INDIANA CTSI Clinical and Translational Sciences Institute

STANDARD OPERATING PROCEDURE
Indiana CTSI Specimen Storage Facility

TITLE: SOP FOR ALARM SYSTEMS MANAGEMENT AND RESPONSE

CHAPTER: 2-Facility

SOP #: SF-2-4.15

SUPERSEDES SOP #: N/A

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AUTHORED BY: _____ DATE: 10-4-22
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1. REVISION
   1.1. Significant changes incorporated in this version include:
      1.1.1. Corrected Step 6.2.1.2 to define that calling 317-274-2741 in response to an alarm permits halting Remote Notification escalation, not acknowledging an alarm.
      1.1.2. Added Step 6.2.1.4 directing that RENO notifications cannot be halted from the **call-out** phone menu in response to alarm notification received via mobile or landline phone. Upon receipt of phone notification of alarm condition, you may halt RENO notifications per Section 6.2.1.2, however alarms are acknowledged per Section 6.2.1.3, AND you must report to campus.
      1.1.3. Added Step 6.3.3 directive that room temperature thermostats and sensors are not to be obstructed
      1.1.4. Corrected erroneous Section reference in Step 6.6.2.4
      1.1.5. Section 6.6.5.1 revised to add procedure for creating system backup if backup wasn't automatically generated.
      1.1.6. Section 6.6.7 clarified to direct deleting wildcard asterisk (*) from the list of points on the Query window. (To run a report for all points in response to a missed daily alarm printout, only the wildcard asterisk is needed in the list.)
      1.1.7. Added Section 6.6.8 defining the procedure to run alarm point activity log for specific type of alarm activity, such as Remote Notifications.
      1.1.8. Step 6.6.8.4 defines that "Failed to be Notified" is an expected result for notification of mobile and landline phones.
      1.1.9. Added Section 6.8 defining retention requirements for system backup files on the alarm computer, clarifying that original guidelines define retention of system backup files on the SSF shared drive, and further clarifying those original retention guidelines for system backup files on the SSF shared drive.
      1.1.10. Corrected section references altered by the addition of Section 6.8.
      1.1.11. Added Appendix F directive to confirm that room temperature thermostats and sensors are not obstructed in response to a room temperature alarm.

1.1.12. Revised Appendix K to reflect that some freezers only locally alarm visibly without an audible alarm component, therefore Step 5 acceptance criteria includes audible or visible alarm.

2. PURPOSE
   2.1. This Standard Operating Procedure (SOP) defines the procedures used in the Indiana CTSI Sample Storage Facility (SSF) to set the alarming and notification parameters for notifying personnel in response to out-of-specification conditions detected by the Siemens alarm system and to define the procedure to be followed by SSF personnel when an alarm notification is received. This procedure satisfies guidance set forth in ISBER.

3. PRINCIPLE
   3.1. Specimen storage facilities must provide continuous monitoring of critical systems in order to safeguard the specimens and to remain in compliance with "Best Practice" guidances. This is accomplished in the SSF via an electronic monitoring and alarm system designed and installed by Siemens Building Technologies. The SSF alarm system utilizes Siemens' Insight software with a Remote Notification Option (RENO) system, and staff have the option to log in to the system remotely utilizing the Remote Desktop feature in the Windows Operating System. The Insight software is installed on a centralized computer located in C158, which is supported by Clinical Affairs IT Services (CAITS). Each individual alarm point is wired to one of two central control or field panels which transmit data pertaining to the alarm point status via a network cable over the Building Level Network (BLN) to the Insight software. The functionality of these field panels and the BLN is essential to the receipt of alarm status values and remote notification. All active alarms are identified according to parameters set by SSF in the RENO alarm management console. The RENO Alarm transmits alarm notifications for each individual alarm tag to specific destinations defined by the SSF. Methods for alarm notification include electronic messaging, pagers, and phones. Effective systems for maintaining specimen integrity also require that changes are incorporated by a thoughtful, defined, and recorded procedure and alarms are responded to appropriately and, thus, these must also be defined.

4. SCOPE
   4.1. The SOP applies to SSF personnel assigned to install wiring, acknowledge and respond to the SSF alarm system notifications and, as directly communicated to via SSF Personnel, applicable investigator personnel. The alarm set point parameters are defined in the applicable equipment or facility SOP. Response to Out of Specification Conditions is managed through SF-1-10 SOP for Out of Specification Response and Notification Management. Applicable alarm points for equipment monitored by the SSF alarm and monitoring system located within or outside of the SSF Facility include:
      * Mechanical Refrigeration Units located in C135, C156, Annex I (IB097/MS-B046 Cage), and Annex III (MS-B037) only
      * Liquid Nitrogen Freezers
      * Low Oxygen Alarm
      * Room C135, IB097/MS-B046 Cage, and MS-B037 temperature
      * Electronic LN_2 "Stop" Activation (E-Stop)
      * Uninterrupted Power Supplies
      * BLN Network Connections
      * Field Panel Transmission Error

5. MATERIALS (Components of the system are further described in Appendix A)
   5.1. Insight Advanced Workstation Alarm System
   5.2. RENO Software System

5.3. APOGEE Go Software System High Speed Trunk Interface
5.4. Computer and related equipment
5.5. UPS in rooms C158B and C135
5.6. 4-12v, 7Ah batteries for UPS in C158B
5.7. 1 AA lithium or alkaline batteries for IB097/MS-B046 Cage field panel
5.8. Screw Driver
5.9. Sharpie
5.10. Tape, electrical
5.11. Labels for alarm lines
5.12. Wire, 18 gauge
5.13. Wire nuts
5.14. Wire Cutters

6. PROCEDURE

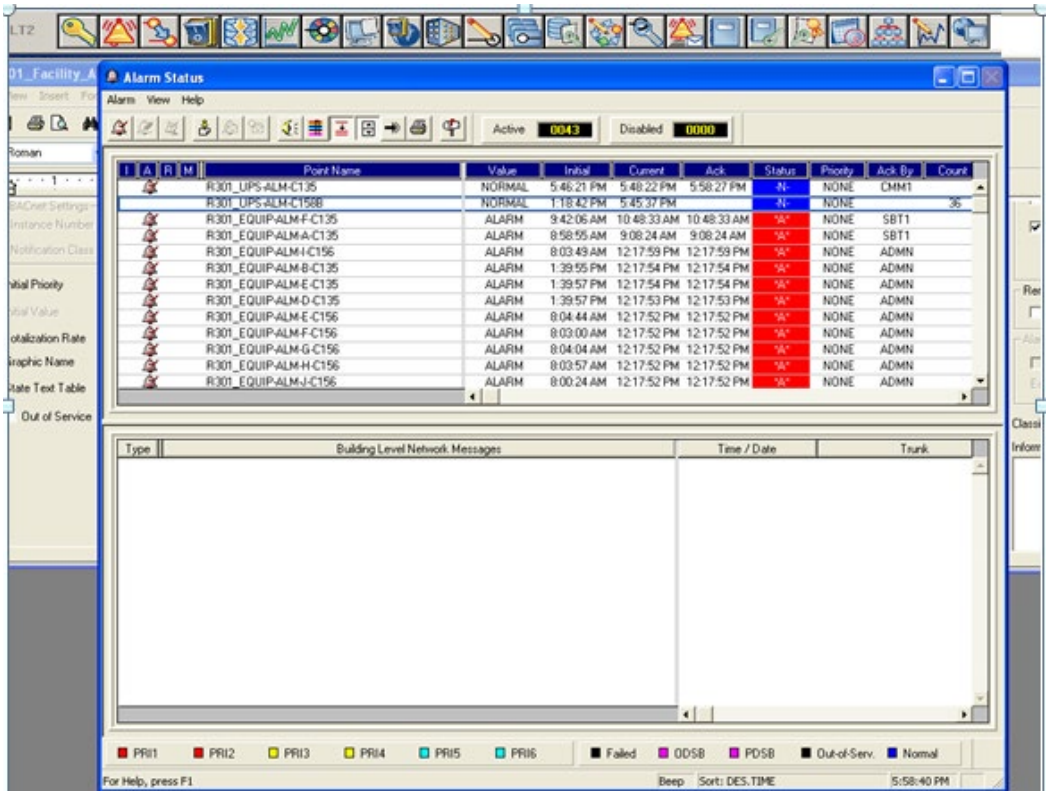
6.1. Management of SSF Personnel "on-call" status

6.1.1. SSF Personnel are "on-call" from approximately 5:30 PM to 7:00 AM on work days and 24 hours on days SSF personnel are not scheduled to work and as needed to provide 24 hour/7 day per week coverage. If the on-call person is unable to respond it is the responsibility of this person to notify the director or, if unable to reach the director, notify other SSF staff to arrange for alarm response to be covered.

6.1.2. SSF Management manages the on-call schedule. Conflicts are referred to the SSF Director.

6.1.3. On-call schedules are maintained on a shared SSF calendar and current contact information is listed in Appendix D (template).

6.2. **SSF Personnel response to an alarm** (Either in response to a page that is received displaying the call-back number of "317-274-2741" or to an email/phone message that is received stating that there is a point in alarm). Refer to the figure below as a reference for the screen display for points in alarm.



6.2.1. **Acknowledge the Alarm** as directed by one of the alarm notification methods or as defined below. **NOTE: Acknowledging an Alarm confirms that you are responding per applicable SOPs!**

6.2.1.1. Acknowledging Alarms (Insight Software) from the IU-CAIT-3bio1a computer.

6.2.1.1.1. Login per Section 6.5.2.

6.2.1.1.2. On the Insight software, select the Alarm Status icon. 

6.2.1.1.3. Look under the A column for no bell.

6.2.1.1.4. Absence of the bell icon indicates an alarm point that is not acknowledged.

6.2.1.1.5. Left click on the alarm point that has not been acknowledged

6.2.1.1.6. Acknowledge the alarm by selecting the bell icon on the top. 

6.2.1.1.7. The alarm point resets and the bell reappears under the A column.

6.2.1.2. Call in using a telephone to stop Remote Notification escalation.

6.2.1.2.1. Dial (317) 274-2741.

6.2.1.2.2. Enter user id and password (Assigned in Section 6.5.5.6).

6.2.1.2.3. Follow prompts to listen and stop the Remote Notification escalation (RENO).

6.2.1.2.4. Once at a computer, acknowledge the alarm via accessing the IU-CAIT-3bio1a computer directly (Section 6.2.1.1) or remotely (Section 6.2.1.3).

6.2.1.3. Access the IU-CAIT-3bio1a computer via Remote Desktop Connection to acknowledge alarms.

6.2.1.3.1. Log into the VPN for IU using the IU passphrase and login.

6.2.1.3.2. Open the "Remote Desktop Connection" program located in the START menu.

6.2.1.3.3. Enter the complete name of the computer: **IU-CAIT-3bio1a.ads.iu.edu**

6.2.1.3.4. Log in to the computer per Section 6.5.2.

6.2.1.3.5. Acknowledge the alarm per Steps 6.2.1.1.2 thru 6.2.1.1.7.

6.2.1.4. NOTE: It is not possible for RENO notifications to be halted **from the call-out** phone menu in response to alarm notification received via mobile or landline phone. Upon receipt of phone notification of alarm condition, you may halt RENO notifications per Section 6.2.1.2, however alarms are acknowledged per Section 6.2.1.3, AND you must report to campus.

6.2.2. Access the alarm system remotely per the Remote Desktop Connection to **the IU-CAIT-3bio1a computer** and determine if a condition exists that requires immediate action per the applicable SOP (Appendix F).

6.2.2.1. Note: Appendix F serves as a quick reference guide only. Staff should consult applicable facility/equipment/OOS SOPs for further details on response to individual alarms.

6.2.2.2. Appendix F must be re-verified minimally each month and when referenced SOPs are modified.

6.2.2.3. If a referenced SOP is modified, prepare a new version of Appendix F indicating any changes in applicable information and noting the new SOP version in Section 1.

6.2.2.4. **If unable to access alarm remotely – REPORT TO SSF TO INVESTIGATE**.

6.2.3. Ensure that Siemens system registers a return to NORMAL status upon resolution of the alarm condition either by reviewing the system graphics or the alarm printout. Once confirmed, acknowledge the condition returning to NORMAL status on the Siemens system. Documentation of this is provided via the daily review of the system graphics per Section 6.6.4. For alarms received involving room temperature excursions, see Section 6.3. Additionally, for alarms involving BLN or field panel failure, see Sections 6.4.1.1 and 6.4.2.3.

6.2.4. Review the Alarm Log (automatically printed for each alarm); describe response, record date/time/initials for response.

6.2.5. File in SSF Alarm Log Binder.

6.3. MRU Room Temperature

6.3.1. Room temperature sensors via the Siemens system indicate high level alarm by printing out room temperature value when room temperature rises above system set point (78°F). NOTE: The alarm printout DOES NOT indicate Alarm status.

6.3.2. The Siemens system indicates a return to a Normal room temperature by printing out again when value returns below the set point. The printout DOES NOT indicate a return to Normal status.

6.3.3. Room temperature thermostats and sensors are not to be obstructed. Do not place anything within 6" of thermostats/sensors.

6.4. Building Level Network (BLN) Disconnection/Field Panel Data Transmission Failure

6.4.1. BLN disconnection

6.4.1.1. The BLN network connection is not associated with an alarm point. Loss of network connectivity is apparent when the resulting field panel data transmission failure alarm for field panel, R3-PXCM-02-CELL (Panel #2, IB097/MS-B046 Cage and MS-B037) is activated. Documentation on the alarm print out would be per Section 6.4.2.3.

6.4.2. Field panel data transmission failure

6.4.2.1. The alarm point for each field panel is a virtual point created in the Insight software which functions as a built-in timer, or counter, that is continuously reset to zero by the active panel. If the panel fails, thus becoming inactive, it can no longer reset the counter. The alarm will activate if the timer counts above its set time defined by the user (i.e., the alarm delay), which is 10 minutes (See Appendix H).

6.4.2.2. An alarm point for a particular panel cannot reside in that same panel, because if a panel loses communication for any reason, the point will be failed on the server and no alarm will be sent. Thus, the alarm point locations as defined in the Siemens software are as follows:

MEC-01 alarm resides in the PXCM-02 panel
PXCM-02 alarm resides in the MEC-01 panel

Therefore, it is possible to receive "false" alarms. For example, when the PXCM-02 panel fails, the timer for the MEC-01 cannot be reset by the MEC-01 panel, because that point has failed with the PXCM-02 panel. When the PXCM-02 panel returns from failure, if it had been in failure for a time longer than the alarm delay, the alarm printout will indicate that the MEC-01 alarm is

"ON." This is NOT indicative of MEC-01 panel failure, and the alarm will turn "OFF" after a minute or so.

6.4.2.3. If a field panel fails, the alarm printout would immediately indicate that the panel has failed. However, the alarm is not activated, thus, RENO is not initiated, until the counter for the alarm counts above its set time. The printout would then show that the alarm is "ON." Likewise, when the panel is functioning again, the alarm printout would immediately indicate that the panel has "Returned from failure" and, subsequently, that the alarm is "OFF."

6.5. **Modifying the Alarm System**:

6.5.1. Complete the Alarm System Change Approval Log (Appendix E)

6.5.1.1. Enter the date the change request is initiated.

6.5.1.2. Enter the type and details of change requested

6.5.1.3. Justify the request

6.5.1.4. Submit for Approval

6.5.1.5. Obtain approval by the SSF Director (direct or electronic).

6.5.1.5.1. In lieu of SSF Director signatory approval prior to implementation of the change, the following are acceptable alternatives (documented by direct signature or electronic approval):

6.5.1.5.2. Approval from the Associate Director

6.5.1.5.3. Approval from Quality Assurance personnel

6.5.1.5.4. Approval from the Chair of the SSF Oversight Committee

6.5.1.5.5. Follow-up approval by the SSF Director must be confirmed by initial and date or via electronic signature. If approval is provided via electronic signature, SSF personnel reference the attached e-mail, initials of approver, date of approval, and initials and date of technician documenting approval in the space provided. For example: RO 09.10.15 (See attachment #1) MLT 09.10.15.

Complete the change per the applicable section below.

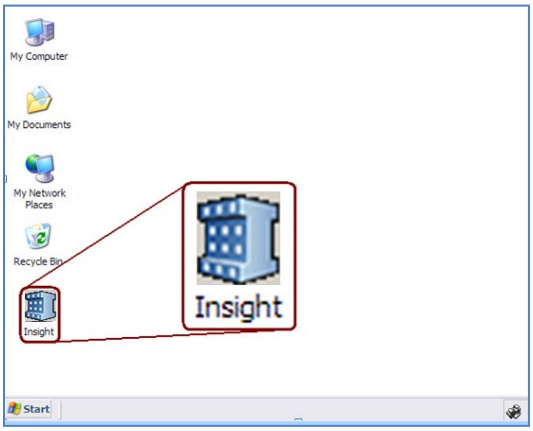
6.5.1.6. **RESTART RENO per Section 6.5.4.**

6.5.1.7. Have **a different SSF staff member** verify that the change was made appropriately. This verification should be performed within 1 week from when the change was made.

6.5.2. **Logging into the system.**

6.5.2.1. Log onto the IU ADS logon domain using your standard IU credentials (username and current IU passphrase).

6.5.2.2. Select the Insight Icon.



6.5.2.3. Application opens to display the alarm status screen as the default with the toolbar (See Appendix B for toolbar icon definitions).

6.5.2.4. Note: System closes the session and requires re-log-on after ~15 minutes of inactivity.

6.5.3. **New Personnel Set-up, Establishing Permissions, and Deactivating Users**

NOTE: Procedures for adding and removing personnel are summarized in Section 6.5.7.

6.5.3.1. Setting up a user in the Insight Software:

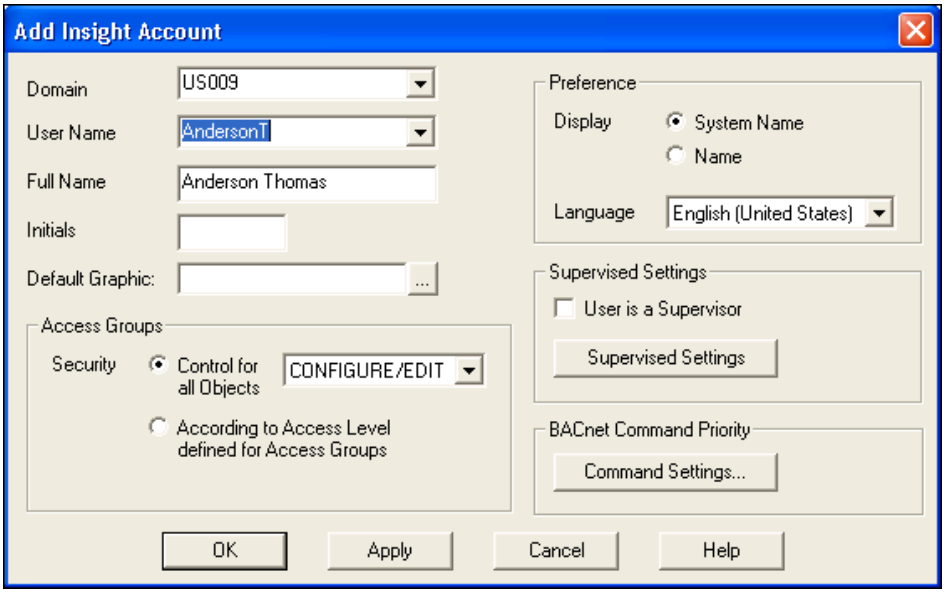
6.5.3.1.1. Log in to the system per Section 6.5.2 (must have administrator rights to the system to perform the following directives. See Section 6.5.3.2).

6.5.3.1.2. Select the user account icon. 

6.5.3.1.3. Select Account.

6.5.3.1.4. Select New.

6.5.3.1.5. Select Insight Account and a pop-up screen appears.



6.5.3.1.6. Enter the following in the pop-up screen:

6.5.3.1.6.1. User name, same as the login for Outlook.

6.5.3.1.6.2. Full Name.

6.5.3.1.6.3. Initials.

6.5.3.1.7. Leave default graphics blank.

6.5.3.1.8. Under Access Groups, assign the access level for all objects as one of the following:

6.5.3.1.8.1. Read-Only (for non-SSF staff personnel who wish to be involved for remote notification purposes only).

6.5.3.1.8.2. Command (non-SSF staff approved by management).

6.5.3.1.8.3. Configure/Edit (for SSF employees).

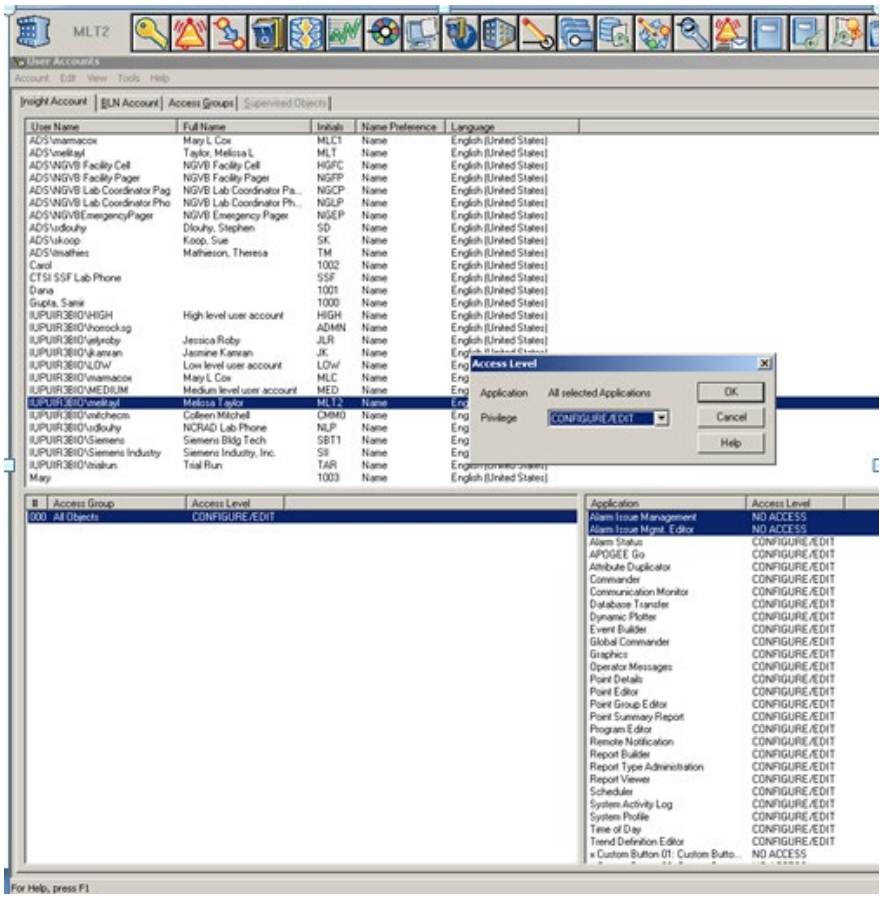
6.5.3.1.9. Under Preference:

6.5.3.1.9.1. Select System Name.

6.5.3.1.9.2. Select the APPLY button.

6.5.3.1.10. For new SSF employees only, change access levels for all Insight applications to "Configure/Edit":

6.5.3.1.10.1. Single click on the new username just created from the username list. The access levels for the Insight applications are viewable on the bottom-right portion of the screen.



6.5.3.1.10.2. By default, the access levels for the Insight applications are set to "No Access."

6.5.3.1.10.3. Select all applications (CTRL + left mouse click) having privileges that are to be changed to "Configure/Edit."

6.5.3.1.10.4. Click "edit" in the toolbar at the top of the screen and

select "access levels." Change privilege to "Configure/Edit" and then click "OK."

6.5.3.1.10.5. Alternately, each application privilege can be changed individually by double clicking on the application and changing the privilege.

6.5.3.1.11. Note: All full-time, SSF staff members trained on this SOP are granted configure/edit rights as a default. At the discretion of the SSF Director, exceptions to the default settings may be mandated.

6.5.3.1.12. Continue per Section 6.5.7.

6.5.3.2. To Set up an administrator on the IU-CAIT-3bio1a computer:
Note: Only SSF personnel trained on this SOP are granted administrator rights. At the discretion of the SSF Director, exceptions may be allowed, such as granting admin rights to a Siemens technician or CAITS personnel (IT department which manages the alarm system computer).

6.5.3.2.1. Current administrators may perform this function by logging into the system per Section 6.5.2. Current administrators are listed on Appendix I.

6.5.3.2.2. From the start button, select control panel, user accounts, user accounts, manage user accounts, and add.

6.5.3.2.3. In username field, enter IU username.

6.5.3.2.4. In domain field, enter ADS.

6.5.3.2.5. Select Next.

6.5.3.2.6. Select Administrator and click finish.

6.5.3.2.7. Continue per Section 6.5.7.

6.5.3.3. Deactivating a User in the Insight Software.

6.5.3.3.1. Log in to the system per Section 6.5.2 (must have administrator rights to the system to perform the following directives. See Section 6.5.3.2).

6.5.3.3.2. In the Insight software, select the user account icon. 

6.5.3.3.3. Right click on user account name.

6.5.3.3.4. Select delete account.

6.5.3.3.5. Select OK.

6.5.3.3.6. Continue per Section 6.5.7.

6.5.3.4. To Remove an administrator from the IU-CAIT-3bio1a computer:

6.5.3.4.1. Current administrators may perform this function by logging into the system per Section 6.5.2. Current administrators are listed on Appendix I.

6.5.3.4.2. From the start button, select control panel, user accounts, user accounts, manage user accounts.

6.5.3.4.3. Click on the username to remove.

6.5.3.4.4. Click Remove.

6.5.3.4.5. Continue per Section 6.5.7.

6.5.4. **Restart RENO**

6.5.4.1. This section must be performed by personnel logged in with administrator privileges.

6.5.4.2. On the Siemens Alarm Console, left click on the Server Manager icon located

next to the Start button. 

6.5.4.3. From the selection tree that appears, expand the tree by selecting the "+" next to Configuration.

6.5.4.4. Left click on "Services" to view the drop-down list.

6.5.4.5. Left click on "Insight RENOServer."

6.5.4.6. Left click on restart.

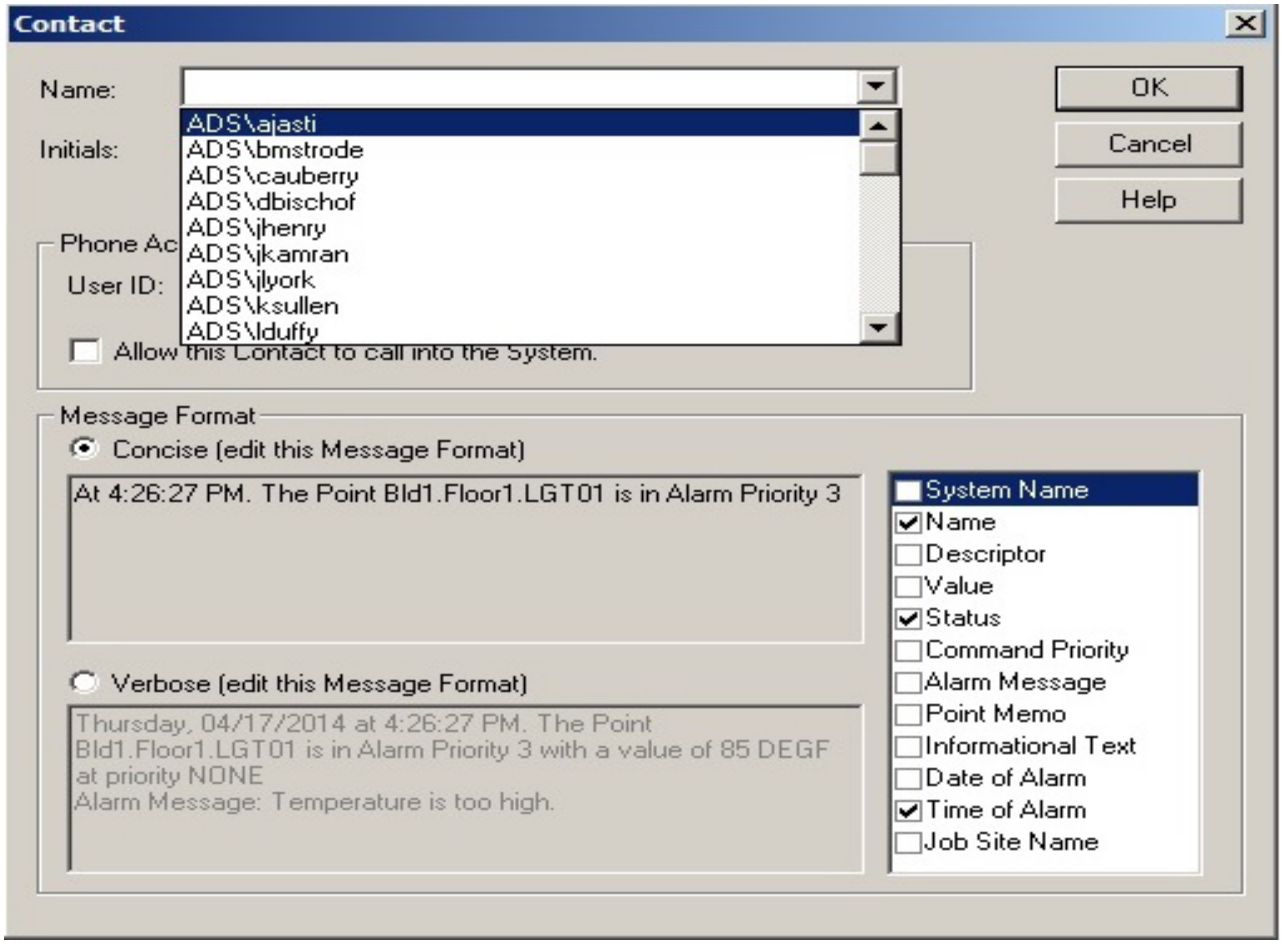
6.5.4.7. Wait until information box is completed.

6.5.5. **Creating New Staff in RENO.**

6.5.5.1. Log in per Section 6.5.2.

6.5.5.2. Click on the RENO icon. 

6.5.5.3. Right click on contacts.



6.5.5.4. Select New Contact.

6.5.5.5. Select name from drop down list by clicking the arrow to the right of the box. The initials will automatically appear.

6.5.5.6. **If privileges to acknowledge alarms are permitted**, enter a user ID and password. Note that the ID and password MUST contain only numerical values. If privileges are not permitted, proceed to step 6.5.5.10.

6.5.5.7. Check the box next to Allow this Contact to call into the system.

6.5.5.8. Select the items that should be heard when the user calls in to the system.

6.5.5.9. Select OK.

6.5.5.10. Right click on the contact's name.
6.5.5.11. **Set up each device** that needs to be utilized as a notification device.
6.5.5.12. Select OK once completed.
6.5.5.13. Repeat for each additional device (cell phone, pager, email, etc.)
6.5.5.14. To **edit a device** right click on the device.
6.5.5.15. Select properties.
6.5.5.16. Make changes and select OK.
6.5.5.17. Add new user to any groups that are applicable.
6.5.5.17.1. Right click on group name.
6.5.5.17.2. Select Add Member.
6.5.5.17.3. Enter a * in the Name field.
6.5.5.17.4. Select Find Now.
6.5.5.17.5. Left click on the device name that needs to be added.
6.5.5.17.6. Select OK.
6.5.5.18. Repeat to add as many devices as needed.
6.5.5.19. Restart RENO per Section 6.5.4 to activate modifications.
6.5.5.20. Verify that the desktop screen contains Siemens icons. Contact SSF Management if icons are not visible or if additional icons must be added. Log action on the Appendix E: Siemens Alarm System Change Approval Log. Note that per this SOP, SSF Director approval is not required to change the icons on the desktop screen.
6.5.5.21. Continue per Section 6.5.7.

6.5.6. **Escalation List Management**

6.5.6.1. Creating a New List – Refer to Appendix G.
6.5.6.1.1. Log in per Section 6.5.2.
6.5.6.1.2. Click on the RENO icon on the toolbar 
6.5.6.1.3. Right click on Escalation List.
6.5.6.1.4. Select New Escalation List.
6.5.6.1.5. Enter a name for this escalation list in the name field.
6.5.6.1.6. Complete the Emergency box by selecting the  button.
6.5.6.1.7. Enter a * in the Name field.
6.5.6.1.8. Select Find Now.
6.5.6.1.9. Left click on the device name that needs to be added.
6.5.6.1.10. Select OK.
6.5.6.1.11. Select OK.
6.5.6.1.12. Right click on new escalation list name.
6.5.6.1.13. Select insert stage.
6.5.6.1.14. Change field Type to Contact Group.
6.5.6.1.15. Enter a * in the Name field.
6.5.6.1.16. Select Find Now.
6.5.6.1.17. Left click on the group name that needs to be added.
6.5.6.1.18. Select OK.
6.5.6.1.19. Repeat until escalation list is complete.
6.5.6.1.20. Restart Reno per Section 6.5.4 to activate modifications.

6.5.6.2. Adding or Removing Contacts from Escalation List
6.5.6.2.1. Add contact
6.5.6.2.1.1. Expand the escalation list to be modified by clicking on the + symbol next to its name.

6.5.6.2.1.2. Note which groups are utilized for each stage of the escalation list
6.5.6.2.1.3. Expand the group list by clicking on the + symbol next to "Groups".
6.5.6.2.1.4. Right click on the name of each group (noted from the escalation list) to which the contact will be added.
6.5.6.2.1.5. Select Add Member
6.5.6.2.1.6. Enter "*" in the Name field
6.5.6.2.1.7. Select Find Now
6.5.6.2.1.8. Left click on the contact (or device) name that needs to be added
6.5.6.2.1.9. Select OK.
6.5.6.2.1.10. Repeat until additions are complete
6.5.6.2.1.11. Restart RENO per section 6.5.4 to activate modifications.
6.5.6.2.1.12. Continue per Section 6.5.7, if applicable.

6.5.6.2.2. Remove contact
6.5.6.2.2.1. Expand the escalation list to be modified by clicking on the + symbol next to its name.
6.5.6.2.2.2. Note which groups are utilized for each stage of the escalation list
6.5.6.2.2.3. Expand the group list by clicking on the + symbol next to "Group"
6.5.6.2.2.4. Expand each group (noted from the escalation list) by clicking on the + symbol next to the group name.
6.5.6.2.2.5. Right click on contact/device to be removed.
6.5.6.2.2.6. Select Remove Member
6.5.6.2.2.7. Select OK.
6.5.6.2.2.8. Repeat for each group in which the contact is to be removed.
6.5.6.2.2.9. Restart RENO to activate modifications.
6.5.6.2.2.10. Continue per Section 6.5.7, if applicable.

6.5.7. **Summary for Adding and Removing Personnel**

6.5.7.1. Adding an Administrator (SSF Personnel, per Step 6.5.3.2):
6.5.7.1.1. Complete the Alarm System Change Approval Log per Section 6.5.1.
6.5.7.1.2. Add to Insight per Section 6.5.3.1.
6.5.7.1.3. Add to IU-CAIT-3bio1a computer per Section 6.5.3.2.
6.5.7.1.4. Add to RENO per Section 6.5.5.
6.5.7.1.5. Add to appropriate Escalation List(s) per Section 6.5.6.2.1.

6.5.7.2. Adding an Insight User (PI personnel):
6.5.7.2.1. Complete the Alarm System Change Approval Log per Section 6.5.1.
6.5.7.2.2. Add to Insight per Section 6.5.3.1.
6.5.7.2.3. Add to RENO per Section 6.5.5.
6.5.7.2.4. Add to appropriate Escalation List(s) per Section 6.5.6.2.1.

6.5.7.3. Removing an Administrator (SSF Personnel per Step 6.5.3.2) or Insight User (PI personnel):

6.5.7.3.1. Complete the Alarm System Change Approval Log per Section 6.5.1.
6.5.7.3.2. Remove from Insight per Section 6.5.3.3.
6.5.7.3.3. Remove IU-CAIT-3bio1a computer access per Section 6.5.3.4, if applicable (SSF Personnel)
6.5.7.3.4. Remove from RENO and Escalation List(s) per Sections 6.5.6.2.2.

6.5.8. **Installation of alarm wires**

6.5.8.1. Installation for a single unit on a single alarm point (for units located in C135 and C156 only). **Clarification: This is the most common example on how to install alarm wires for one unit. Not all freezers have been found to be successfully alarmable using this method. Refer to freezer user manual or a professional for assistance as needed.**

6.5.8.1.1. Cut one strip of wire encased in white plastic long enough to reach from the banana clip in the wall to the contact points on the unit.
6.5.8.1.2. For both cut ends of wire, perform the following:
6.5.8.1.2.1. Cut off about an inch in length of the white plastic using wire cutters, exposing the inner wires wrapped in foil.
6.5.8.1.2.1.1. Do not cut through the inner wires.
6.5.8.1.2.2. Remove the foil wrap. The four inner wires wrapped in colored plastic are now visible.
6.5.8.1.2.3. GENTLY remove about ¼ to ½ inch in length of both the red and black plastic using wire cutters, exposing the bare wires inside.
6.5.8.1.2.3.1. Do not cut through the inner wires.
6.5.8.1.3. Insert one end of the red wire into the red connector point on the banana clip.
6.5.8.1.4. Insert the black wire of the same end into the black connector point on the banana clip.
6.5.8.1.5. Insert the other end of the red wire into the Normally Open (NO) contact point on the unit.
6.5.8.1.5.1. If the unit has an adapter (usually green or black), unscrew and disconnect prior to installing the wires.
6.5.8.1.6. Insert the other end of the black wire into the Common (C) contact point of the unit.
6.5.8.1.6.1. If the unit has an adapter (usually green or black), screw back into unit after installing the wires.

6.5.8.2. Installation for multiple units on a single alarm point, a.k.a. Daisy Chaining (for units located in C135 and C156 only). **Clarification: This is the most common example on how to install alarm wires for multiple units sharing a common alarm point. Not all freezers have been found to be successfully alarmable using this method. Refer to freezer user manual or a professional for assistance as needed.**

6.5.8.2.1. Cut one strip of wire encased in white plastic long enough to reach from the banana clip in the wall to the contact points on the first unit.
6.5.8.2.2. For both cut ends of wire, perform the following:
6.5.8.2.2.1. Cut off about an inch in length of the white plastic

using wire cutters, exposing the inner wires wrapped in foil.

6.5.8.2.2.1.1. Do not cut through the inner wires.

6.5.8.2.2.2. Remove the foil wrap. The four inner wires wrapped in colored plastic are now visible.

6.5.8.2.2.3. GENTLY remove about ¼ to ½ inch in length of both the red and black plastic using wire cutters, exposing the bare wires inside.

6.5.8.2.2.3.1. Do not cut through the inner wires.

6.5.8.2.3. Insert the end of the red wire into the red connector point on the banana clip.

6.5.8.2.4. Insert the other end of the red wire into the Normally Open (NO) contact point of unit #1.

6.5.8.2.4.1. If the unit has an adapter (usually green or black), unscrew and disconnect prior to installing the wires.

6.5.8.2.5. For attaching another unit, cut another strip of wire encased in white plastic long enough to reach between the contact points of the previous unit and the one that is being added, stripping the plastic as mentioned before, this time only stripping the black wires on each end.

6.5.8.2.6. Insert the end of the black wire into the Common (C) contact point of the previous unit.

6.5.8.2.6.1. If the unit has an adapter (usually green or black), screw back into unit after installing the wires.

6.5.8.2.7. Insert the other end of the black wire into the Normally Open (NO) contact point of the next unit.

6.5.8.2.7.1. If the unit has an adapter (usually green or black), screw back into unit after installing the wires.

6.5.8.2.8. Repeat steps 6.5.8.2.5 thru 6.5.8.2.7 (using additional white wires) as necessary until all units are alarmed. Then proceed to next step.

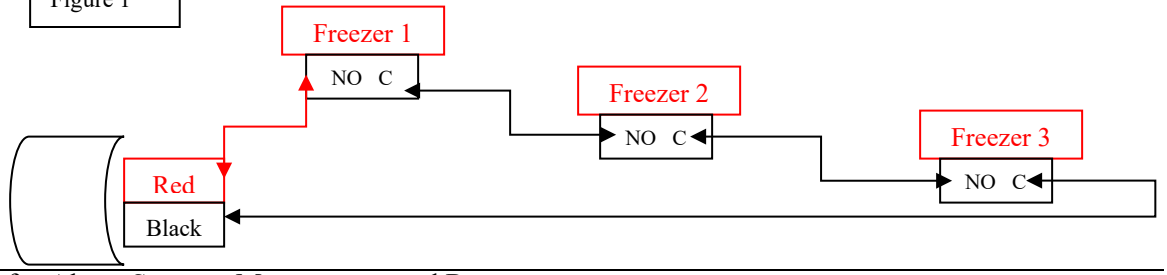
6.5.8.2.9. When there are no more units to add to the daisy chain, cut a final strip of wire encased in white plastic long enough to reach in between the contact points of the final unit and the banana clip in the wall, stripping only the black wires on both ends.

6.5.8.2.10. Insert an end of the black wire into the Normally Open (NO) contact point of the final unit.

6.5.8.2.11. Insert the other end of the black wire into the black connector point on the banana clip (See Figure 1)

6.5.8.2.12. Test Freezer Alarm Functionality for all units on the alarm point per Section 6.9 (LN_2 Freezers) or Section 6.10 (Mechanical Freezers).

Figure 1



6.5.8.3. Installation for multiple units on a single alarm point, a.k.a. Daisy Chaining (for units located in MS-B037) **Clarification: This is the most common example on how to install alarm wires for multiple units sharing a common alarm point. Not all freezers have been found to be successfully alarmable using this method. Refer to freezer user manual or a professional for assistance as needed.**

6.5.8.3.1. Cut one strip of wire encased in white plastic long enough to reach from the blue wire in the wall to the contact points on the first unit.

6.5.8.3.2. For both cut ends of wire, perform the following:

6.5.8.3.2.1. Cut off about an inch in length of the white plastic using wire cutters, exposing the inner wires wrapped in foil (Do not cut through the inner wires).

6.5.8.3.2.2. Remove the foil wrap. The four inner wires wrapped in colored (red and black) plastic are now visible.

6.5.8.3.2.3. GENTLY remove about ¼ to ½ inch in length of both the red and black plastic using wire cutters, exposing the bare wires inside (Do not cut through bare wires).

6.5.8.3.3. Blue alarm point wires, installed by Campus Facility Services, contain 2 wires, encased in white and black plastic.

6.5.8.3.4. If not already complete, strip off the blue, white, and black colored casings of the end of the wire.

6.5.8.3.4.1. Cut off about an inch in length of the blue plastic using wire cutters, exposing the inner wires (black and white plastic covered wires).

6.5.8.3.4.2. GENTLY remove about ¼ to ½ inch in length of both the white and black plastic using wire cutters, exposing the bare wires inside (Do not cut through bare wires).

6.5.8.3.4.3. Insert bare inner wire covered in white plastic, encased in blue plastic coming from wall, into Normally Open (NO) on the first freezer unit (freezer alarm adapter might have to be unscrewed to insert wires).

6.5.8.3.4.4. Leave bare inner wire covered in black plastic, encased in blue plastic, free for now.

6.5.8.3.4.5. Insert bare inner wire covered in red plastic, encased with white plastic (daisy chain wire) into Common (C) of the first unit to be on the daisy chain.

6.5.8.3.4.6. Using the red inner wire on the other end of this daisy chain wire, connect to Normally Open (NO) of the second unit to be on the daisy chain.

6.5.8.3.4.7. Connect the black inner wire of the white plastic encased daisy chain wire to Common (C) of the alarm adapter of the second unit.

6.5.8.3.4.8. Twist together the black inner wire at the other end of the white encased daisy chain wire to the bare inner wire covered in black, encased in blue plastic (use a wire nut to secure connection).

6.5.8.3.4.9. Repeat steps 6.5.8.3.4.3 through 6.5.8.3.4.8 (using additional wire encased in white plastic) as necessary until all units are alarmed. Then proceed to next step.

6.5.8.3.4.10. When there are no more units to add to the daisy chain, cut a final strip of wire encased in white plastic long enough to reach in between the contact points of the final unit and the wire encased in blue plastic in the wall, stripping only the black wires on both ends.

6.5.8.3.4.11. Insert an end of the black wire into the Common (C) contact point of the final unit.

6.5.8.3.4.12. Twist the other end of the black internal wire (white encased daisy chain wire) to the black internal wire of the blue encased wire in the wall (See Figure 2).

6.5.8.3.4.13. Test Freezer Alarm Functionality for all units on the alarm point per section 6.10 (Mechanical Freezers).

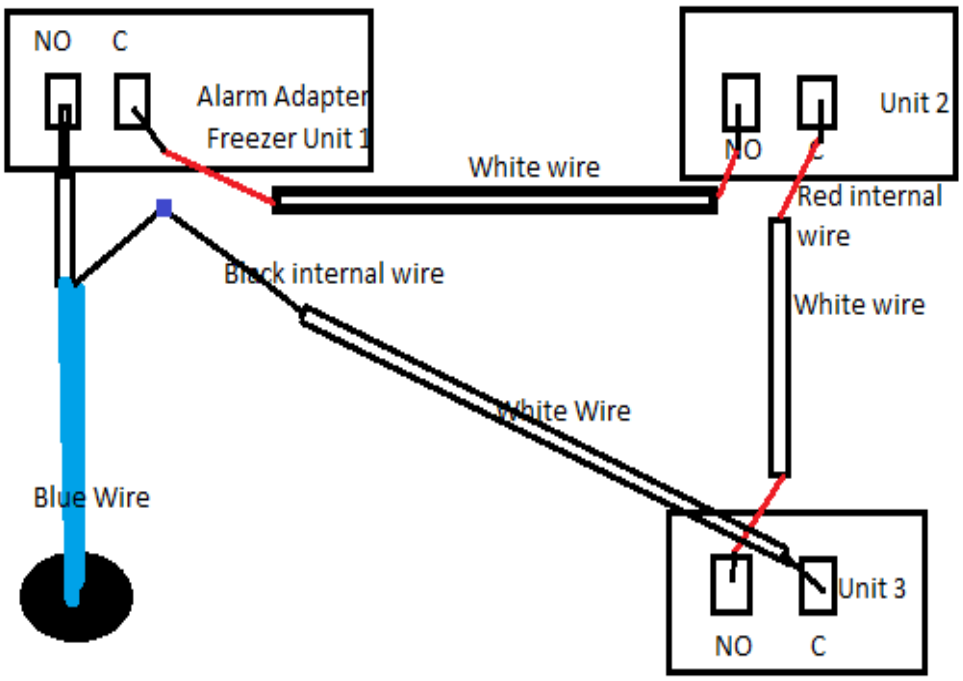


Figure 2

6.5.8.4. Installation for a single unit on a single alarm point (for units located in IB097/MS-B046 Cage, and MS-B037) **Clarification: This is the most common example on how to install alarm wires for units in these locations. Not all freezers have been found to be successfully alarmable using this method. Refer to freezer user manual or a professional for assistance as needed.**

6.5.8.4.1. Alarm point wires having a blue plastic casing have been pre-installed in the wall by Campus Facility Services.

6.5.8.4.2. Each blue wire contains only 2 wires, encased in white and black plastic.

6.5.8.4.2.1. Strip off the blue, white, and black colored casings of the end of the wire per Steps 6.5.8.3.4.1-6.5.8.3.4.2.

6.5.8.4.2.2. Attach the end of the black wire to the Common (C) and the end of the white wire to the Normally Open (NO) contact points on the unit. (Freezer alarm adapter, if present, may have to be unscrewed to insert wires).

6.5.8.4.3. The method of "Daisy Chaining" units is not necessary in IB097/MS-B046 Cage due to the fact that there were enough alarm points/wires installed for the maximum number of units that the room can hold.

6.5.8.5. Labeling the wires

6.5.8.5.1. On the back of the respective unit, a diagram indicates each of the numbered wire slots available for connections. See Appendix M (Common Wiring Diagrams) for the most common diagrams.

6.5.8.5.2. On the respective freezer unit, label each wire attached to contact points with the wire slot location using electrical tape or other labeling medium and a sharpie.

6.5.8.5.2.1. Wrap each piece of tape around the respective wire.

6.5.8.5.3. Label the white or blue alarm point wire with the alarm point ID.

6.5.8.5.4. Identify the wires on all units.

6.5.8.6. Disconnecting the Freezer Alarm

6.5.8.6.1. Prior to disconnecting the alarm, ensure that the location of the alarm wires within the alarm plug are documented as described:

6.5.8.6.1.1. On the respective freezer unit, verify that each wire is labeled legibly per Section 6.5.8.5. Label any wires that are not already legibly labeled using the black sharpie and labels.

6.5.8.6.2. Place a sign on the door of the unit stating "FREEZER ALARM DISCONNECTED: Do not use for sample storage"

6.5.8.6.3. Using a suitable screwdriver, loosen the screws holding the alarm wires to the contact points on the freezer unit and remove.

6.5.8.6.3.1. If the unit has an adapter (usually green or black) unscrew and disconnect prior to removing the wires.

6.5.8.6.4. Connect the alarm wires removed from the unit's contact points to close the alarm circuit using a wire nut suitable for 18-gauge wire.

6.5.8.6.5. Confirm that the alarm wires have been removed from the unit and connected together correctly by viewing the alarm point on the graphics of the Siemens Alarm Console per Section 6.6.1.

6.5.8.6.5.1. The value of the alarm point should read "NORMAL."

6.5.8.6.6. Document that freezer was disconnected on freezer maintenance log and/or Out of Specification Form, as applicable.

6.5.8.7. Reconnect to Freezer Alarm

6.5.8.7.1. Remove wire nut, separate wires and straighten each wire.

6.5.8.7.2. Reinsert the numbered wires to corresponding wire slots and tighten the screw to secure the wires.

6.5.8.7.3. Reinsert alarm adapter (if applicable) and tighten the screws to secure.

6.5.8.7.4. Confirm that the alarm wires have been hooked up to the unit correctly by viewing the alarm point on the graphics of the Siemens Console per Section 6.6.1.

6.5.8.7.4.1. The value of the alarm point should read "NORMAL."

6.5.8.7.5. Document that freezer was reconnected on freezer maintenance log and/or Out of Specification Form, as applicable.
6.5.8.7.6. Test Freezer Alarm Functionality per Section 6.9 (LN_2 Freezers) or Section 6.10 (Mechanical Freezers).

6.5.9. **Activating an alarm point**
6.5.9.1. Log in to the system using IU credentials per Section 6.5.2.
6.5.9.2. Select the graphics icon.
6.5.9.3. Double click on the room number in the tree where the point is located.
6.5.9.4. Left click on the alarm point selected for activation.
6.5.9.5. Drag to the point editor icon and type new name (if desired).
6.5.9.5.1. Change Descriptor only.
6.5.9.5.2. Name and System Name must not be changed and must be identical.
6.5.9.6. In the Alarm Type section, select enhanced alarms.
6.5.9.7. In the Remote Notification section, select the Enabled box.
6.5.9.8. Select properties.
6.5.9.9. Verify that "BA Alarm Pri1" is selected
6.5.9.10. Click button on the right of the "Notification Type" field.
6.5.9.11. Select Escalation in the "Type" drop-down box.
6.5.9.12. Select which escalation group list you want notified
6.5.9.13. Confirm that the Numeric Message includes ten digits (3172742741).
6.5.9.14. Select Ok.
6.5.9.15. Select Ok again.
6.5.9.16. Close box by clicking the x in the upper right corner
6.5.9.17. A confirmation box will appear. Select "Yes" to save changes.
6.5.9.18. On the point editor screen for the alarm point, uncheck the out of service box.
6.5.9.19. In the Alarm Type section, select alarm properties.
6.5.9.20. Change alarm destinations to "001) SSF ALARMS"
6.5.9.21. Select the correct Mode Point formatted like the following example: R301_EQUIP-ALM-A-C135-ENA, where "-ENA" is selected for the respective location/alarm point.
6.5.9.22. Type the number "1" into Mode Delay.
6.5.9.23. Type the number "840" into Level Delay.
6.5.9.24. Check to make sure that Acknowledge Return to Normal is selected
6.5.9.25. Check to make sure that Alarm Mode Enabled is selected
6.5.9.26. Change priority to PRI1
6.5.9.27. Click Ok.
6.5.9.28. This activation of a new alarm will print on the daily alarm print out.
6.5.9.29. Close the point editor screen by clicking the x in the upper right corner.
6.5.9.30. On the room map, click enable log report
6.5.9.31. Double click on alarm that was activated
6.5.9.32. Select the "ENABLED" button
6.5.9.33. Click command
6.5.9.34. Click refresh
6.5.9.35. Restart RENO per Section 6.5.4.

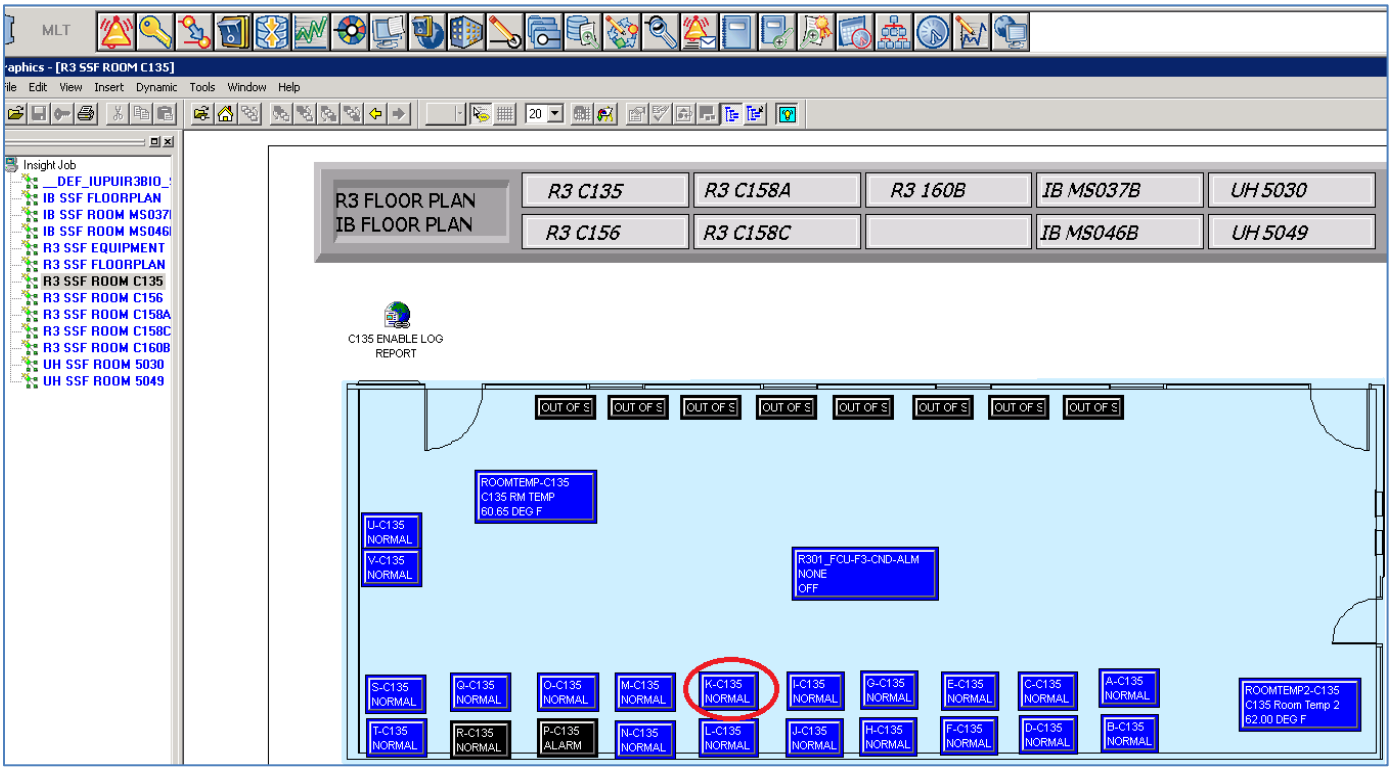
6.5.10. **Deactivating/Placing Out of Service an Alarm Point**
6.5.10.1. Log in to the system using IU credentials per Section 6.5.2.
6.5.10.2. Select the graphics icon.
6.5.10.3. Double click on the room number where the point is located.

6.5.10.4. Double click on the "Enable Log Report" for that room.
6.5.10.5. Double click on the Enable point for the out of service alarm point.
6.5.10.6. Select Disable and Command.
6.5.10.7. Left click on the alarm point selected for putting out of service.
6.5.10.8. Drag to the point editor icon. The point editor window will appear.
6.5.10.9. At the bottom left of the window click the "Out of Service" box.
6.5.10.10. In the Remote Notification box to the right in the window uncheck the "Enabled" box.
6.5.10.11. Close the point editor screen by clicking the x in the upper right corner. A confirmation box will appear to save the changes made.
6.5.10.12. Click yes.
6.5.10.13. Restart RENO per section 6.5.4.

6.5.11. SSF Siemens Alarm Notification Schema: Escalation Groups are defined in Appendix G.
6.5.12. SSF Siemens Alarm Escalation Schema: Settings for initial notification per alarm type are defined in Appendix H (Note: alarm parameters are per applicable equipment or facility SOP)

6.6. **Routine Monitoring**

6.6.1. To view alarm points for monitoring:
6.6.1.1. Log in to the system using IU credentials per Section 6.5.2.
6.6.1.2. Select the graphics icon. 
6.6.1.3. Double click on the room number in the tree where the point is located.
6.6.1.4. Read value on graphics display.



6.6.2. Daily, monitor the alarm system for any alarm activity.
6.6.2.1. Each workday, check alarm printout report to ensure there was no record of

any alarm condition notifications the previous day(s).

6.6.2.2. If there were no alarm condition notifications recorded, print out a copy of "Documentation for no alarms Generated via the Siemens Alarm System.docx." and enter the applicable date range for the printed report; Initial and Date.

6.6.2.3. If there were alarm condition notifications recorded for previous day(s), provide a detailed explanation of the alarm event and initial and date.

6.6.2.4. If it is discovered that an alarm printout was missed for a given date, an activity report may be run per Section 6.6.7 to determine if there were alarms during that time. Print the activity report and document the review on the printout.

6.6.2.5. File alarm activity printout in the Alarms binder.

6.6.3. Daily, document alarm functionality following the daily auto-reboot.

6.6.3.1. Each workday following the daily auto-reboot of the Siemens Alarm Server, (scheduled for approximately 7 AM) confirm that RENO sends alarm notifications minimally to e-mail as follows:

6.6.3.1.1. Unplug the UPS located in C158B, which connects the Siemens Alarm Server to the building electrical supply.

6.6.3.1.2. Confirm e-mail notification to an SSF staff member.

6.6.3.1.3. Document completion on Alarm System Daily Maintenance Log (Appendix N)

NOTE: If the audible alarm emitted during the routine UPS test changes to a double-beep every 5 seconds, this indicates a low battery in the UPS. A triple-beep every 5 seconds indicates that the batteries require **immediate** replacement. Replace the four 12V, 7Ah batteries with NEW batteries (i.e., not ones that have been recharged) as described in the electronic copy of the UPS Manual which is stored in the Alarm folder on the shared drive. The front cover, which is removed to access the battery pack, has a "spring latch" per the manual. This is a plastic tab on the bottom left side that must be depressed with a screwdriver (or similar) from the underside of the panel. Document battery replacement in the comment section of Appendix N.

6.6.4. Daily, review the Siemens graphic to ensure that there are not any unresolved alarm conditions. Document completion on Appendix N.

6.6.5. Weekly, on Monday in the early morning, Insight auto generates a system backup.

6.6.5.1. Weekly, on Monday, SSF personnel:

6.6.5.1.1. Confirm creation of the new backup. If backup is not generated, proceed as follows:

6.6.5.1.1.1. Open the Insight Backup Utility from "All Programs" on the Start menu.

6.6.5.1.1.2. Select "Yes" when asked if you want to allow the "Backup Utility" program to make changes to the alarm computer.

6.6.5.1.1.3. Select Back Up Database.

6.6.5.1.1.4. Select Back Up.

6.6.5.1.1.5. A system backup is saved to the backup\Current_Backups folder on the alarm system computer's C drive.

6.6.5.1.2. Copy current backup to the Alarm\System Backups\Current folder on the SSF shared drive.
6.6.5.1.3. Delete oldest file after saving the newest data on the shared drive per retention requirements defined in Section 6.8.
6.6.5.1.4. Zip (compress) the files to conserve space on the shared drive.

6.6.5.2. If the scheduled review falls on a non-working day or holiday, SSF staff should perform this review on the next business day.
6.6.5.3. Per Siemens recommendation, the SSF maintains one year of backup files in case of system corruption.
6.6.5.4. Document completion on Appendix N, page 2.

6.6.6. Weekly, on Friday, review APOGEE Insight Startup parameters as described in the electronic version of the document entitled: "Insight & Windows Services for daily check". This document is stored in the Alarm folder on the shared drive. A single page summary has been derived from this document and is incorporated to facilitate review as Appendix O. Ensure that the settings for each of the items listed on Appendix O, APOGEE Insight Services Startup Parameters – Weekly Friday Verification, posted near the alarm computer, are "**Started"** and "**Automatic**.**"** The purpose of verifying these settings is to ensure that the settings required for proper RENO notification and Insight functionality were not impacted by any system updates which occur on Thursday evenings, per CAITS IT personnel.
6.6.6.1. If the review falls on a Friday which is a non-working day or holiday, SSF staff should perform this review on the next business day.
6.6.6.2. If any of the parameters is not set to Started and Automatic, update the settings to Started and Automatic as necessary.
6.6.6.3. Document completion on Appendix N. Provide detail regarding any changes made to the settings of any of the parameters in the Comment section of Appendix N, page 2.
6.6.6.4. In the event that the SSF is notified by CAITS that unplanned updates are to occur or have occurred on a different day other than Thursday evenings, an additional verification should be performed as soon as possible after the updates occur.

6.6.7. Running a report for a specific alarm point:
6.6.7.1. Select the System Activity Log icon.
6.6.7.2. Select Query.
6.6.7.3. Select Query again, then Add.
6.6.7.4. Under the Find Now section, in the Type dropdown, select object.
6.6.7.5. Another screen appears and then select the alarm point(s).
6.6.7.6. Delete the wildcard asterisk (*) from the list of points on the Query window. (To run a report for all points in response to a missed daily alarm printout, only the wildcard asterisk is needed in the list.)
6.6.7.7. Enter the date range (maximum range is 30 days).
6.6.7.8. Run report.

6.6.8. Running a report for a specific type of activity on an alarm point (such as RENO activity):
6.6.8.1. Follow Steps 6.6.7.1 – 6.6.7.6.
6.6.8.2. Select the appropriate activity type(s) from the Action Category drop down menu, such as "Alarming or Point Memo" or "Remote Notification" (RENO).
6.6.8.3. Run report.

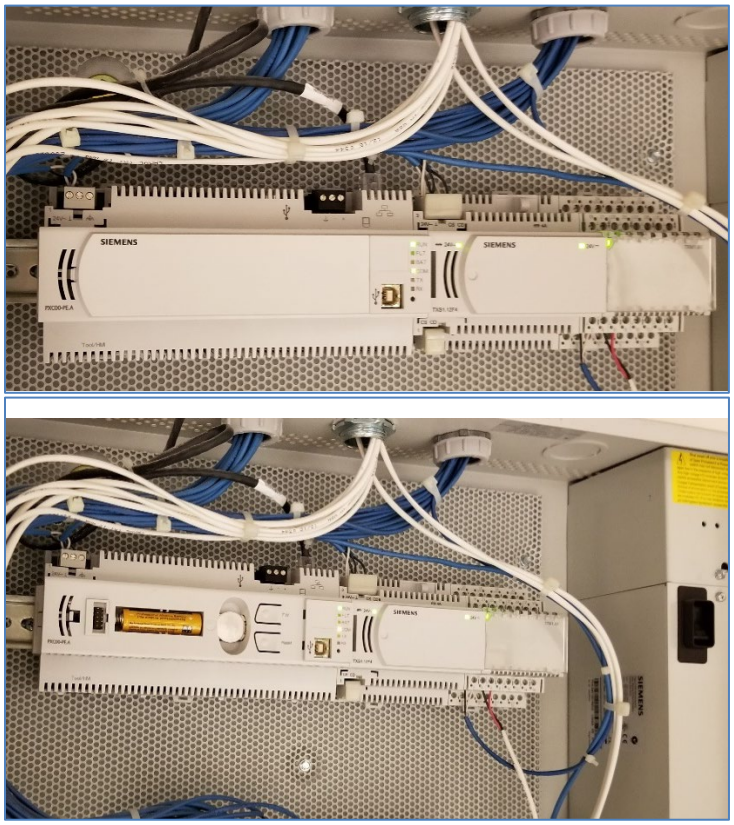
6.6.8.4. NOTE Regarding RENO Activity Data:
6.6.8.4.1. "Failed to be Notified" status is an expected result for mobile and landline phones notified by RENO.

6.7. Alarm System Maintenance and Function Verification – Annual or as otherwise indicated (Appendix C).
6.7.1. BLN (internet connectivity) disconnection notification.
6.7.1.1. Unplug the internet cable from the back of the alarm computer located in C158B.
6.7.1.2. Record time.
6.7.1.3. Monitor for RENO Notification of Field Panel PXCM-02 (Panel #2) failure (See Section 6.4.1). Record time. Acceptable if delay is ≤ 11 minutes.
6.7.1.4. Plug the internet cable back into the alarm computer.
6.7.1.5. Confirm that the system prints out "Return from failure".

6.7.2. Field panel data transmission failure notification for panel "MEC-01-CELL" (Field Panel #1, for C135/C156).
6.7.2.1. Access the field panel, labeled "MEC-1 CELL REPOSITORY" on the east wall of C135, and disconnect the cable labeled "BLN MEC-1" from the field panel.
6.7.2.2. Record time.
6.7.2.3. Monitor for RENO Notification. Record time. Acceptable if delay is ≤ 11 minutes.
6.7.2.4. Reconnect the cable to the field panel.
6.7.2.5. Confirm that the system prints out "Return from failure".

6.7.3. Field panel data transmission failure notification for remote panel "PXCM-02-CELL" (Field Panel #2, for IB097/MS-B046 Cage and MS-B037).
6.7.3.1. Access the field panel, located in the SSF Annex (IB097/MS-B046 Cage) in an electrical box labeled "Siemens", and disconnect the cable labeled "Network Cable Field Panel #2" (the only black cable, located towards the top of the box) from the field panel or turn off the field panel using the On/Off switch.
6.7.3.2. Record time.
6.7.3.3. Monitor for RENO Notification. Record time. Acceptable if delay is ≤ 11 minutes.
6.7.3.4. Reconnect the cable to the field panel or turn the switch to on position.
6.7.3.5. Confirm that the system prints out "Return from failure".

6.7.4. "PXCM-02-CELL" Field Panel #2 (IB097/MS-B046 Cage and MS-B037) backup battery replacement
6.7.4.1. Backup battery is located behind beige plastic panel labeled "Siemens" in the middle of the field panel. Panel has a "Bat" indicator LED light that is unlit when battery is adequately charged.



6.7.4.2. Replace 1 AA backup battery with a new AA alkaline or lithium battery.
6.7.4.3. Record completion on Appendix C.
6.7.4.4. NOTE: The MEC-01 panel does not require backup battery replacement. It is protected by the C135 UPS, which is connected to emergency power.

6.7.5. UPS: Test UPS Alarm for both C158B and C135.
6.7.5.1. Unplug the UPS in C158B from the electrical outlet. Record time.
6.7.5.2. Monitor for RENO Notification. Record Time. Acceptable if delay is ≤ 3 minutes.
6.7.5.3. Reconnect to main power.
6.7.5.4. Acknowledge the alarm in the alarm system per Section 6.2.1.
6.7.5.5. Repeat Steps 6.7.5.1 - 6.7.5.4 for the UPS located in C135.

6.7.6. Emergency LN_2 Stop (E-Stop)
6.7.6.1. Activate E-stop.
6.7.6.2. Record time.
6.7.6.3. Monitor for RENO Notification. Record Time. Acceptable if delay is ≤ 3 minutes.
6.7.6.4. Reset the E-Stop by pulling out the mushroom button and press the reset button on the Chart Controller inside C156. After resetting the E-Stop ensure that the associated compressed air cylinder continues to exhibit an air pressure between 500-680 kPa.
6.7.6.5. Acknowledge the alarm in the alarm status window per Section 6.2.1.

6.7.7. Low Oxygen Alarm
6.7.7.1. Reset alarm set points A1-Adj and A2-Adj both to the current oxygen level in C156, per current reading on unit (Refer to PointGard II Operating Manual located in the Operations Manager's Office for instructions on how to do this

and SF-2-2).

6.7.7.2. Record time when unit goes into alarm.

6.7.7.3. Monitor for RENO Notification. Record Time. Acceptable if delay is ≤ 3 minutes.

6.7.7.4. Re-set alarm points A1-Adj and A2-Adj to 19.5% and 19.0%, respectively.

6.7.7.5. Acknowledge the alarm in the alarm status window per Section 6.2.1.

6.7.8. LN_2 Freezer Alarm: Not Applicable

6.7.9. Refrigerator and standard mechanical freezer: Not Applicable

6.7.10. Room C135 Temperature: Not Applicable

6.7.11. Room IB097/MS-B046 Cage Temperature: Not Applicable

6.7.12. Room MS-B037 Temperature: Not Applicable

6.7.13. Record all actions and results for Alarm testing on Appendix C and attach alarm log printout.

6.8. Retention of system backups

6.8.1. Retention of system backups on the SSF shared drive:

6.8.1.1. Retain 1 rolling year of weekly backups in the Alarm\System Backups\Current folder, extending into the previous year, as needed.

6.8.1.2. In addition to retention per Step 6.8.1.1, the first backup of each of the prior years is retained in the Alarm\System Backups\Initial B-U (annual) folder.

6.8.2. Retention of system backups on the alarm computer:

6.8.2.1. For the current year, retain the first backup of each month in the backup\Current_Backups folder.

6.8.2.2. For prior years, retain the first backup of at least the previous year in the backup\First Yearly Backup folder.

6.9. Alarm Testing the LN_2 freezers (applicable if the unit has been repaired, moved to/from another location, is new to the facility, requires alarm functionality verification, has had alarm wires disconnected, or for any other approved reason).

6.9.1. Login per Section 6.5.2.

6.9.2. View alarm points per Section 6.6.1.

6.9.3. Record information on LN_2 Alarm Testing Worksheet, Appendix J. Routine annual alarm testing being performed per SF-3-2 or SF-3-16 directives is documented on Appendix B of SF-3-2 or SF-3-16, as applicable.

6.9.3.1. Unit ID defines the specific info (i.e., serial number and location ID) for a freezer/controlled environment storage unit which is the primary unit to be tested.

6.9.3.1.1. Under Steps 1 and 9 of Appendix J, place labels denoting the SN (serial number) and location ID (or record the SN and ID) for each additional unit that is connected to the same alarm point as the primary unit being tested (DO NOT include the primary unit in this documentation). **Clarification: The alarm printout for the primary unit being tested is generated automatically. For the other units, look for change in Alarm Value on the commander window (view window by double clicking alarm point on Siemens system) from NORMAL to ALARM.**

6.9.3.2. Alarm Line ID defines the Alarm point that is assigned to the primary unit in the Siemens system.

6.9.3.3. Physical Location refers to the Room # and Location of the unit being tested.

6.9.3.4. Check the box that describes the reason the alarm test is being conducted. If the reason is not listed, then check other and describe.

6.9.3.5. Recording and modification of the Mode and Level Delay (Siemens).

6.9.3.5.1. Left click the graphics icon (refer to Appendix B) for the chosen alarm point and drag to the Point Editor icon (refer Appendix B).

6.9.3.5.2. Once screen appears, select alarm properties

6.9.3.5.3. Record Mode and Level Delay

6.9.3.5.4. To modify use arrows to select new settings (Mode Delay = 0 min and Level Delay = 180 sec).

6.9.3.5.5. Select Ok.

6.9.3.5.6. Close box by clicking x in the upper right corner.

6.9.3.5.7. A confirmation box will appear. Select yes to save changes.

6.9.3.5.8. Restart RENO per Section 6.5.4 (also, defined in Step 2 of worksheet).

6.9.3.6. The remaining steps listed on Appendix J (beginning with Step 3) are to be followed as written and do not require further instructions.

6.9.3.7. Submit completed form/attachment(s) to SSF Director for review. Samples may be returned to the unit being tested prior to SSF Director as long as all units have demonstrated alarm notifications as expected and as documented by the technician performing the testing. If alarm notifications fail to meet acceptance criteria, contact SSF Management for directives. Document all actions.

6.9.3.8. File completed form.

6.10. Alarm testing the mechanical refrigeration units (applicable if the unit has been repaired, moved to/from another location, is new to the facility, requires alarm functionality verification, has had alarm wires disconnected, or for any other approved reason).

6.10.1. Login per Section 6.5.2.

6.10.2. View alarm points per Section 6.6.1.

6.10.3. Record information on Mechanical Refrigeration Unit Alarm Testing Worksheet, Appendix K. Routine annual alarm testing being performed per SF-3-1 directives is documented on Appendix B of SF-3-1.

6.10.3.1. Unit ID defines the specific info (i.e., serial number and location ID) for a freezer/controlled environment storage unit which is the primary unit to be tested.

6.10.3.1.1. Under Steps 1 and 8 of Appendix K, place labels including the SN (serial number) and location ID (or record the SN and ID) for each additional unit that is connected to the same alarm point as the primary unit being tested (DO NOT include the primary unit in this documentation). **Clarification: The alarm printout for the primary unit being tested is generated automatically. For the other units, look for change in Alarm Value on the commander window (view window by double clicking alarm point on Siemens system) from NORMAL to ALARM.**

6.10.3.2. Alarm Line ID defines the Alarm point that is assigned to the freezer in the Siemens system.

6.10.3.3. Physical Location refers to the Room # and Location of the unit being tested.

6.10.3.4. Check the box that describes the reason the alarm test is being conducted. If the reason is not listed then check other and describe.

6.10.3.5. Recording and modification of the Mode and Level Delay (Siemens).
6.10.3.5.1. Left click the graphics icon (refer to Appendix B) for the chosen alarm point and drag to the Point Editor icon (refer Appendix B).
6.10.3.5.2. Once screen appears, select alarm properties
6.10.3.5.3. Record Mode and Level Delay
6.10.3.5.4. To modify use arrows to select new settings (Mode Delay = 0 min and Level Delay = 180 sec).
6.10.3.5.5. Select Ok.
6.10.3.5.6. Close box by clicking x in the upper right corner.
6.10.3.5.7. A confirmation box will appear. Select yes to save changes.
6.10.3.5.8. Restart RENO per Section 6.5.4 (also, defined in Step 2 of worksheet).

6.10.3.6. The remaining steps listed on Appendix K (beginning with Step 3) are to be followed as written and do not require further instructions.
6.10.3.7. Submit completed form/attachment(s) to SSF Director for review. Samples may be returned to the unit being tested prior to SSF Director sign-off as long as all units have demonstrated alarm notifications as expected and as documented by the technician performing the testing. If alarm notifications fail to meet acceptance criteria, contact SSF Management for directives. Document all actions.
6.10.3.8. File completed form.

6.11. Freezer Intake
6.11.1. Upon receipt of a new freezer, place sign on front that reads "freezer alarm disconnected: do not use for sample storage."
6.11.2. Refer to Section 6.5.8 for installation of alarm wires.
6.11.3. Perform Alarm Testing for new freezer per Section 6.9 (LN_2 Freezers) or per Section 6.10 (Mechanical Refrigeration Units).
6.11.4. Complete all necessary paperwork related to addition of freezer. Refer to SOP SF-1-4 and Appendices J and K of this SOP.
6.11.5. Remove the "FREEZER ALARM DISCONNECTED" signage from the unit's door once alarm wires have been successfully connected and unit has been verified to send an alarm.
6.11.6. Document that freezer alarm was tested and functions within normal parameters on the freezer maintenance log and alarm notification print out and/or Out of Specification Form, as applicable.

6.12. **Non-Routine Maintenance**
6.12.1. In the event that repairs are needed to the Siemens alarm system, contact SSF Management.
6.12.2. SSF Management contacts the Siemens representative to initiate the repair.
6.12.3. Siemens technical representatives complete a Service Report Form. An example of the form (and the minimum content) is provided as Appendix L. Modifications to the form are acceptable as long as the minimum content defined in Appendix L is preserved.
6.12.4. Retain all documents related to the repair and initiate an evaluation for potential requalification as defined in SOP SF-1-12 SOP for Facility Commissioning and Validation/Revalidation. Documents are retained in the SSF Operations Office.

7. REFERENCES
7.1. ISBER Best Practices (current version)
7.2. Siemens Insight Rev 3.12 (Release Notes and Manual, saved on the SSF shared drive)

7.3. Siemens PXC Modular Series Manual (saved on the SSF shared drive)
7.4. Siemens on-call tech support: 1-800-832-6569
7.5. Clinical Affairs IT Services (CAITS): 317-274-5336
7.6. IU Health Security: 317-944-8000
7.7. Siemens Computer Call-Out Number: 317-321-1352
    7.7.1. Phone line used by RENO to notify escalation lists of alarm conditions
7.8. Siemens Computer Dial-In Number: 317-274-2741
    7.8.1. Phone line used by on-call personnel to call into Siemens Insight to acknowledge alarms.

8. DOCUMENTATION
8.1. Records are maintained per SF-1-6 Controlled Document Management SOP.
8.2. All Deviations are managed per the SF-1-9 Deviation Management SOP.

9. APPENDICES
The current version of each of the following appendices is used to guide and/or implement this SOP:
APPENDIX A: Components of the Siemens Alarm System (1 Page)
APPENDIX B: Toolbar icons and descriptions (1 Page)
APPENDIX C: Maintenance and Function Verification Log (1 Page)
APPENDIX D: SSF Alarm Call Personnel Log (Template) (1 Page)
APPENDIX E: Siemens Alarm System Change Approval Log (1 Page)
APPENDIX F: SSF Siemens Alarm Response Guide (1 Page)
APPENDIX G: SSF Siemens Alarm Notification Schema: Escalation Group Design (1 Page)
APPENDIX H: SSF Siemens Alarm Escalation Schema: Settings for Escalation per Alarm Type (1 Page)
APPENDIX I: Siemens Alarm Console Administrators (1 Page).
APPENDIX J: LN_2 Alarm Testing Worksheet (4 Pages)
APPENDIX K: Mechanical Refrigeration Unit Alarm Testing Worksheet (4 Pages)
APPENDIX L: Siemens Service Report Form for Alarm System Repair/Maintenance [Example] (2 Pages)
APPENDIX M: Common Wiring Diagram (1 Page)
APPENDIX N: Alarm System Daily and Weekly Maintenance Log (2 Pages)
APPENDIX O: APOGEE Insight Services Startup Parameters – Weekly Verification (1 Page)

10. COLLABORATING BIOBANK TRAINING DIRECTIVES
10.1. N/A

Components of the Siemens Alarm System:

1.1. APOGEE
- 1.1.1. Building level automation software
  - 1.1.1.1. Provides functionality to the basic system components in the building such as control panels and alarm points.

1.2. Insight
- 1.2.1. Software which provides user a graphical approach to viewing the building automation system. The user can manage and control a building from an easy to use interface.
  - 1.2.1.1. Collect, view, analyze trend information.
  - 1.2.1.2. Store and retrieve long-term information.

- 1.2.2. RENO (Remote Notification Option)
  - 1.2.2.1. Permits user to configure level of detail in the alarm messages sent to each contact person.
  - 1.2.2.2. Permits user to define group notifications.
  - 1.2.2.3. Permits user to define escalation lists for notification.

- 1.2.3. RENO / Insight Phone Lines
  - 1.2.3.1. Call-Out Number: 317-321-1352
    - 1.2.3.1.1. Phone line used by RENO to notify escalation lists of alarm conditions
  - 1.2.3.2. Dial-In Number: 317-274-2741
    - 1.2.3.2.1. Phone line used by on-call personnel to call into Siemens Insight and acknowledge alarms.

1.3. High Speed Trunk Interface (i.e., trunk port)
- 1.3.1. Small, square piece of equipment, located in C158 and connected to the alarm computer/server.
- 1.3.2. Interfaces the serial data line to the APOGEE Automation System.

1.4. UPS (Uninterrupted Power Supply)
- 1.4.1. Provides back-up power to critical equipment in the event of a power outage.
- 1.4.2. There are two UPS units located in the SSF:
  - 1.4.2.1. UPS located in C158B provides back-up power to the alarm computer.
    - 1.4.2.1.1. Unit is hard-wired and supported by IU emergency power.
  - 1.4.2.2. UPS located in C135 provides back-up power to equipment located in C135 and C156.

1.5. Control Panels (Field Panels)
- 1.5.1. Transmit data pertaining to alarm point status via a network cable over the Building Level Network (BLN) to the Insight software.
- 1.5.2. There are two control panels located in the SSF:
  - 1.5.2.1. R3-MEC-01-CELL (Panel #1) transmits status of alarm points located in the R3 building (C135 and C156).
  - 1.5.2.2. R3-PXCM-02-CELL field panel (Panel #2) transmits status of alarm points located in Annex I and Annex III (IB097/MS-B046 Cage and MS-B037).

Toolbar Icons and Descriptions

 - **Alarm Issue Management (Optional)** - Alarm Issue Management displays point alarm issues detected in your building system.

 - **Alarm Issue Management Editor (AIM) (Optional)** - Alarm Issue Management Editor allows you to define contacts and equipment information that is used when assigning a contact to an alarm issue.

 - **Alarm Status** - Alarm Status displays point alarms and Building Level Network (BLN) or Automation Level Network (ALN) messages detected in your building system.

 - **Attribute Duplicator** - Attribute Duplicator allows you to copy the properties of a point to another point or a group of points. For example, a list of analog points will have all their enhanced alarm definitions modified.

 - **Commander** - Commander lets you take manual control of a point and override any pre-established automatic controls for the point.

 - **Database Transfer** - Database Transfer provides a way for you to manually upload and download the Insight system databases between the workstation and the field panels.

 - **Point Editor** - The Point Editor is used to enter point information into the Insight system so that the Insight software can monitor and control the equipment connected to the point.

 - **Point Group Editor** - The Point Group Editor is used to organize the points in your system. Grouping points allows you create relationships and hierarchies among the points.

 - **Point Summary Report** - The Point Summary Report application allows you to create three types of printed reports containing information about the points within the field panels and devices of your Building Automation System.

 - **Program Editor (Optional)** - The Program Editor is used to create control programs with the Powers Process Control Language (PPCL).

 - **System Activity Log (Optional)** - The System Activity Log allows you to view the activities, which are logged in your system.

 - **System Profile** - System Profile gives you graphical, system-wide control for defining, configuring, and maintaining your entire building control network.

 - **Time-of-Day (TOD)** - Time-of-Day (TOD) is used to automatically command points based on a daily schedule or yearly calendar.

 - **Dynamic Plotter (Optional)** - Dynamic Plotter is used to plot point values in a continuous graph. Historical trend point values, dynamic point value changes, or a combination of historical and dynamic values can be used to analyze and report on point activity.

 - **Event Builder** - The Event Builder provides a mechanism to define Zones and Events for your building system.

 - **Global Commander** - The Global Commander allows you to issue a single command to be applied to a selected group of points in the building system.

 - **Graphics** - Graphics allows you to create and display color graphics of your facility and equipment for point monitoring and commanding.

 - **Online Documentation Screen** - The Online Documentation screen allows you navigation capabilities, global searches to the Insight Main Help files, Insight manuals (PDF), Technical Editor e-mail address, and the Siemens Web site.

 - **Panel Point Log Report** - The Point Log Report allows you to quickly create a Point Log Report without creating a report definition in Report Builder.

 - **Point Detail** - Point Details is used to view information about a logical point defined in your building system.

 - **Remote Notification (Optional)** - Remote Notification allows the Insight system to send alarm and event information to external devices. These devices are alphanumeric pagers, numeric pagers, phones, or e-mail addresses.

 - **Report Builder** - The Report Builder is used to configure report definitions. When you select a report type, Report Builder opens the report definition for the report you want to create.

 - **Report Viewer** - The Report Viewer is used to display reports on the screen, to the printer or to file.

 - **Scheduler (Report Scheduling Optional)** - Scheduler provides a way for you to schedule events, reports, and trend collection on the Insight calendar.

 - **Trend Definition Editor** - The Trend Definition Editor allows you to define trend points that will show how your building control equipment is operating over a specified time period.

 - **User Accounts** - User Accounts is used to manage access and security for the Insight software and field panels on a specified BLN or ALN.

Alarm System Maintenance and Function Verification Log
(Complete annually and as otherwise indicated) Year:

Type of Alarm or Notification	Time Activated	Time Notified	Difference (Minutes)		Acceptable	Initials/ Date	Comments / Corrective Actions (must be completed if not acceptable)
			Actual	Limit			
BLN (internet connectivity) disconnection				≤ 11	☐ Yes ☐ No		
Field Panel #1 (MEC-01) failure- C135/C156				≤ 11	☐ Yes ☐ No		
Field Panel #2 (PXCM-02) failure- IB097/MS-B046 Cage and B037				≤ 11	☐ Yes ☐ No		
UPS - Room C158B				≤ 3	☐ Yes ☐ No		
UPS - Room C135				≤ 3	☐ Yes ☐ No		
E-Stop				≤ 3	☐ Yes ☐ No		
Low Oxygen Alarm – R3 – C156 South wall				≤ 3	☐ Yes ☐ No		
Field Panel #2 (PXCM-02) Backup Battery Replacement IB097/MS-B046 Cage and B037					Completed: ☐ Yes ☐ No		
Copy of Alarm Log Attached					☐ Yes ☐ No		
Reviewed By /Date:							

Name	Email	Page #	Cell Number	Other

Effective Date: _____

Obsolete Date: _____

Siemens Alarm System Change Approval Log Year_____ Page ____of ____

Request Initiation Date	Description of SSF Alarm Modification Requested Initials/Date	Rationale for Modification Initials/Date	Request Submitted Initials/Date	Request Approved Initials/Date*	Request Completed Initials/Date	Change Verified Initial/Date

**If not completed by approver, document date of approval, approver's initials, initials and date of documenting technician, and "See attachment #XX" per example (RO 09.10.15 (See Attachment #1) MLT 09.10.15).*

SSF Siemens Alarm Response Guide

Alarm Point	Value	Expected Response
Mechanical Freezer (Ultra Low)	ALARM	Report to SSF Refer to SOP SF- 3-1 and 1-10 Appendix D.
Mechanical Freezer (Standard)	ALARM	Report to SSF Refer to SOP SF- 3-1 and 1-10 Appendix D.
Refrigerator	ALARM	Report to SSF Refer to SOP SF- 3-1 and 1-10 Appendix D.
Liquid Nitrogen Freezer	ALARM	Report to SSF Refer to SOP SF- 3-2 or SF-3-16 and 1-10 Appendix D.
Room Temperature – C135, IB097/MS-B046 Cage, and MS-B037	ALARM	Contact CFS Report to SSF if not resolved Confirm that room temperature thermostats and sensors are not obstructed. Refer to SOP SF-2-1
Low Oxygen Monitor	ALARM	Report to SSF, manually close the main LN_2 valve or press E-Stop, and notify SSF Director Refer to SOP SF-2-2
E-Stop Activation	Activated	Report to SSF and determine cause. Refer to SOP SF-2-2
Alarm Computer on Battery Power (UPS)	Activated	Report to SSF and determine cause.
BLN Disconnect	ALARM ON (for field panel PXCM-02 only)	Report to SSF. Confirm all equipment is within normal parameters. Restart Siemens Alarm Computer. If the problem still persists, Contact CAITS (317-274-5336) to resolve any IT issues. If this is ineffective in re-establishing a connection, contact the Siemens tech on call (1-800-832-6569)
Field panel data transmission failure	ALARM ON	Report to SSF. Confirm all equipment is within normal parameters. Restart Siemens Alarm Computer. If the problem still persists, Contact CAITS (317-274-5336) to resolve any IT issues. If this is ineffective in re-establishing a connection, contact the Siemens tech on call (1-800-832-6569)

Reviewed by:

SSF Specific Alarm Settings

Escalation Group	Actions			Escalation		
	A1	B2	C3	Intervals for duplicate group notification	total # of replicate groups	Elapsed Time between Escalation Groups
Group 1*	On- Call Tech	All SSF personnel	Investigator Personnel per Submission Form	15 minutes	4	1 hour
	Phone/pager Notification	E-mail				
Group Level 2	On- Call Tech **& Back-up**	N/A	Investigator Personnel per Submission Form	10 minutes	3	30 minutes
	Phone/pager Notification	N/A				
Group Level 3	All SSF Personnel	N/A	Investigator Personnel per Submission Form	30 minutes	4	2 hours
	Phone/pager Notification	N/A				
Loop back to Group 1 and Repeat until acknowledged						

*First Group 1 notification stage will include all noted actions. Subsequent Group 1 replicates (2 through 4) will include only the On-Call Tech Phone/pager action unless submission form from investigator indicates other action required.

Note: The above schema is the standard escalation tree for all units and contains the minimum required notification parameters for all units managed by the SSF. The addition of notification actions is permissible when requested by the owners of units managed by the SSF or when necessary to ensure that sufficient personnel will be notified in some manner at each stage of an escalation tree.

SSF Siemens Alarm Escalation Schema: Settings for Escalation Per Alarm Type

Alarm Point	Alarm Delay	Notification
Mechanical Freezer (Ultra Low)	15 minutes*	Per Current Version of Appendix G of this SOP
Mechanical Freezer (Standard)	15 minutes*	Per Current Version of Appendix G of this SOP
Refrigerator	15 minutes*	Per Current Version of Appendix G of this SOP
Liquid Nitrogen Freezer	15 minutes*	Per Current Version of Appendix G of this SOP
Room Temperature: C-135, IB097/MS-B046 Cage, and MS-B037	1 hour	Per Current Version of Appendix G of this SOP
Low Oxygen Monitor	1 minute	Per Current Version of Appendix G of this SOP
E-Stop Activation	1 minute	Per Current Version of Appendix G of this SOP
Uninterrupted Power Supplies	1 minute	Per Current Version of Appendix G of this SOP
BLN Disconnection	10 minutes	Per Current Version of Appendix G of this SOP
Field panel data transmission failure	10 minutes	Per Current Version of Appendix G of this SOP

* The alarm delay listed is in addition to any alarm delays that are internally programmed in the freezer.

Current Administrators for the Siemens Alarm Console

Name	Position

Effective Date: Obsolete Date:

LN_2 Alarm Testing Worksheet

Unit ID_____ Alarm Point Name _____	Physical Location: Room # _____ Location (Row) _____	
❑ New Unit Alarm Qualification ❑ Repair/Re-connect	❑ Move/Re-connect ❑ Biennial Defrost/Re-connect	❑ Other: _____

Step #	Description	Performed By / Date	Observation / Measurement
	Record the initial alarm notification delay (Mode Delay and Level Delay) as found.		**As found:** Mode Delay _____ Min Level Delay _____Sec
	Modify the initial alarm notification delay as follows: Mode Delay = 0 min and Level Delay = 180 sec. Click "Save" before closing the window (Siemens).		Completed Yes No
1	Record the SN for each unit connected through the alarm point being tested.		Unit SN (1) _____ (2) _____ (3) _____ (4) _____ (5) _____ (6) _____ (7) _____

[1] No additional units on this alarm point. Initial / date: _____

LN_2 Alarm Testing Worksheet Unit ID _____			
Step #	Description	Performed By / Date	Observation / Measurement
2	• On the Siemens Alarm Console, left click on the Server Manager icon located next to the Start button. • From the selection tree that appears, select the "+" next to Configuration to expand tree. • Left click on "Services" to view the drop down list, left click on "Insight RENOServer," and left click on restart. • Wait until information box is completed.		Completed Yes No
3	Trigger alarm on unit as follows: Activate the alarm test function (instructions follow for CHART MVE LN_2 units. For all other units, refer to SF-3-2): • On the LN_2 unit monitor hit the setup button, if password required hit enter four times. If that does not work refer to manual or ask PI. • Select temperature menus by hitting the enter button. Select Temp A, • Hit setup button to scroll until you see alarm test. • To begin alarm test use the up arrow button to change from no to yes. • Hit enter and temperature A will start getting warmer (NOTE: Alarm test function may need to be activated more than once to ensure that the freezer remains in alarm long enough to send an alarm notification to Siemens). • After alarm test is complete the temperature will return to actual temperature of LN_2 freezer and the alarm test function will automatically return to no. Record time of audible/visible freezer alarm.		Time: _____AM / PM
4	Record time of alarm notification on the Siemens Console.		Time: _____AM / PM
5	Confirm that for alarm point _____, the Siemens system recognizes the alarm status ≤ 6 minutes of when the audible freezer alarm was activated.		Completed Yes No
6	Clear the alarm on the freezer by pressing the Alarm Mute button.		Completed Yes No
7	Return the delay set point to "as found" value in Step 1 after alarm point prints out Normal. Click "Save" before closing the window.		Completed Yes No
8	Restart RENO per Step #2.		Completed Yes No

LN_2 Alarm Testing Worksheet Unit ID _____			
Step #	Description	Performed By / Date	Observation / Measurement
9	For each unit listed in Step 1 above, test the alarm connection by (1) activating the test alarm feature or (2) unplugging the unit. (It is acceptable for the performing tech to record the activation of the alarm from the Siemens console and the verifying tech to verify in lieu of awaiting alarm print-out and attaching.) **Note: Alarm Mute button MUST be pressed on the freezer controller to clear the alarm condition after every unit tested.** Unit SN (1) _____ (2) _____ (3) _____ (4) _____ (5) _____ (6) _____ (7) _____		Test Method (1 or 2) Alarm Successfully Activated (Yes or No) 1 2 - Yes No 1 2 - Yes No 1 2 - Yes No 1 2 - Yes No 1 2 - Yes No 1 2 - Yes No 1 2 - Yes No

[1] No additional units on this alarm point. Initial / date: _____

LN_2 Alarm Testing Worksheet Unit ID _____			
Step #	Description	Performed By / Date	Observation / Measurement
10	All Units Demonstrate Expected Alarm Notifications: ❑ Yes ❑ No Section 1-9 documentation is complete and legible. Tech Signature/Date:_____		Tech Signature/Date:_____ (applicable only if two techs involved in alarm testing)
11	Ensure that the following documents have been revised/completed, signed and filed if changes were required following this action: • SF-1-4 Appendix D (Template for SSF Storage Agreement). • SF-1-4 Appropriate revised Storage Location Map (Appendix E). • SF-2-4 Appendix E (Siemens Alarm System Change approval log). • SF-3-2 or SF-3-16 Appropriate revised Acceptable Ranges Map (Appendix C).		Document has been revised/completed, signed and filed: ❑ Yes ❑ No ❑ No changes ❑ Yes ❑ No ❑ No changes ❑ Yes ❑ No ❑ No changes ❑ Yes ❑ No ❑ No changes
Second Technician or Manager Review, Signature/Date:_____			
Comments			

Approved by: SSF Director_____ Date _____

Mechanical Refrigeration Unit Alarm Testing Worksheet

Unit ID_____ Alarm Point Name _____	Physical Location: Room # _____ Location (Row) _____

❑ New Unit Alarm Qualification
❑ Repair/Re-connect
❑ Move/Re-connect
❑ Biennial Defrost/Re-connect
❑ Other: _____

Step	Description	Observation / Measurement	Performed By / Date
1	Record the initial alarm notification delay (Mode Delay and Level Delay) as found.	**As found:** Mode Delay _____ Min Level Delay _____ Sec	
	Modify the initial alarm notification delay as follows: Mode Delay = 0 min and Level Delay = 180 sec. Click "Save" before closing the window (Siemens).	Completed Yes No	
	Record the Unit ID (name / location / serial number for each unit connected through the alarm point being tested. (i.e. C135-A1; S/N: xxxxx)	Unit ID (1) _____ (6) _____ (2) _____ (7) _____ (3) _____ (8) _____ (4) _____ (9) _____ (5) _____ (10) _____	

[1] **No additional units on this alarm point. Initial / date: _____**

Mechanical Refrigeration Unit Alarm Testing Worksheet **Unit ID** _____

Step	Description	Observation / Measurement	Performed By / Date
2	• On the Siemens Alarm Console, left click on the Server Manager icon located next to the Start button. • From the selection tree that appears, select the "+" next to Configuration to expand tree. • Left click on "Services" to view the drop down list, left click on "Insight RENOServer," and left click on restart. Wait until information box is completed.	Completed Yes No	
3	Trigger alarm on unit as follows: Increase temperature of the internal probe by placing a warm towel over the probe or leaving the door open (if unit is **empty**) until alarm has been activated. Record time of audible/visible freezer alarm.	Time: _____AM / PM	
4	Observe for time of Alarm notification on the Siemens Console.	Time: _____AM / PM	
5	Confirm that for alarm point _____, the Siemens system recognizes the alarm status ≤ 6 minutes from when the audible freezer alarm was activated.	Completed Yes No	
6	Return the delay set point to "as found" value in step 1 after alarm point prints out Normal. Click "Save" before closing the window.	Completed Yes No	
7	Restart RENO per Step #2.	Completed Yes No	

Mechanical Refrigeration Unit Alarm Testing Worksheet **Unit ID** _____

Step	Description			
8	For each unit listed in Step 1 test the alarm connection by: 1) activating the test alarm feature, 2) warm towel method, 3) unplugging or switching off the unit, or 4) door open (only if freezer is empty of specimens)			
	Description	Observation / Measurement		Performed By / Date
	Unit SN:	Test Method (1, 2, 3, or 4)		
		Alarm Successfully Activated (Yes or No)		
	(1)	1 2 3 4	Yes No	
	(2)	1 2 3 4	Yes No	
	(3)	1 2 3 4	Yes No	
	(4)	1 2 3 4	Yes No	
	(5)	1 2 3 4	Yes No	
	(6)	1 2 3 4	Yes No	
	(7)	1 2 3 4	Yes No	
	(8)	1 2 3 4	Yes No	
	(9)	1 2 3 4	Yes No	
	(10)	1 2 3 4	Yes No	
9	All Units Demonstrate Expected Alarm Notifications: ❑ Yes ❑ No Section 1-8 documentation is complete and legible. Tech Signature / Date: _____ 2nd Tech Signature / Date: _____ (applicable only if two techs were involved in alarm testing)			

[1] **No additional units on this alarm point. Initial / date: _____**

Mechanical Refrigeration Unit Alarm Testing Worksheet **Unit ID** _____

Step	Description	Observation / Measurement	Performed By / Date
10	Confirm delay set points were returned to "as found" values per Step 6. **Completed by different technician than personnel who executed Step 6.** • Note: Execution of Step 10 prior to completing Steps 7, 8, and/or 9 is permitted	Completed Yes No*	
	*A "No" selection requires executing Steps 6-7, documenting actions in Steps 6-7, and repeat of Step 10 verification by alternate personnel.		
Non-Participating Technician or Manager Review, Signature / Date:_____			
Step	Description	Observation / Measurement	Performed By / Date
11	Ensure that the following documents have been revised/completed, signed and filed, if changes were required following this action:	Document has been revised/completed, signed, and filed:	
	SF-1-4 Appendix D ▪ Template for SSF Storage Agreement	❑ Yes ❑ No ❑ No change	
	SF-1-4 Appropriate revised Freezer Room Map ▪ Appendix E, F, I, K or M	❑ Yes ❑ No ❑ No change	
	SF-2-4 Appendix E ▪ Siemens Alarm System Change approval log	❑ Yes ❑ No ❑ No change	
Non-Participating Technician or Manager Review, Signature / Date:_____			
Comments			

Approved by: SSF Director_____ Date _____

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Client Name:	
Date Of Service:	
Work Order /Ticket Number:	
Specialist Name:	

Problem Description:

Include Date, time, reported by and specific data and identification of involved components.

Attached documentation: __ No __ Yes (number of pages____)

Root Cause Of Problem:

Include the process used for diagnosing the problem and the data that led to the conclusion.

Attached documentation: __ No __ Yes (number of pages____)

Corrective Action(s) Completed To Repair Problem:

Include specifically which components were adjusted, repaired and/or replaced. Detail the testing that was completed following the repair to demonstrate that the problem was successfully resolved.

Attached documentation: __ No __ Yes (number of pages____)

Preventative Action(s) Proposed To Prevent Reoccurrence:

Include source of communication to client if other than via this report.

Attached documentation: __ No __ Yes (number of pages____)

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Additional Information/Comments

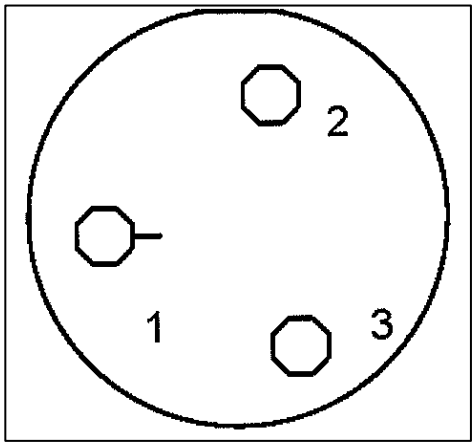
List of attached documentation
1 2 3 4 5 6

Report completed by_____
Date_____

Common Wiring Diagrams

Wire Slot Diagram				
	1	2	3	
X				x
X	4*	5*	6*	x
1 = Normally Open				
2 = Common				
3 = Normally Closed				

Wire Slot Diagram						
7	6	5	4*	3*	2*	1*
7= Normally Open						
6= Common						
5= Normally Closed						



Wire Slot Diagram
2 1 3
1 = Common
2 = Normally Open
3 = Normally Closed

* Indicates slots with no specification

Month: **Year:**

ALARM SYSTEM DAILY AND WEEKLY MAINTENANCE LOG

DAILY MAINTENANCE

Date	Morning			Evening*			Comments / Corrective Actions
	UPS Test	Review of Siemens Graphic	Tech initials	UPS Test	Review of Siemens Graphic	Tech Initials	
1	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
2	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
3	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
4	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
5	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
6	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
7	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
8	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
9	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
10	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
11	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
12	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
13	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
14	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
15	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
16	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
17	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
18	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
19	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
20	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
21	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
22	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
23	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
24	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
25	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
26	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
27	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
28	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
29	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
30	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
31	❑Yes ❑No	❑Yes ❑No		❑Yes ❑No	❑Yes ❑No		
Reviewed By:							

* Evening verification not mandated by SF-2-4.

Month: **Year:**

ALARM SYSTEM DAILY AND WEEKLY MAINTENANCE LOG

WEEKLY MAINTENANCE

Week	Task / Verification	Completed	Tech Initials / Date	Comments
1	Confirm Backup Created & Delete Oldest File*	❑Yes ❑ No ❑ N/A		
	Transfer Backup to Shared Drive & Delete Oldest File*	❑Yes ❑ No ❑ N/A		
	Insight Startup Parameter Verification**	❑Yes ❑ No		
2	Confirm Backup Created & Delete Oldest File*	❑Yes ❑ No		
	Transfer Backup to Shared Drive & Delete Oldest File*	❑Yes ❑ No		
	Insight Startup Parameter Verification**	❑Yes ❑ No		
3	Confirm Backup Created & Delete Oldest File*	❑Yes ❑ No		
	Transfer Backup to Shared Drive & Delete Oldest File*	❑Yes ❑ No		
	Insight Startup Parameter Verification**	❑Yes ❑ No		
4	Confirm Backup Created & Delete Oldest File*	❑Yes ❑ No		
	Transfer Backup to Shared Drive & Delete Oldest File*	❑Yes ❑ No		
	Insight Startup Parameter Verification**	❑Yes ❑ No		
5	Confirm Backup Created & Delete Oldest File*	❑Yes ❑ No ❑ N/A		
	Transfer Backup to Shared Drive & Delete Oldest File*	❑Yes ❑ No ❑ N/A		
	Insight Startup Parameter Verification**	❑Yes ❑ No ❑ N/A		
N/A	Non-Routine Insight Startup Parameter Verification**	❑Yes ❑ No ❑ N/A		
	Non-Routine Insight Startup Parameter Verification**	❑Yes ❑ No ❑ N/A		
	Non-Routine Insight Startup Parameter Verification**	❑Yes ❑ No ❑ N/A		
	Non-Routine Insight Startup Parameter Verification**	❑Yes ❑ No ❑ N/A		

Reviewed By:

* Backup update and transfer to be performed every Monday.

** Insight Startup Verification to be performed every Friday and after non-routine updates, except on non-working days, in which case it is to be completed next business day.

APOGEE Insight Services Startup Parameters – Weekly Friday Verification

On the SSF Alarm Computer, the following services should be set to **Status: Started and Startup Type: Automatic.**

Access the Services menu by clicking on the Start menu, Administrative Tools, and Services.

Insight AsyncSvc:
• Enables APOGEE Insight to communicate with a BLN.

Insight DBCSServer:
• Maintains an index of objects in the database, which is used to optimize the performance of the Object Selector, and is also used by APOGEE GO and RENO applications.

Insight EventLogSvc:
• Responsible for collecting all APOGEE messages such as Alarm and Event messages.

Insight EventPrtSvc:
• Allows Alarm and Event messages to print to an Event printer.

Insight GlobalTablesService:
• Ensures that the APOGEE Insight computer and the BLN members (that is, the field panels) have the same node table and field panel configuration information (for example, the Destination membership and BLN User Accounts).

Insight LoaderSvc:
Performs database uploads and downloads.

Insight MonitorSvc:
• Monitors whether the other members of the MLN are communicating on the Ethernet (that is, is used by System Profile to show the connection status of Insights).

Insight RENOServer:
• Carries out the Remote Notification (RENO) functionality.

InsightSchedulerSvc:
• Ensures that any scheduled task that occurs at APOGEE Insight (for example, Reports and Trend Collections), scheduled through the APOGEE Scheduler application is executed automatically.

Objectivity AMS Service:
• Used to access the APOGEE Insight database.

Objectivity Lock Server:
• Used to access the APOGEE Insight database.

SentinelLM:
• Provides all APOGEE Insight computers on an MLN with the appropriate APOGEE license(s).

* Information obtained from Siemens' "Insight & Windows Services for daily check" document saved in Shared Drive, Alarm folder.

Effective Date: _____

Obsolete Date: _____