaporator process. The Workstations provide the operator with system, faceplate, graphic, trend, and alarm summary displays. Process information is accessed and process control and alarm acknowledgment is performed at the workstations. The displays and databases for each workstation are generic in nature so that all Evaporator, Tank Farm, and HVAC information can be obtained at any workstation.

5. There is one alarm printer (labeled PR-CR-1).
Attachment 2

EPN’s Inhibited per TO-600-060 Evaporator Shutdown

When the Evaporator is being shut down to Shutdown mode the following EPN’s are inhibited using General Function 43 per TO-600-060 and Stay inhibited until the facility is restarted using General Function 34 per TO-600-020.

To verify the most current EPN’s inhibited by the General Function 43 check faceplates 90, 91 and 92.

**Faceplate 90**

<table>
<thead>
<tr>
<th>PI-CA1-11</th>
<th>PIC-CA1-7</th>
<th>LIC-CA1</th>
<th>LIC-CA1-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIC-CA1-3</td>
<td>FIC-CA1-6</td>
<td>VI-PB1-2A</td>
<td></td>
</tr>
<tr>
<td>VI-PB1-1A</td>
<td>VI-PB1-3A</td>
<td>FI-CA1-1</td>
<td>FI-CA1-9</td>
</tr>
<tr>
<td>FI-CA1-3</td>
<td>PI-CA1-20</td>
<td>SIC-PB2-1</td>
<td>VI-PB2-1A</td>
</tr>
</tbody>
</table>

**Faceplate 91**

<table>
<thead>
<tr>
<th>FI-CA1-2</th>
<th>PI-CA1-10</th>
<th>FIC-CA1-4</th>
<th>PI-EA1-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIC-EA1-1</td>
<td>PI-EC1-2</td>
<td>PI-EC2-2</td>
<td>FIC-EC3-1</td>
</tr>
<tr>
<td>PIC-EC1-2</td>
<td>PI-EC1-9</td>
<td>AI-RW-1</td>
<td>FI-RC2-1A</td>
</tr>
<tr>
<td>AI-STM-1</td>
<td>FI-RC1-1A</td>
<td>YS-AW102</td>
<td>PSH-CA111</td>
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</tbody>
</table>

**Faceplate 92**

<table>
<thead>
<tr>
<th>YS-PB1-1</th>
<th>TSH-PB2-1</th>
<th>YS-VFD-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZS-EA1-1C</td>
<td>YS-P-C100</td>
<td>RC2-PIG</td>
</tr>
<tr>
<td>RC3-PIG</td>
<td>RC1-PIG</td>
<td></td>
</tr>
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</table>